



### Features:

- **Small, Rugged DP Transducer for Liquid & Gas**
- **±5 VDC or 4-20 mA Two-Wire Output**
- **Full Scale Range from 3.50" H<sub>2</sub>O to 3200 psi**
- **Nickel, Gold, 316SST, Inconel options available**
- **0.25% Accuracy – 0.1%, 0.05% Accuracy Optional**

The Validyne Model P55 is a compact differential pressure transducer designed for industrial measurement applications. The variable reluctance sensing technology allows the P55 to be used in a wide variety of low pressure measurements where fast dynamic response, high resistance to vibration and superior signal stability through ambient temperature change is required. The P55 will accept both gases and liquids directly at the sensing diaphragm; there are no internal isolation fluids to slow the sensor response or cause excessive temperature shift errors.

The P55 is available in three output configurations: 4-20 mA current sink output, DC output and isolated DC output. The 4-20 mA output version is a true two-wire system which will operate over a supply voltage of 9 to 55 VDC.

The DC version is a direct replacement for the VDC signal. The isolated DC output version provides the same ±5 VDC signal, isolated from the power supply by 100 MOhms

The P55 is also available in an absolute pressure version with a welded variable reluctance sensor. Zero and span controls are available for external adjustment, and the wiring may be via connector or pigtail options.

Sensor wetted parts include 410 steel, suitable for inert gases and hydrocarbons, 316 SST for water-based fluids and Inconel for corrosive applications. (See ordering information)

### The P55 is Ideal for:

- **Level Measurements**
- **Hydraulic Systems**
- **Vehicle Testing**
- **Engine Test Cells**
- **Flight Test**
- **Liquid Chromatography**



# P55 Differential Pressure Transducer

## Specifications

### General Specifications –

#### Ranges:

**P55D/E:**  $\pm 0.125$  psid to  $\pm 3200$  psid  
**P55A:** 0 – 0.125 psia to 0 - 3200 psia

#### Accuracy:

**P55D:**  $\pm 0.25\%$  FS, includes Non-linearity, hysteresis and non-repeatability  
**P55E:**  $\pm 0.1\%$  FS. Like above for specified ranges  
**P55A:**  $\pm 0.5\%$  FS, as above  
**P55D:**  $\pm 0.5\%$  FS, ranges -62, -64

#### Overpressure:

**P55D/E:** 200% FS up to 4000 psi maximum with less than 0.5% FS output shift  
**P55A:** 20 psia or 200% FS, whichever is greater, up to 4000 psia maximum, for less than 0.5% zero shift

#### Line Pressure:

**P55D:** 3200 psig maximum, with zero shift less than 1%/Kpsi

#### Pressure Ports:

**P55D/E:** 1/8" female NPT with 8-32 bleed screw & Gasket, Other options available.  
**P55A:** 5/16-24 UNF-2B with 1/8" male NPT adapter included

### Environmental Specifications -

**Operating Temp:** -65°F to 250°F (-54 to 121°C)

#### Compensated Temp:

Standard: 40°F to +140°F (4°C to 60°C)  
Optional: 0°F to +160°F (-18°C to 71°C)  
Optional: -40°F to +230°F (-40°C to 110°C)  
Optional: -65°F to +250°F (-54°C to 121°C)

**Temperature Errors:**  $\pm 0.5\%$  FS for operating temperature range of 40F to +140 F

Optional ranges temp. errors vary.

Includes non-linearity and hysteresis errors

### Sensor Physical Specifications -

**Pressure Media:** Liquids & gases compatible with 410, 316 SST, Inconel.

**O-Rings:** Buna-N Standard, other compounds available

**Pressure Cavity Volume:** 0.012 cu in, each port

**Volumetric Displacement:** 0.0003 cu in at FS

**Weight:** 16 Oz.

### Power Requirements -

**Power Supply:** 9 to 55 VDC, unregulated

**Current Draw:**  
4-20 mA Output: 25 mA max  
 $\pm 5$  VDC Versions: 3 mA, typ

### Signal Output -

**4-20 mA Output:** 4 to 20 mA  
**DC Voltage Output:**  $\pm 5$  VDC @ 0.5 mA

**Zero Balance:** By external adjustment  
**Span:** By external adjustment

**Frequency Response:** Low Pass Filter at 250 Hz, -3 db

**Line Regulation:** 0.02%

**Output Noise:** 2 mVrms

**Insulation Resistance:** 100 MOhms, any terminal to case

## Ordering Information

<p style="text-align: center;"><b>MEASUREMENT</b></p> <p>A = Absolute</p> <p><b>D = Differential</b></p> <p>E = Extended Accuracy 0.1% F.S.</p> <p>F = 0.05% F.S.</p> <p>*Consult factory for other options</p> <p>** E,F = Not for all configurations</p>	<p style="text-align: center;"><b>ELECTRICAL CONNECTORS</b></p> <p>1 = <b>PT02A-10-6P (STD)</b></p> <p>2 = PT02E-10-6P (NEMA)</p> <p>3 = WK-6-32S- Cannon</p> <p>4 = ½" NPT 24" LEADS 24 Gage</p> <p>5 = D38999 A35 (MIL-STD-1560)</p> <p>6 = WK-4-32S – Cannon</p> <p>*Consult factory for other connector options</p>	<p style="text-align: center;"><b>COMP. TEMP. RANGE</b></p> <p><b>G = 40F to +140F (4°C to 60°C) STD</b></p> <p>S = 0F to +160F (-18°C to 71°C)</p> <p>U = -40F to 230F (-40°C to 110°C)</p> <p>W = -65F to +250F (-54°C to 121°C)</p> <p>C = Customer specified</p> <p>*Other Temp. Ranges available.</p> <p>** -U and -W = Not for all configurations.</p>	<p style="text-align: center;"><b>SENSOR MATERIAL</b></p> <p>3 = 316 SS (Teflon coated dia.)</p> <p><b>4 = 410 SST (STD)</b></p> <p>5 = 410 SST Nickel Plated</p> <p>6 = 410 SST Gold Plated</p> <p>8 = Inconel (Teflon coated dia.)</p>
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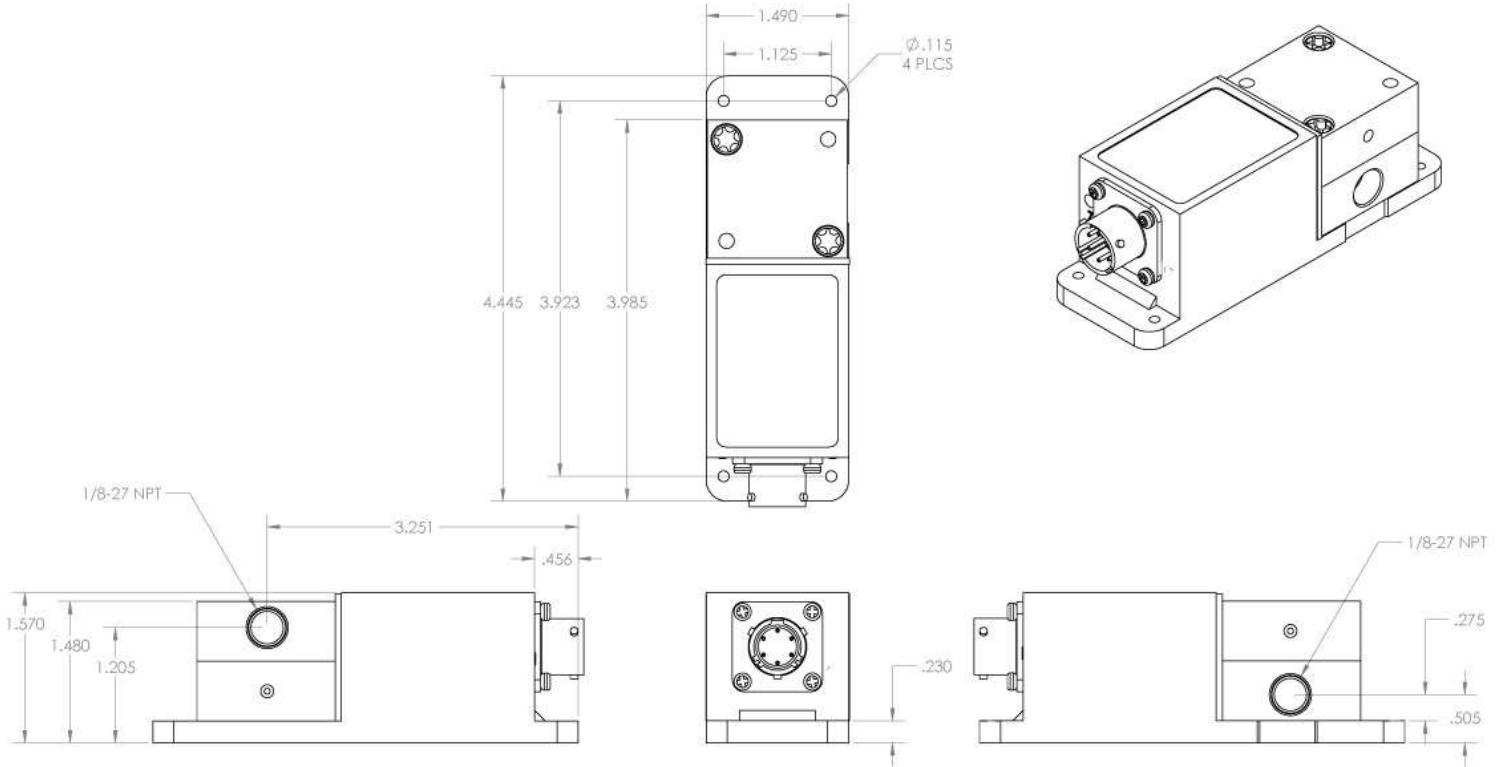
MODEL NUMBER      **P55D - 1 - N - 1 - XX - G - 4 - A**

<p style="text-align: center;"><b>O-RINGS</b></p> <p>L = Fluorosilicone</p> <p><b>N = BUNA-N (STD)</b></p> <p>E = Ethylene Propylene</p> <p>V = Viton-A</p> <p>S = Silicone</p> <p>K = Kalrez</p> <p>T = Teflon</p> <p>C = Customer Spcified</p> <p>*Consult factory for other O-rings</p>	<p style="text-align: center;"><b>CALIBRATED OUTPUT (DC):</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>ISO</th> <th>-FS</th> <th>ZERO</th> <th>+FS</th> </tr> </thead> <tbody> <tr> <td>1 =</td> <td></td> <td></td> <td style="text-align: center;"><b>0</b></td> <td style="text-align: center;"><b>+5v</b></td> </tr> <tr> <td>2 =</td> <td></td> <td style="text-align: center;">-5v</td> <td style="text-align: center;">0</td> <td style="text-align: center;">+5v</td> </tr> <tr> <td>3 =</td> <td></td> <td style="text-align: center;">0</td> <td style="text-align: center;">+2.5v</td> <td style="text-align: center;">+5v</td> </tr> <tr> <td>4 =</td> <td></td> <td style="text-align: center;">-</td> <td style="text-align: center;">4mA</td> <td style="text-align: center;">20mA</td> </tr> <tr> <td>5 =</td> <td></td> <td style="text-align: center;">4mA</td> <td style="text-align: center;">12mA</td> <td style="text-align: center;">20mA</td> </tr> <tr> <td>6 =</td> <td style="text-align: center;">X</td> <td style="text-align: center;">-</td> <td style="text-align: center;">0</td> <td style="text-align: center;">+5VDC</td> </tr> <tr> <td>7 =</td> <td style="text-align: center;">X</td> <td style="text-align: center;">-5VDC</td> <td style="text-align: center;">0</td> <td style="text-align: center;">+5VDC</td> </tr> <tr> <td>8 =</td> <td style="text-align: center;">X</td> <td style="text-align: center;">0</td> <td style="text-align: center;">+2.5VDC</td> <td style="text-align: center;">+5VDC</td> </tr> </tbody> </table> <p>*Consult factory for different output options, offset calibrations, USB, RS485, and other digital outputs.</p>		ISO	-FS	ZERO	+FS	1 =			<b>0</b>	<b>+5v</b>	2 =		-5v	0	+5v	3 =		0	+2.5v	+5v	4 =		-	4mA	20mA	5 =		4mA	12mA	20mA	6 =	X	-	0	+5VDC	7 =	X	-5VDC	0	+5VDC	8 =	X	0	+2.5VDC	+5VDC	<p style="text-align: center;"><b>PRESSURE RANGE</b></p> <p>Two digit Range Dash Number See Page 6.</p> <p>*Consult factory for different full scale pressures and engineering units not listed.</p>	<p style="text-align: center;"><b>PRESSURE PORT OPTIONS PRESSURE PORT</b></p> <p><b>A = 1/8" NPT Female with 8-32" bleed port (STD) (90° from elec. Conn.)</b></p> <p>B = 1/8" NPT Female with 1/8" female NPT bleed port (90° from elec. Conn.)</p> <p>E = 5/16" female port AND 10050-2, No bleed port,</p> <p>F = ¼" OD tube X 1" Long, No bleed port</p> <p>G = ZTA41 Adapters (1/16" Pressure Port)</p> <p>H = 5/16" female port A.N.D 10050-2 (M.S. 33649 / SAE AS5202), 8-32" bleed port, 55D,55E</p>
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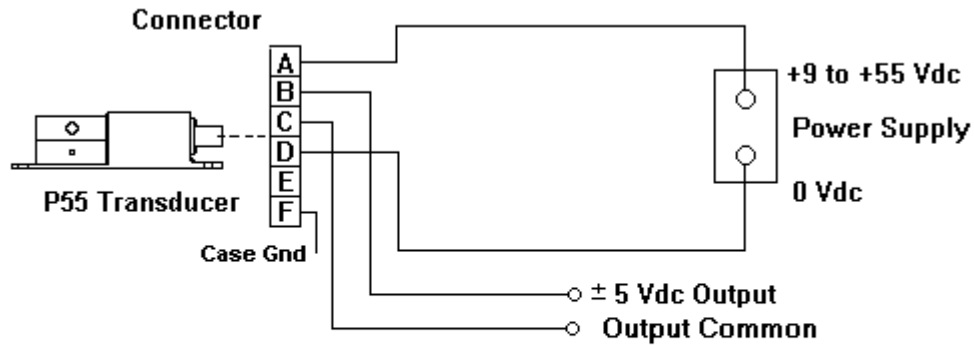
### Special Requirements?

With over 3000 custom specifications already we are confident we can customize a solution to fit your needs. Form factor, housing, pressure ports, electrical connectors, outputs and calibrations are all customizable. Contact our factory via email or phone today!

## Outline Drawing & Connections

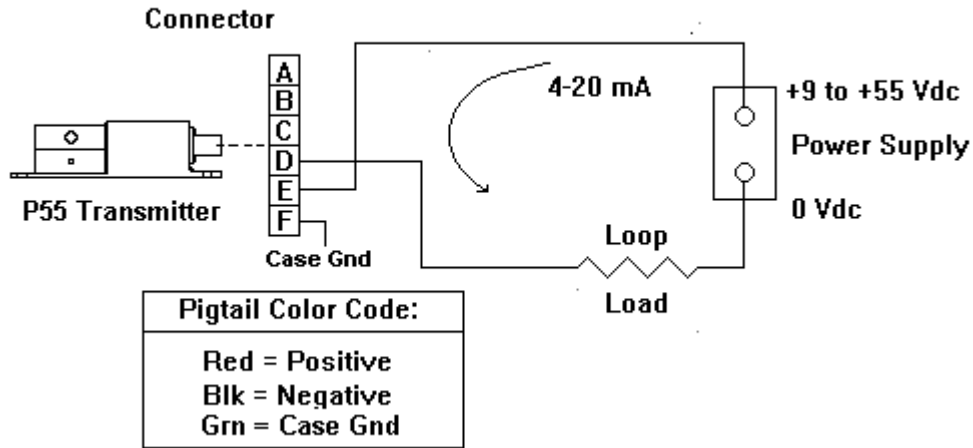


### Transducer Wiring Diagram



Non-Isolated Pigtail Color Code:	Isolated Pigtail Color Code:
Red = + Power    Yel = - Power	Red = + Power    Blk = - Power
Orn = + Signal    Gry = Output Common	Orn = + Signal    Grv = - Signal
Grn = Case Gnd	Grn = Case Gnd

**Outline Drawing & Connections**



**Mating Connector and Cable (Optional)**

- 11322-X** PT06A-10-6S to 5 Lugs (A, B, C, D & Shield) Voltage output option
- 12458-X** PT06A-10-6S to Pigtails (D & E) Current output option
- X = Length of cable in feet.

## Ordering Information – Range Chart

Range Code	Psi	In Hg	In H2O	KPa	Torr	CM H2O
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

- Units can be calibrated in other engineering units as well. Contact the factory for details.
- For pressures in between range codes, pick the higher range code

Updated 5/10/21