



Features

- Measures Ultra-Low Differential and Gauge Pressures From 0.10" H₂O Full-Scale
- Absolute Ranges As Low As 0.08 PSIA Full-Scale
- 4-20 mA or 10-50 mA dc Output
- Optional $\sqrt{\Delta P}$ Output
- Available in Two- And Four-Wire Configurations
- Integral 3½ Digit Liquid Crystal Local Display Available
- Field Repairable

Description

Validyne's P532 Pressure Transmitters are ideally suited for measuring extremely low liquid and gas pressures in industrial applications. Full-scale differential pressure ranges from 0.10" H₂O to 2" H₂O with line pressure rating of 100 psig, and ranges of 2" H₂O to 3200 psid with line pressures up to 3200 psig are offered. Ranges from 8 psid to 10,000 psid at line pressures of 10,000 PSI are also offered. Gauge pressure ranges start at 0.10" H₂O and absolute pressure from 0.08 psia full-scale. This unique design, which utilizes a diaphragm-type variable reluctance pressure sensor, provides many outstanding advantages including:

- All surfaces of the transducer and pressure manifold ports which come in contact with the process fluid are corrosion resistant. This eliminates the need for isolating membranes and transfer oil fill techniques normally required for most industrial applications, particularly those involving ΔP measurements across flow elements.
- Extremely low volumetric displacement – 3×10^{-4} inches³ for most ranges – for full-scale pressure changes.
- Total diaphragm deflection of less than 0.0015" for full-scale pressure excursion

provides excellent dynamic response characteristics at low stress levels. This prolongs the life of the instrument in applications involving extensive pressure cycling.

- Gauge and differential pressure sensors may be easily disassembled in the field for cleaning or range changing, by replacing the sensing diaphragm. (A family of low-cost, interchangeable diaphragms are available from factory stock to cover any full-scale pressure range between the limits shown in the Specifications.)

The P532 Assembly includes the appropriate sensor, a pressure manifold assembly (which serves to isolate the sensor from external mounting and plumbing stresses), and an all solid-state electronics module housed in a moisture-proof, dust-resistant NEMA 4 enclosure.

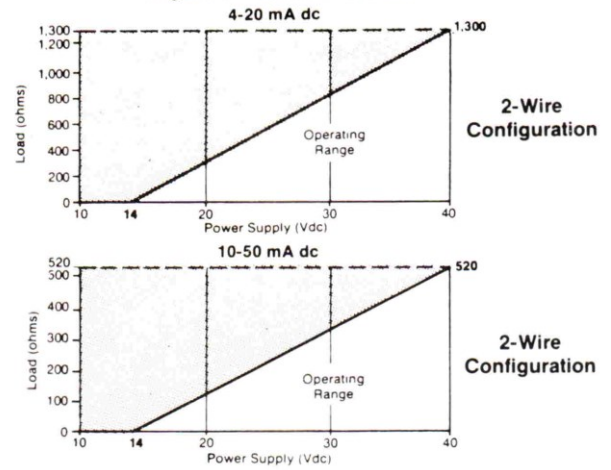
Electrical connections and Zero and Span adjustments are readily accessible under a water-tight, removable cover. Each P532 is factory adjusted and precision calibrated to the full-scale range specified by the customer.

Available options include a 3½ digit liquid crystal local output display, square-rooted output for use with non-laminar flow elements, a choice of O-ring seal compounds and sensor materials for corrosive service, and choices of input power.

Functional Specifications

Pressure Media:	Liquids, Gases or Vapors
Pressure Ranges:	Any full-scale value between the limits shown may be specified (See Ordering Information)
Differential Ranges:	0.10" to 2.0" H ₂ O at 100 psig line pressure; 2.25" H ₂ O to 3200 psid at 3200 psig line pressure; (Unidirectional or bi-directional ranges can be specified)
	8 psid to 10kpsid at 10kpsid line pressure
Gauge/Vacuum Ranges:	0-0.10" H ₂ O FS to 0-3200 psig FS
Absolute Ranges:	0-0.8 psia FS to 0-3200 psia FS
Outputs:	4-20 mA dc, 10-50 mA dc; linear or square root function
	$I_o = 4 + 16 \sqrt{\frac{P_{IN}}{P_{FS}}}$ mA dc, or
	$I_o = 10 + 40 \sqrt{\frac{P_{IN}}{P_{FS}}}$ mA dc
Power Supply	
2-Wire Configuration:	14-40 Vdc, External Supply Required
4-Wire Configuration:	115 Vac, ±10%, 50/60 Hz (Std.); 230 Vac, ±10%, 50Hz (Optional)
Load Limitations:	See Figure 1
Indication:	Optional 3½ digit liquid crystal display (LCD) independently adjustable for readout in engineering units; 0-1999 counts, max.; selectable decimal point
Span and Zero Adjust:	Continuously adjustable; Adjustable range ±10%, nominal, of full-scale pressure; accessible under removable moisture-proof cover
Operating Temperature:	0 to +160°F
Humidity:	0-100% relative humidity
Overpressure Limits	
Differential & Gauge:	Ranges < 2.25" H ₂ O, 15 psid max without damage Ranges ≥ 2.25" H ₂ O, 500% of full-scale pressure, or 4500 psid, whichever is less, without damage
Absolute:	500% FS or 20 psia, whichever is greater, 4500 psia max
Line Pressure (Diff.)	
Ranges ≥3200PSI to 10K psi:	10Kpsid, with less than 1% Full-Scale/1000 psig zero shift
Ranges ≥2.25" H₂O to 3200:	3200 psig, with less than 1% Full-Scale/1000 psig zero shift
	100 psig, with less than 1% Full-Scale/100 zero shift
Ranges <2.25" H₂O:	Ranges ≥ 2.25" H ₂ O = 3 x 10 ⁻⁴ in ³ /Full-Scale Ranges < 2.25" H ₂ O = 3.5 x 10 ⁻³ in ³ /Full-Scale
Volumetric Displacement:	Cavity volumes and displacements symmetrical on differential and gauge units.
Volumetric Symmetry:	

Figure 1. Load Limitations



4-Wire Configuration

- (1) Max Load Resistance for 4-20 mA dc Output is 1000 ohms.
- (2) Max Load Resistance for 10-50 mA dc Output is 320 ohms.

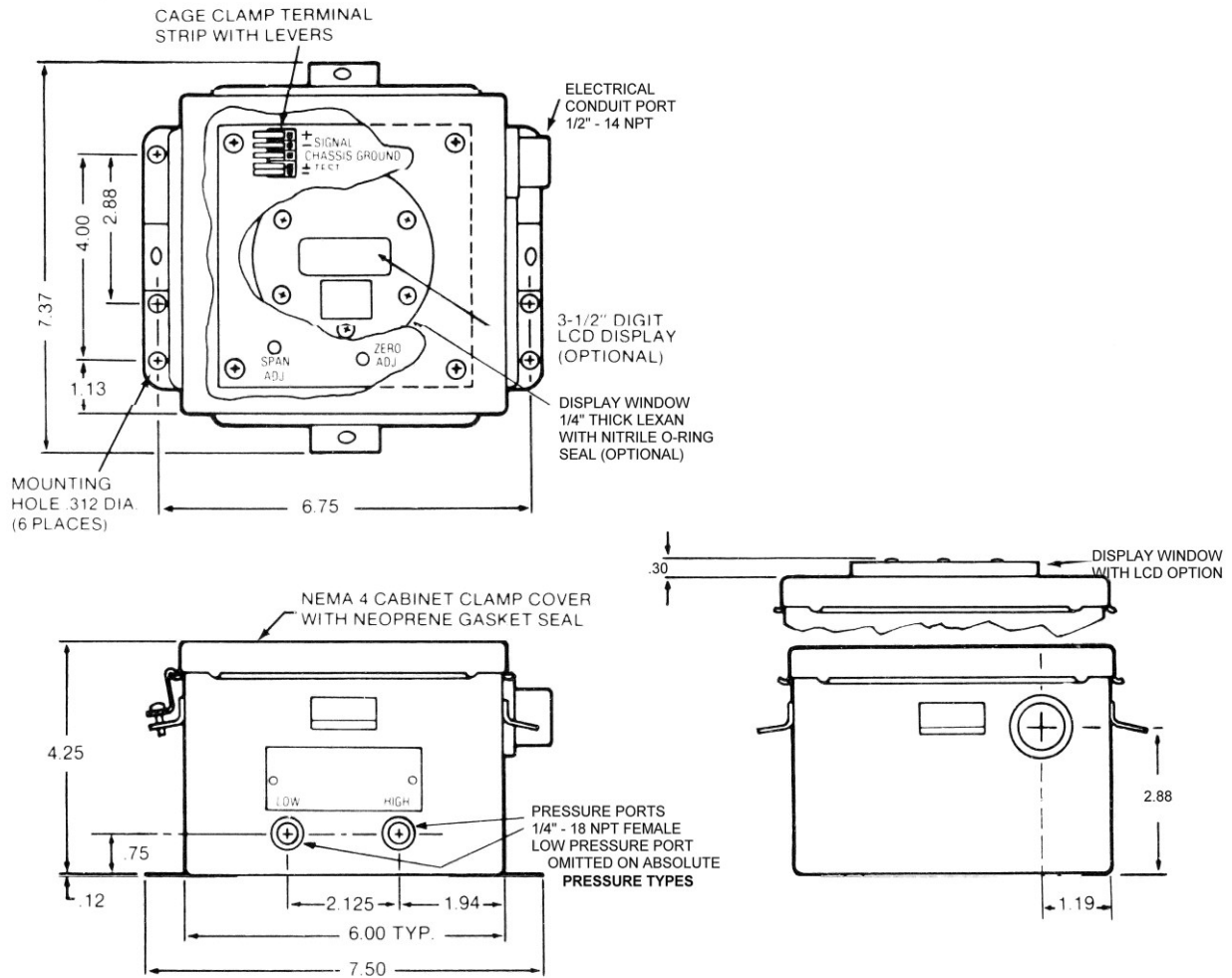
Performance Specifications

Accuracy:	0.25% Full-Scale including linearity, hysteresis and repeatability (0.5% for ≥3200 PSI)
Stability:	0.5% Full-Scale for six months
Conformity (√ΔP Units):	0.5% Full-Scale from 20-100% of range
Temperature Effect	
Zero Shift:	Less than 1% FS/100°F (all ranges)
Span Shift:	Less than 2%/100°F (ranges ≥ 2.25" H ₂ O). Less than 0.05%/°F (ranges < 2.25" H ₂ O)
Supply Voltage Effect:	Less than 0.01% FS per volt variation (2-wire configuration)
Load Effect:	No load effect other than the change in power supplied to the transmitter (2-wire configuration)

Physical Specifications

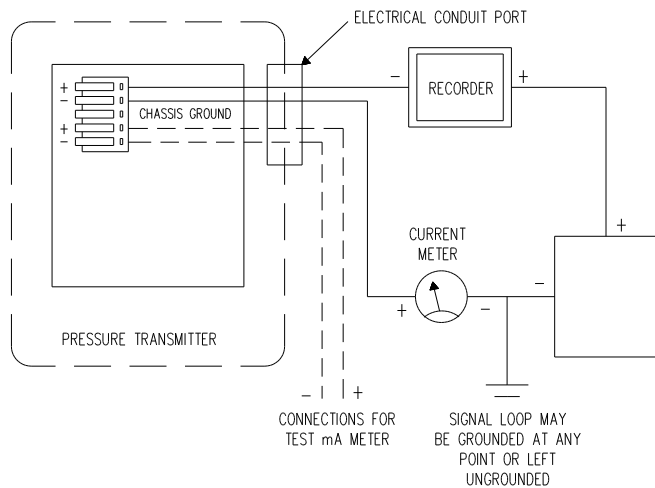
Pressure Ports:	¼-18 NPT Female; two ports on differential and gauge units; one port on absolute units
Enclosure:	NEMA 4 with Neoprene cover gasket; enameled steel, (stainless steel enclosure optional)
Weight:	6.5 lbs. for ranges ≥ 2.25" H ₂ O 8.0 lbs. for lower ranges
O-rings:	Available with Buna-N, Viton-A, Silicone, Ethylene Propylene or Teflon (ranges ≥ 2 psi)
Sensor Material	
Differential & Gauge Units:	Type 410 Stainless Steel (Std.); Type 410 SST Nickel Plated, Type 410 Gold Plated or 316, Inconel for ranges ≥ 2 psi (Optional)
Absolute Units:	Type 410 Stainless Steel (Std.) Other materials available
Electrical Connections:	Cage clamp terminal strip with levers. Accepts up to 12 gauge wire
Mounting:	Optional mounting brackets available; P/N 2151-2500

Dimensional Drawings

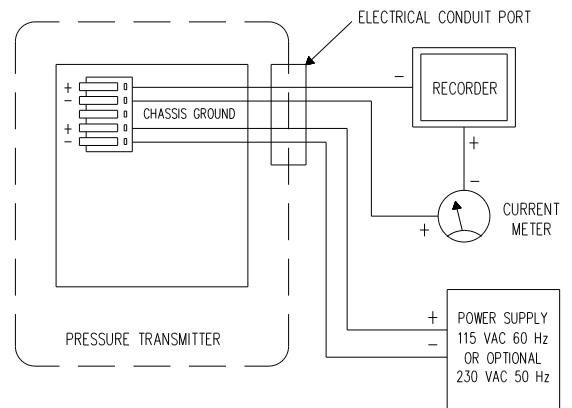


Wiring Connections

2-WIRE CONFIGURATION



4-WIRE CONFIGURATION



Ordering Information To order the Model P532 Pressure Transmitter specify the part number as indicated.

Measurement	
Option Letter	Description
D	= Differential or Gauge
A	= Absolute

Pressure Range
Specify the full scale pressure value and units; i.e. 100mm Hg, 5 psid, 30kPa, etc.

O-Ring	
Option Letter	Description
N	= BUNA-N
E	= Ethylene Propylene
V	= Viton-A
S	= Silicone
T	= Teflon (Ranges \geq 2 psi)

Input Voltage	
Option No.	Description
1	= 14-40 Vdc (2-wire system)
3	= 115 Vac (4-wire system)
4	= 230 Vac (4-wire system)

P532D – XX – N – 1 – A – 1 – S – 4

Calibrated Output					
Option Letter	-FS	Zero	+FS	$\sqrt{\Delta P}$	Display
A	-	4mA	20mA	-	-
B	4mA	12mA	20mA	-	-
E	-	4mA	20mA	Yes	-
G	-	4mA	20mA	-	Yes
H	4mA	12mA	20mA	-	Yes
J	-	4mA	20mA	Yes	Yes
K	-	10mA	50mA	-	-
L	10mA	30mA	50mA	-	-
M	-	10mA	50mA	Yes	-
N	-	10mA	50mA	-	Yes
P	10mA	30mA	50mA	-	Yes
R	-	10mA	50mA	Yes	Yes
S	-	20mA	4mA	-	-

Enclosure	
Option Number	Description
1	= NEMA 4, Enameled Steel (std.)
2	= NEMA 4, Stainless Steel

Compensated Temperature Range	
Option Letter	Description
S	= 0° to 160°F

Sensor Material	
Option No.	Description
3	= Type 316 Stainless Steel
4	= Type 410 Stainless Steel
5	= Type 410 SST Nickel Plated (1)
6	= Type 410 SST Gold Plated (1)
8	= Hastelloy C276

- (1) Sensor Material options 5 and 6 available on differential and gauge pressure units only.
- (2) The Validyne part number used on packing lists and invoices will be as shown above, except that a two-digit pressure range code number will be substituted for the pressure range and units. The transmitter itself will be marked with calibrated range and units specified.
- (3) For Calibrated Output Options "J" or "R", which provide both a square rooted output **and** LCD local output display, if the digital display is to be factory adjusted to read out in units other than the pressure units specified for full-scale range of the transmitter (e.g. flow units, such as cubic feet per minute, pounds per hour, etc.), a specific note should be included in the purchase order giving the full-scale value and units to be used for display scaling. (Note that the maximum value that can be displayed is 1999. If the desired full-scale value exceeds 1999, it is recommended that the display be scaled for 0-100% of full-scale.)

Specifications are subject to change without notice.

Range Chart

Range Code	Psi	In Hg	In H2O	KPa	Torr	CM H2O
06	0.0050	0.010	0.14	0.035	0.26	0.35
08	0.0080	0.016	0.22	0.055	0.41	0.56
10	0.0125	0.026	0.35	0.086	0.65	0.88
12	0.020	0.041	0.55	0.140	1.03	1.40
14	0.032	0.065	0.89	0.22	1.65	2.25
16	0.05	0.102	1.40	0.35	2.58	3.50
18	0.08	0.16	2.22	0.55	4.14	5.60
20	0.125	0.25	3.5	0.86	6.5	8.8
22	0.20	0.41	5.5	1.40	10.3	14.0
24	0.32	0.65	8.9	2.2	16.5	22.5
26	0.50	1.02	14.0	3.5	25.8	35.0
28	0.80	1.6	22.2	5.5	41.4	56.0
30	1.25	2.5	35.0	8.6	65.0	88.0
32	2.0	4.1	55.0	14.0	103.0	140.0
34	3.2	6.5	89.0	22.0	165.0	225.0
36	5.0	10.2	140.0	35.0	258.0	350.0
38	8.0	16.0	222.0	55.0	414.0	560.0
40	12.5	25.0	350.0	86.0	650.0	880.0
42	20.0	41.0	550.0	140.0	1030.0	1400.0
44	32.0	65.0	890.0	220.0	1650.0	2250.0
46	50.0	102.0	1400.0	350.0	2580.0	3500.0
48	80.0	160.0	2220.0	550.0	4140.0	5600.0
50	125.0	250.0	3500.0	860.0	6500.0	8800.0
52	200.0	410.0	5500.0	1400.0	10300	14000
54	320.0	650.0	8900.0	2200.0	16500	22500
56	500.0	1020.0	14000	3500.0	28500	35000
58	800.0	1600.0	22200	5500.0	41400	56000
60	1250.0	2500.0	35000	8600.0	65000	88000
62	2000.0	4100.0	55000	14000	103000	140000
64	3200.0	6500.0	89000	22000	165000	225000
66	5000.0	10200	140000	35000	258000	350000
68	8000.0	16000	222000	55000	414000	560000
70	10000	20300	277000	68900	517000	703000