

# Multi-Sense® Model 231RS

## Multi-Configurable, Wet-to-Wet Differential Pressure Transducer

Setra's Model 231RS is the industry's first multi-configurable, wet-to-wet differential pressure transducer utilizing remote sensors. This design reduces labor and material costs versus traditional copper piping installations. The 231RS has a robust, NEMA 4 enclosure with an LCD display and a hinged, captive cover allowing for easy access to switches in order to adjust range and output. An optional display is available that allows users to view high, low, and differential pressure readings on a simple rotating cycle.

### Advantages of Remote Sensors

Remote sensors provide multiple advantages. By connecting the high and low side transducers at the point of measurement instead of running copper piping back to the transducer, the labor and material costs are cut by one-third.

### All Inclusive Field Selectable Design

The 231RS has a multi-configurable design, providing the user with field selectable ranges and outputs as well as push button or remote zero. This design gives the user total flexibility to make changes on the job site.

### Multiple Connector Options for Added Flexibility

The 231RS offers remote sensors that connect to the unit via armored jacket, cable or conduit fitting available in 10, 20, 30, 40 and 50 foot lengths. With the remote sensors, there is no need for a 3 or 5 valve manifold and no risk to compromising the electronics.

### Display Options Available

The 231RS has an optional LCD display which gives the user the ability to view the high, low and differential pressure outputs locally at the device. The visual indicator gives instant feedback providing performance validation to the user.



- Wet-to-Wet w/ Remote Sensors
- Armored Jacket, Conduit, Cable Versions
- Optional LCD Display w/ Hinged Cover

### Model 231RS Features:

- Remote Sensor Design
- Labor and Material Costs Cut By One Third
- Field Selectable Ranges
- Field Selectable Outputs
- Field Accessible Push Button & Remote Zero
- Jumper Selectable Port Swap
- All Cast Aluminum, NEMA 4 Rated Housing
- CE & RoHS Compliant

### Applications:

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

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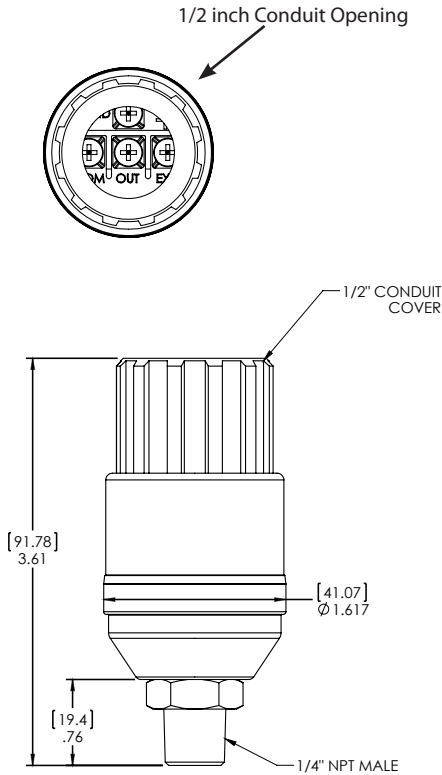
Multi-Configurable, Wet-to-Wet Differential Pressure Transducer



## REMOTE SENSOR DIMENSIONS

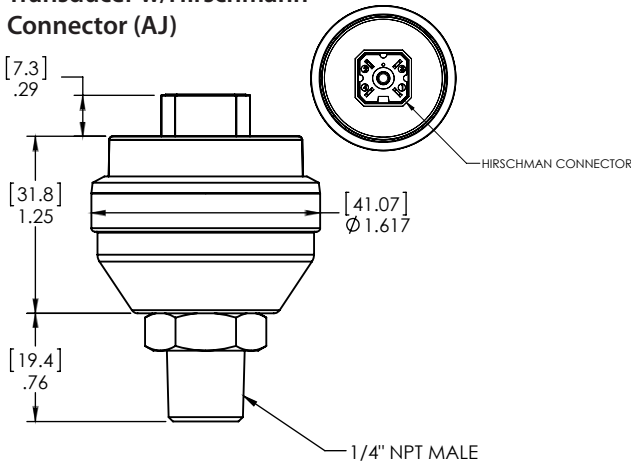
## GENERAL SPECIFICATIONS

Transducer w/Conduit (3M)

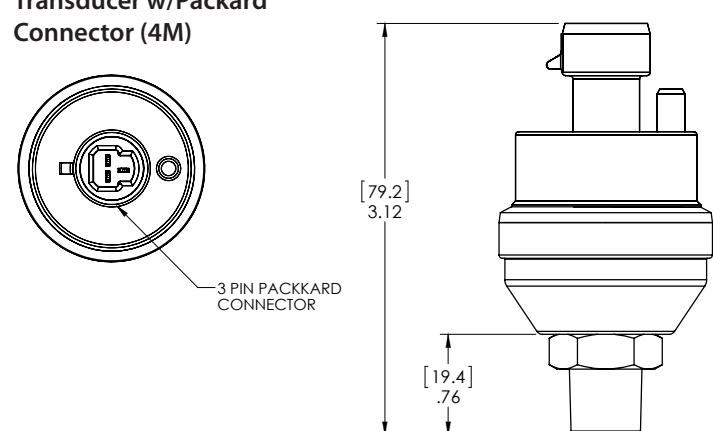


Electrical Data (Voltage)		Performance Data					
Circuit	3-Wire	Accuracy RSS <sup>4</sup> (at constant temp.)					
Excitation	15 to 30 VDC/18 to 30 VAC <sup>6</sup> (Reverse Excitation Protected)	Pressure Ranges A, B, C	±1.0% FS				
Output <sup>1</sup>	0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC	Pressure Ranges D	±2.0% FS				
Output Impedance	30 Ohms	<b>Pressure Ranges (Selection Example, Pg 4.)</b>					
Circuit Consumption	8 mA (typ.) at 5 VDC, 8 mA (typ.) at 10 VDC, 40 mA (typ.) at 18-30 VAC	Range Code	A	B	C	D	Max. Line Pressure
		RS1	50	25	10	5	50
<b>Electrical Data (Current)</b>		RS2	75	37.5	15	7.5	75
Circuit	2-wire (Reverse Excitation Protected)	RS3	100	50	20	10	100
Output <sup>2</sup>	4 to 20 mA	RS4	150	75	30	15	150
External Load	0 to 250 Ohms	RS5	250	125	50	25	250
Min. Supply Voltage	15 VDC + 0.02 x Resistance of receiver plus line)	<b>Pressure Media</b>					
Max. Supply Voltage	30 VDC + 0.004 x Resistance of receiver plus line)	Liquids or Gases Compatible with 17-4 PH Stainless Steel Note: Hydrogen not recommended for use with 17-4 PH stainless steel					
<b>Physical Description</b>		<b>Thermal Effects<sup>5</sup></b>					
Case	Die Cast Aluminum, Powder Coated	Compensated Range °F (°C)	+32 to +130 (0 to +54)				
Pressure Fittings	1/4-18 NPT Male	Zero/Span Shift %FS/100°F (50°C)	2.0 (1.8)				
Electrical Connection	1/2 in. Conduit	Warm-up Shift	<0.12% FS				
Size	4.0 x 6 x 2 in. (102 x 152 x 51 mm)	Response Time	1 to 5 sec. (selectable)				
Weight	1.3 lb	Proof Pressure	2 x Full Scale				
<b>Environmental Data</b>		Burst Pressure	15 x Full Scale (50 psi), 10 x Full Scale (75 x 150 psi), 8 x Full Scale (250 PSI)				
Operating <sup>3</sup> Temperature °F (°C)	-4 to +185 (-20 to -85)	<sup>1</sup> Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.					
Storage Temperature °F (°C)	-4 to +185 (-20 to +85)	<sup>2</sup> Calibrated at factory with a 24VDC loop supply voltage and a 250 ohm load.					
Vibration	10g from 50Hz to 2000 Hz	<sup>3</sup> Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.					
Shock	200g	<sup>4</sup> RSS of Non-Linearity, Hysteresis, and Non-Repeatability.					
		<sup>5</sup> Units calibrated at nominal 70°F. Maximum thermal error computed from this datum. Specifications subject to change without notice.					
		<sup>6</sup> NOT RECOMMENDED TO CONNECT VAC EXCITATION TO EARTH (SAFETY) GROUND					

Transducer w/Hirschmann Connector (AJ)



Transducer w/Packard Connector (4M)



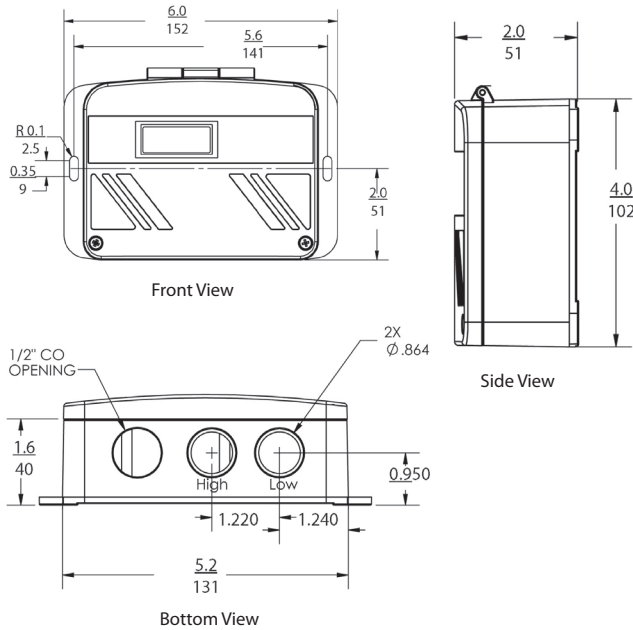
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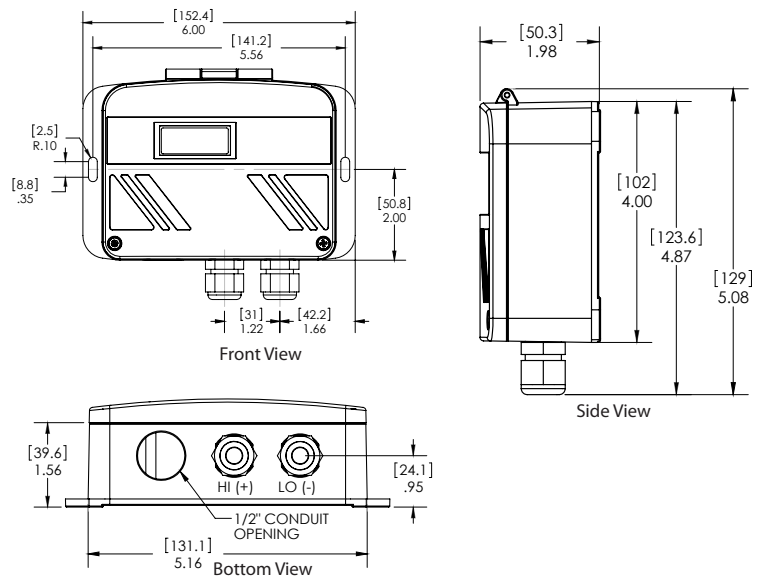


## DIMENSIONS

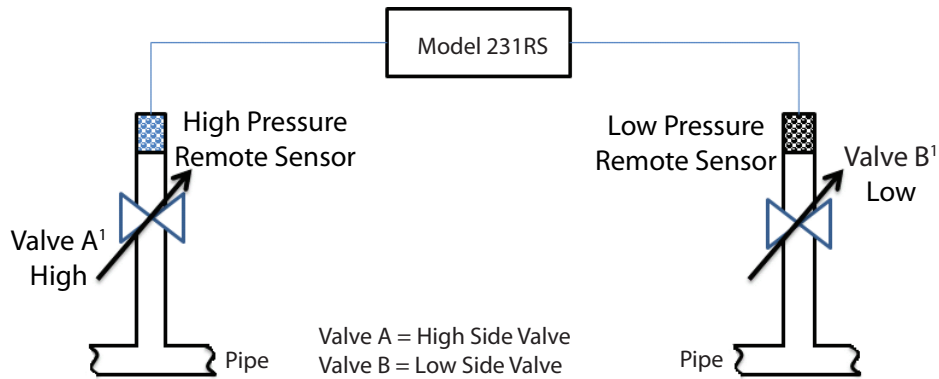
### Conduit Version



### Cable Version



## INSTALLATION



1. Valves not included.

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## ORDERING INFORMATION

2	3	1	G	-				-			-		
Model	Range Specification <sup>1</sup>		Pressure Connection		Display		Cable <sup>2</sup>						
231G = 231RS		Unidirectional	Bidirectional	3M	1/4-18 NPT Ext. Remote Sensor (Conduit Version- No Cable Provided)		N	No Display	10	10ft			
	RS1	5, 10, 25, 50 PSID	±5, ±10, ±25, ±50 PSID	4M	1/4-18 NPT Ext. Remote Sensor (Cable Version)		D	LCD Display	20	20ft			
	RS2	7.5, 15, 37.5, 75 PSID	±7.5, ±15, ±37.5, ±75 PSID	AJ	1/4-18 NPT Ext. Remote Sensors (Armored Jacket Version)				30	30ft			
	RS3	10, 20, 50, 100 PSID	±10, ±20, ±50, ±100 PSID						40	40ft			
	RS4	15, 30, 75, 150 PSID	±15, ±30, ±75, ±150 PSID						50	50ft			
	RS5	25, 50, 125, 250 PSID	±25, ±50, ±125, ±250 PSID										

<sup>1</sup> For higher ranges contact factory.  
<sup>2</sup> Cable lengths only available with Pressure Connection Code 4M (up to 30 ft) and AJ (up to 50 ft).  
<sup>3</sup> Only available on Armored Jacket Pressure Connection

Ordering Example: 231GRS44MN10 = Model 231RS w/Range Code RS4, 1/4-18 NPT Ext. Remote Sensor (Cable Version) , No Display, 10ft. Cable <sup>1</sup>

**NOTE:** NOT RECOMMENDED TO CONNECT VAC EXCITATION TO EARTH (SAFETY) GROUND

## PRESSURE RANGE CODE SELECTOR (IMPORTANT: READ BEFORE ORDERING)

Examine the pressure application and determine what is the Highest System Line Pressure.  
 Determine what is the Differential Pressure being measured.  
 Find the MAX. Line Pressure in the table on the right that is  $\geq$  to your Highest System Line Pressure.  
 Verify that your DP falls within the selectable ranges in that row.  
 Follow that row to the left and select that range code.

Range Code	A	B	C	D	Max. Line Pressure
RS1	50	25	10	5	50
RS2	75	37.5	15	7.5	75
RS3	100	50	20	10	100
RS4	150	75	30	15	150
RS5	250	125	50	25	250

**Example:**

Highest System Line Pressure: 125 PSIG  
 Differential Pressure Measured: 75 PSID  
 "Max Line Pressure"  $\geq$  to System Line Pressure: 150 PSID (75 PSID DP falls within ranges in this row)  
 Select Range Code: RS4



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