Model 230

True Wet-to-Wet Differential Pressure Transducer

The Model 230 is Setra's highest accuracy solution for monitoring differential pressure in wet-to-wet applications. Its single diaphragm design enables a true wet-to-wet differential pressure measurement with superior ±0.25% FS accuracy compared to competitive units which calculate differential pressure using two single point pressure sensors. The stainless steel capacitive sensor provides a highly accurate, linear analog output proportional to the pressure over a wide temperature range. The 230 is offered with an optional 3 or 5 valve machined brass manifold for ease of installation and maintenance.

Avoid Line Pressure w/ Single Diaphragm Sensor

Unlike the competition, the 230 is a true wet-to-wet sensor with a single diaphragm construction. The differential pressure range of a single diaphragm is not impacted by line pressure whereas dual differential pressure sensors require the individual sensors to measure gauge pressure, comparing the outputs to determine the differential pressure.

Increase the Sensors Response Time

The 230 utilizes an all stainless steel capacitive sensor which responds 20x faster than oil filled sensors and provides conditioned electronic circuitry with a highly accurate, linear analog output proportional to the pressure over a wide temperature range.

Save Time on Money & Installation

When time and project costs are a priority, the 230 is offered with an optional 3 or 5 valve machined brass manifold for ease of installation and maintenance. The brass body has no internal process connections, therefore eliminating the risk of internal leaks.



- **Single Diaphragm Design**
- **All Stainless Steel Capacitive Sensor**
- **3 or 5 Valve Manifold Assembly Options**

Model 230 Features:

- ±0.25% FS Accuracy
- No Liquid Fill Diaphragm
- NEMA 4 Rated Housing
- Low Line Pressure Effect
- Fast Response Time
- Gas & Liquid Compatible
- Meets CE Conformance Standards

Applications:

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

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PROOF PRESSURE

Unidirectional		
Pressure Range PSID	Proof Pressure High Side PSI	Proof Pressure Low Side PSI
0 to 1.0	50	2.5
0 to 2.0	50	5
0 to 5.0	100	12.5
0 to 10.0	100	25
0 to 25.0	350	62.5
0 to 30.0	350	75
0 to 50.0	350	125
0 to 100.0	350	250

Bidirectional		
Pressure Range PSID	Proof Pressure High Side PSI	Proof Pressure Low Side PSI
0 to ±0.5	50	1.25
0 to ±1.0	50	2.5
0 to ±2.5	100	6.35
0 to ±5.0	100	12.5
0 to ±10.0	200	25
0 to ±25.0	350	62.5
0 to ±50.0	350	125

GENERAL SPECIFICATIONS

Performance Data	
Accuracy RSS[1] (at constant temp)	±0.25% FS
Non-Linearity, BFSL	±0.20% FS
Hysteresis	0.10% FS
Non-Repeatability	0.05% FS
Thermal Effects[2]	
Compensated Range °F(°C)	+30 to +150 (-1 to +65)
Zero Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Span Shift %FS/100°F(%FS/50°C)	2.0 (1.8)
Line Pressure Effect	Zero shift ±0.004% FS/PSIG line pressure
Resolution	Infinite, limited only by output noise level (0.02%FS)
Static Acceleration Effect	2%FS/g (most sensitive axis)
Natural Frequency	500 Hz (gaseous media)
Warm-up Shift	±0.1% FS total
Response Time	30 to 50 milliseconds
Long Term Stability	0.5%FS/1 YR
Maximum Line Pressure	350 PSIG
Environmental Data	
Operating[3] Temperature °F (°C)	0 to +175 (-18 to +80)
Storage Temperature °F (°C)	-65 to +250 (-54 to +121)
Vibration	5 g from 5 Hz to 500 Hz
Acceleration	10g
Shock	50g
Pressure Media	
Model 230	Gases or liquids compatible with 17-4 PH Stainless Steel, 300 Series Viton O-Rings. Note: Hydrogen not recommended for use with 17-4 PH stainless steel. Optional Buna-N O'rings are recommended for hydrocarbon applications.
3 & 5 Valve Manifold	Gases or liquids compatible with 360 brass, Copper 122, Acetal plug valves and Nitrile O-rings.

Physical Description (Model 230)	
Case	Stainless Steel/Aluminum
Electrical Connection	Barrier strip terminal block with conduit enclosure & 0.875 DIA conduit opening.
Pressure Fittings	1/4"-18 NPT internal
Weight (approx.)	14.4 oz
Sensor Cavity Volume	0.27 in³ Positive Port, 0.08 in³ Negative Port
(With 1/4"NPT external fittings installed-does not include cavity volume of 1/4"NPT external fittings.)	
Physical Description (3-Valve Manifold Assembly)[4]	
Manifold Block	Brass
Valves (3)[5]	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	7.05"W x 6.25"H x 2.16"D
Weight	<2.5 lbs.
Physical Description (5-Valve Manifold Assembly)[6]	
Manifold Block	Brass
Valve (5)[5]	V1 for Connection to ± Port V2 for Connection to – Port V3 for Equalizing Pressure V4 & V5 for Connection to External Gauge or Alternate Plumbing Configuration
Process Connection	1/4"-18 NPT Internal Thread
Dimensions	7.05"W x 6.25"H x 2.16"D
Weight	<3.8 lbs.
Electrical Data (Voltage)	
Circuit	3-Wire (Exc, Out, Com)
Excitation	9 to 30 VDC for 0-5 VDC Output, 13 to 30 VDC for 0-10 VDC Output
Output[7]	0 to 5 VDC[8], 0 to 10 VDC[8]
Output Impedance	100 ohms
Electrical Data (Current)	
Circuit	2-Wire
Output[9]	4 to 20mA[10]
External Load	0 to 1000 ohms
Minimum supply voltage (VDC)	9+ 0.02 x (Resistance of receiver plus line).
Maximum supply voltage (VDC)	30+ 0.004 x (Resistance of receiver plus line).

[1] RSS of Non-Linearity, Hysteresis, and Non-Repeatability.
[2] Units calibrated at nominal 70° F. Maximum thermal error computed from this datum.
[3] Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher.
[4] Order assembled with the Model 230 (Code 3V) or separately as Option 891.
[5] Refer to drawings
[6] Order assembled with the Model 230 (Code 5V)
[7] Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
[8] Zero output factory set to within ±25mV (for 5 VDC output) or ±50mV (for 10 VDC output)
Span (Full Scale) output factory set to ±25 mV (for 5 VDC output) or ± 50 mV (for 10 VDC output
[9] Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.
[10] Zero output factory set to within ±0.16mA. Span factory set to within ±0.16 mA

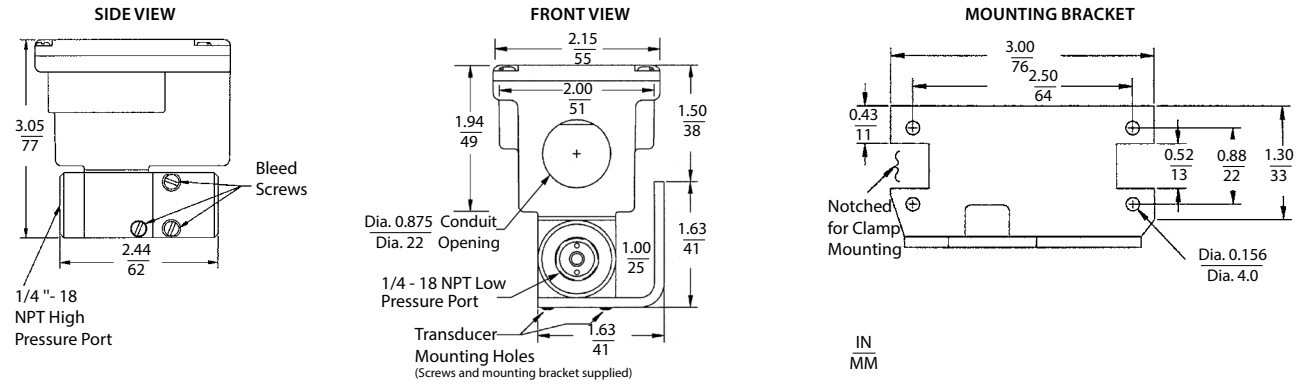
Specifications subject to change without notice.

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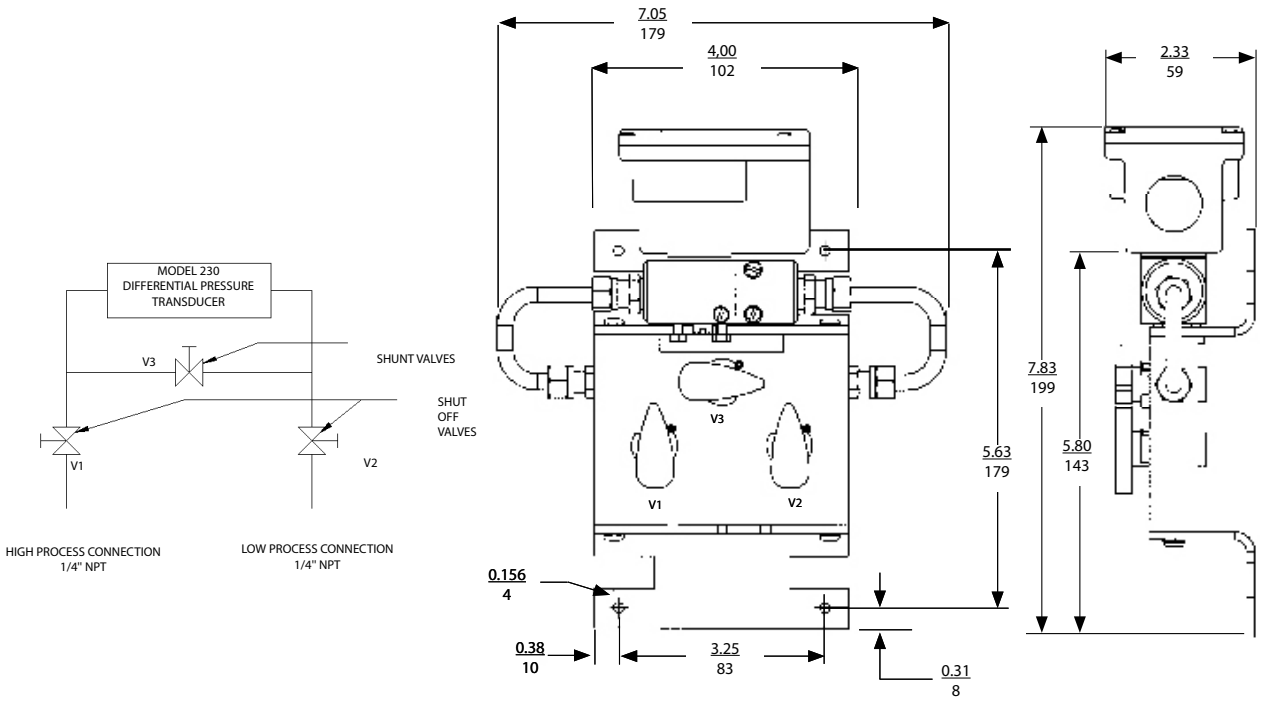
Model 230

Wet-to-Wet Differential Pressure Transducer

MODEL 230 DIMENSIONS



DIMENSIONS W/ 3-VALVE MANIFOLD ASSEMBLY



For differential pressure measurements at high line pressure (350 PSIG max), it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown.

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Model 230

True Wet-to-Wet Differential Pressure Transducer

ORDERING INFORMATION

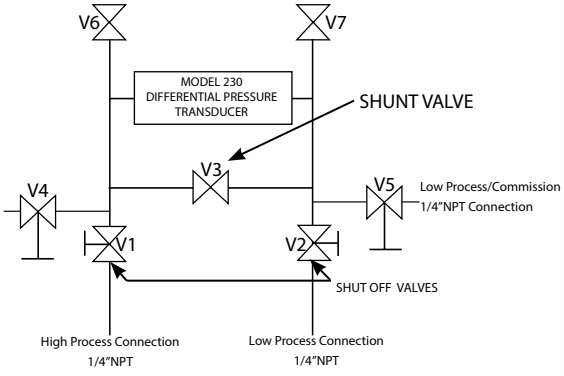
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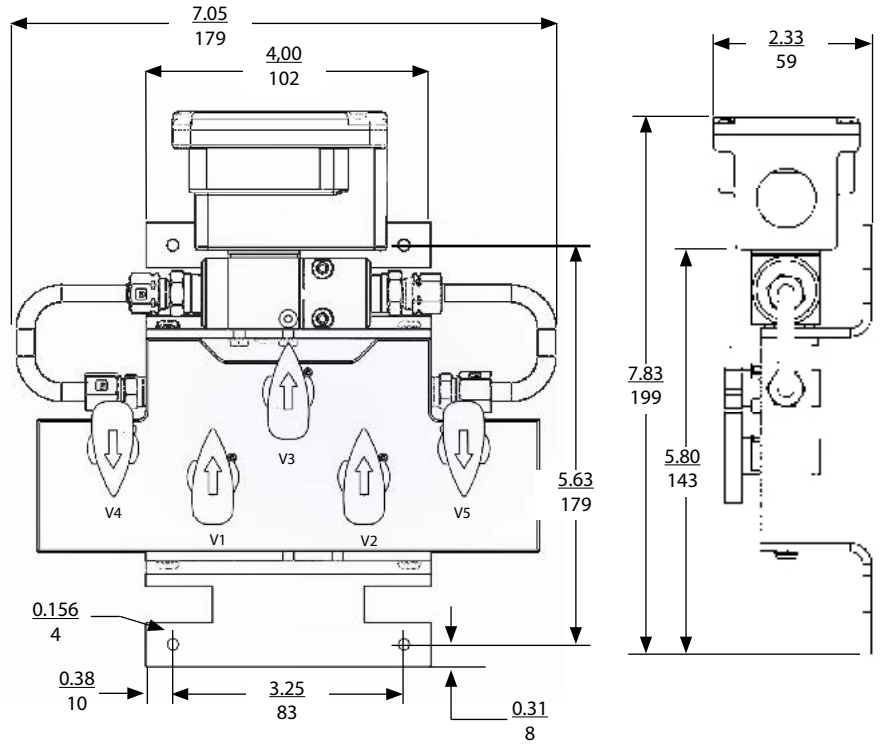
Model	Range				Pressure Fitting		Output		Bleed Screw Seals			Optional	
2301 = 230	Unidirectional		Bidirectional		2F	1/4" NPT (F)	11	4-20 mA	Std.			C	Calibration Certificate
	001PD	0 to 1 PSID	0R5PB	±0.5 PSID	3V	3-Valve Manifold	2D	0.05-5.05 VDC	Opt.	A	Buna-N		
	002PD	0 to 2 PSID	001PB	±1 PSID	5V	5-Valve Manifold	2E	0.05-10.05 VDC					
	005PD	0 to 5 PSID	2R5PB	±2.5 PSID									
	010PD	0 to 10 PSID	005PB	±5 PSID									
	025PD	0 to 25 PSID	010PB	±10 PSID									
	030PD	0 to 30 PSID	025PB	±25 PSID									
	050PD	0 to 50 PSID	050PB	±50 PSID									

Please contact factory for versions not shown.

Ordering Example: 2301005PD2F11B = Model 230 0 to 5 PSID unidirectional, 1/4-18 NPT Male fitting, 4 to 20 mA Output, and Viton/Silicone Seals.
2301005PD3V11B = Model 230, 0 to 5 PSID unidirectional, 3-Valve Manifold, 4 to 20 mA, Output, and Viton/Silicone Seals (Assembled w/3- Valve Manifold).

DIMENSIONS W/ 5-VALVE MANIFOLD ASSEMBLY





For differential pressure measurements at high line pressure (350 PSIG max), it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown.
Note: V6 and V7 bleed valves are not required when used with a Setra Model 230. Use the bleed screws on Model 230 to bleed the lines of air.

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