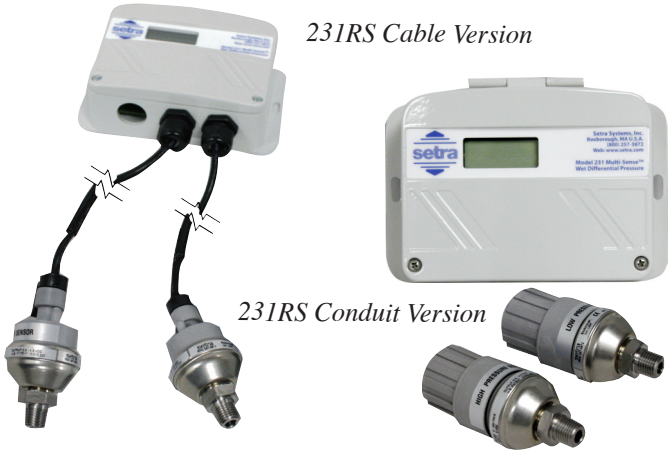
Multi-Sense® Model 231RS

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



Industry First Wet-to-Wet Remote Sensor Design

DESCRIPTION

Setra's 231RS with remote sensors reduces labor, materials, and time. The sensors are installed directly into the pipe and electrical connection is made between the remote sensors and the Model 231RS via cables or conduit, reducing labor cost by one-third and the cost of copper to connect the pressure transducer to the pipe. Startup time is reduced since purging air out of the lines is not necessary.

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

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

FEATURES

- Wet-to-Wet Transducer w/ Remote Sensors
- Conduit and Cable Versions
- Field Selectable Output - True 4 to 20 mA, 0 to 5, 1 to 5, and 0 to 10 VDC
- Each Unit Provides 4 Unidirectional and 4 Bidirectional Switch Selectable Pressure Ranges
- Field Accessible Push-Button Zero and Remote Zero
- Jumper Selectable Port Swap
- Optional LCD
- All Cast Aluminum, NEMA4 Rated Housing
- CE and RoHS Compliant

APPLICATIONS

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

SPECIFICATIONS

Performance Data

Accuracy RSS[1] (at constant temp.)

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

Line Pressure Determines Selection of Range Code

Pressure Ranges (Selection Example, Pg.4)

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

Thermal Effects[2]

Compensated Range °F (°C)	+32 to +130 (0 to +54)
Zero Shift %FS/100°F (50°C)	2.0 (1.8)
Span Shift %FS/100°F(50°C)	2.0 (1.8)
Warm-up Shift	<0.12% FS
Response Time	1 to 5 sec. (selectable)
Proof Pressure	2 x Full Scale
Burst Pressure	15 x Full Scale (50 psi) 10 X Full Scale (75 x 150 psi) 8 x Full Scale (250 psi)

Environmental Data

Temperature	
Operating[3] °F (°C)	-4 to +185(-20 to +85)
Storage °F (°C)	-4 to +185(-20 to +85)
Vibration	10g from 50 Hz to 2000 Hz
Shock	200g

Physical Description

Case	Die Cast Aluminum, Powder Coated
Pressure Fittings	1/4-18 NPT Male
Electrical Connection	1/2 in. Conduit
Size	4.0 x 6 x 2 in. (102 x 152 x 51mm)
Weight	1.3 lb (Case Only)

Pressure Media

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

Electrical Data (Voltage)

Circuit	3-Wire
Excitation	15 to 30 VDC/18 to 30 VAC (Reverse Excitation Protected)
Output[4]	0 to 5 VDC 0 to 10 VDC 1 to 5 VDC
Output Impedance	30 Ohms
Current Consumption	8 mA (typ.) at 5 VDC 8 mA (typ.) at 10 VDC 40 mA (typ.) at 18-30 VAC

Electrical Data (Current)

Circuit	2-Wire (Reverse Excitation Protected)
Output[5]	4 to 20 mA
External Load	0 to 250 Ohms

Minimum supply voltage (VDC) = 15 + 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 or lower.
[4] Calibrated into a 50K ohm load, operable into a 5000 ohm load or greater.
[5] Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load.

Specifications subject to change without notice.

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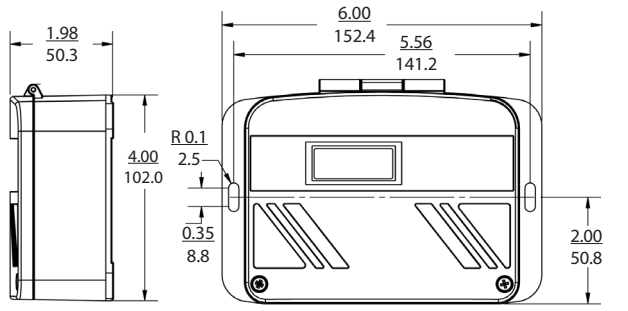
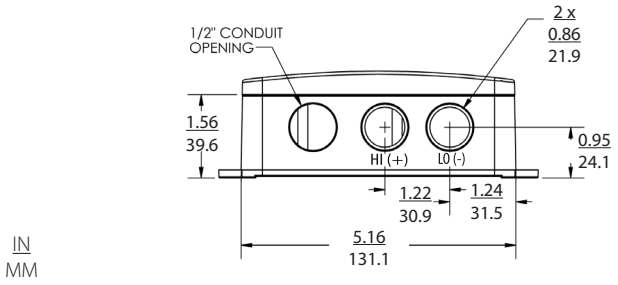
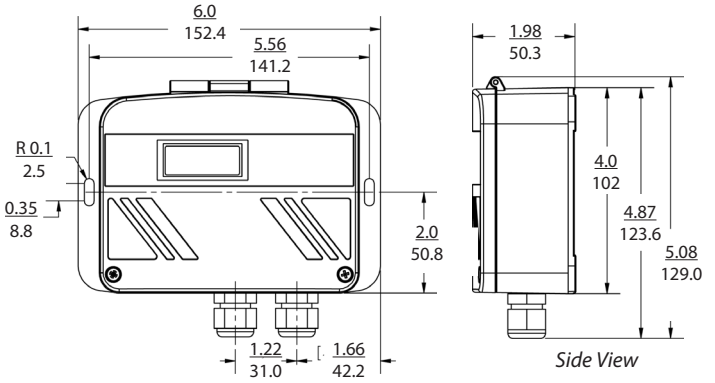
DIMENSIONS

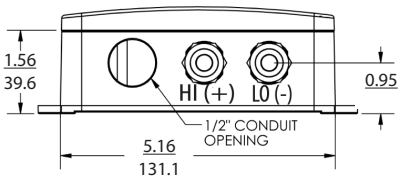




Conduit Version

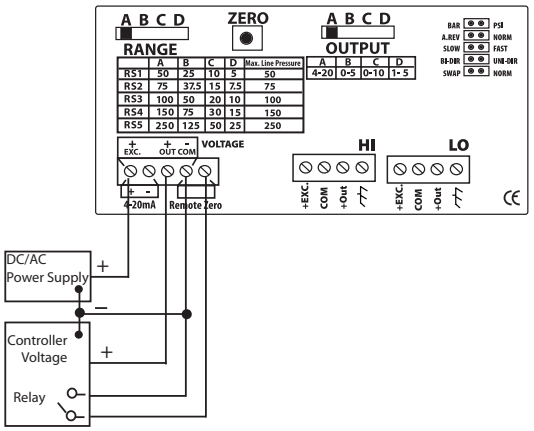
IN
MM



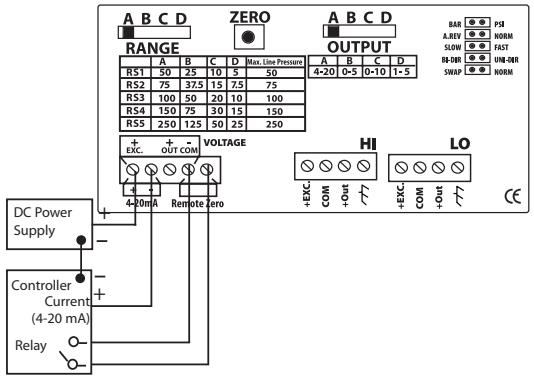


Cable Version

WIRING



3-Wire - Voltage Output
0 to 5 VDC
0 to 10 VDC
1 to 5 VDC
Remote Zero



2-Wire - Current Output
4 to 20 mA
Remote Zero

SSP231RS Rev.A 09/14/111

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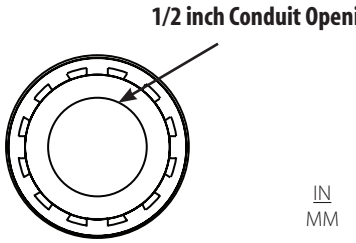
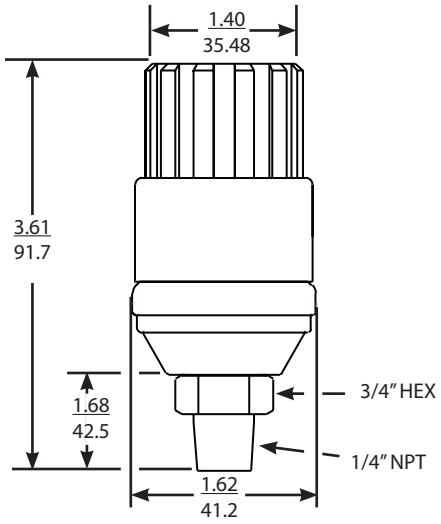
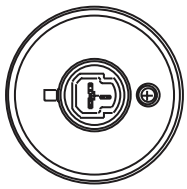
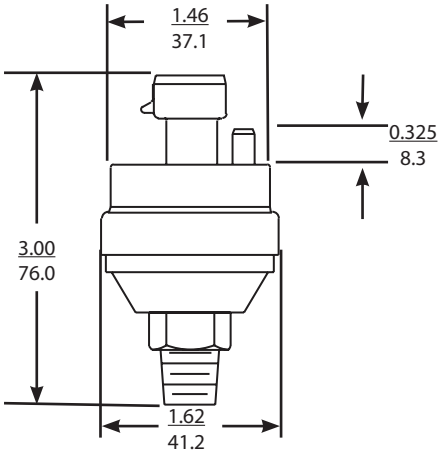




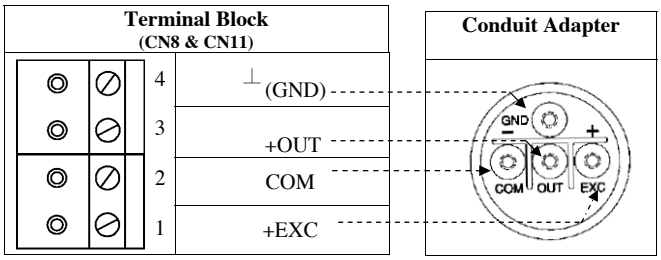
Transducer w/Conduit



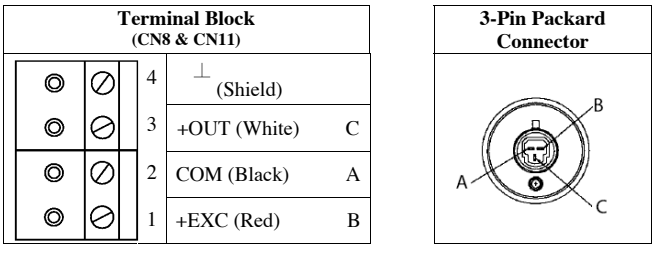


Transducer w/Packard Connector

WIRING



Transducer w/Conduit



Transducer w/Packard Connector

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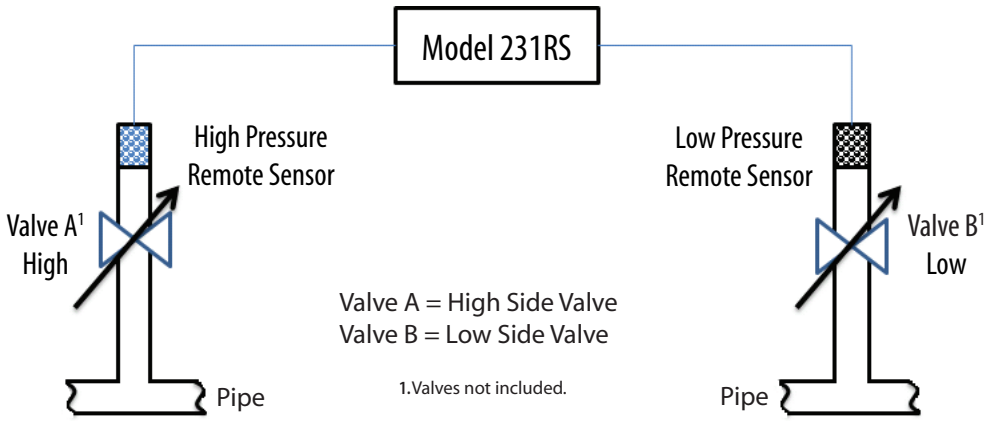
INSTALLATION



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

Line Pressure Determines Selection of Range Code

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 ≥ 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" ≥ to System Line Pressure: 150 psid (75 psid DP falls within ranges in this row)
Select Range Code: RS4

ORDERING INFORMATION

2 3 1 G – [ ][ ][ ] – [ ][ ] – [ ] – [ ][ ]

Model	Range Code	Pressure Connection		Display			Cable[1]		
231G = 231RS	See Table 1 Below	3M	1/4-18 NPT Male Remote Sensor (Conduit Version)	Std.	N	No Display	Std.	10	10ft
		4M	1/4-18 NPT Male Remote Sensor (Cable Version)	Opt.	D	LCD Display	Opt.	20	20ft
							Opt.	30	30ft

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

Table 1. Range Specification

RANGE CODE[2]	UNIDIRECTIONAL PRESSURE RANGES	BIDIRECTIONAL PRESSURE RANGES
RS1	5, 10, 25, 50 psid	±5, ±10, ±25, ±50 psid
RS2	7.5, 15, 37.5, 75 psid	±7.5, ±15, ±37.5, ±75 psid
RS3	10, 20, 50, 100 psid	±10, ±20, ±50, ±100 psid
RS4	15, 30, 75, 150 psid	±15, ±30, ±75, ±150 psid
RS5	25, 50, 125, 250 psid	±25, ±50, ±125, ±250 psid

1. Cable lengths only available with Pressure Connection Code 4M. 2. For higher ranges contact factory.

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