

# P1500 Series

## High Performance Low Level Pressure Sensor

Schaevitz® P1500 Series Strain Gauge Pressure Transducers are high grade sensors that provide highly precise measurement of absolute or vented gauge pressures over wide temperature ranges.

Standard versions of this transducer use a 17-4 pH stainless steel diaphragm to sense pressure. The deflection of the diaphragm is transferred to a double cantilever beam by a force transfer rod. Strain in the beam, and therefore, input pressure is measured by four foil strain gauges.

An all-welded construction provides high reliability and stability. Capable of sensing extremely small changes of applied pressure, the transducers are relatively insensitive to vibration, altitude and shock.

The P1500 Series are available in a range of electrical inputs and outputs. Zero and span potentiometers are available as a special option with the P1540, P1550, P1560 and P1590 models.



### Features

- ❑ **High overload capability**
- ❑ **Operation in high temperatures**
- ❑ **Shock and vibration resistant**
- ❑ **2 wire 4-20 mA option: Intrinsic safety approval to EEx ia IIc T4 ( $T_{amb}=60^{\circ}\text{C}$ ), BASEFA, CENELEC EN50-020**

### Applications

- ❑ **Pneumatic pressure monitoring**
- ❑ **Climate room control**
- ❑ **Vehicle brake system monitoring**
- ❑ **Military and commercial aircraft**

### Specifications by Model @ 77°F (25°C)

Model Number	P1502/4	P1542/4	P1552/4	P1562/4	P1582/4	P1592/4
<b>Input Voltage</b>	10 VDC (12 V max)	10 VDC	11-18 VDC	18-32 VDC	10-36 VDC	±15 VDC
<b>Current</b>	28 mA	20 mA	20 mA	25 mA	—	20 mA
<b>Output (F.R.O.)</b>						
<b>Full Range Output (±1%)</b>						
<b>100 mbar</b>	20 mV	5 VDC	2.5 VDC	5 VDC	4-20 mA	5 VDC
<b>200 mbar &amp; 300 mbar</b>	25 mV	5 VDC	2.5 VDC	5 VDC	4-20 mA	5 VDC
<b>Impedance (ohm)</b>	350 ±5%	<10	<10	<10	Load Resist. 1300 max. @ 36 VDC	<10
<b>Current mA (max)</b>	—	5	5	5	—	5 mA
<b>Frequency Response</b>	Approx. 1.0 kHz for 100 mbar to approx. 2 kHz for 350 mbar	1 kHz	1 kHz	1 kHz	100 Hz	1 kHz
<b>Combined Thermal Zero &amp; Sensitivity Shift</b>						
<b>% F.R.O./°F</b>	±0.008	±0.008	±0.008	±0.008	±0.008	±0.008
<b>% F.R.O./°C</b>	±0.015	±0.015	±0.015	±0.015	±0.015	±0.015
<b>Residual Unbalance (%FRO)</b>	±4%	±1%	±1%	±1%	+1-0%	±1%
<b>Weight oz (gm)</b>						
<b>Cable 100 &amp; 200 mbar</b>	12.5 (350)	13.2 (370)	13.2 (370)	13.2 (370)	13.2 (370)	13.2 (370)
<b>Cable 350 mbar</b>	8.9 (250)	9.6 (270)	9.6 (270)	9.6 (270)	9.6 (270)	9.6 (270)
<b>Connector 100 &amp; 200 mbar</b>	11.4 (320)	12.1 (340)	12.1 (340)	12.1 (340)	12.1 (340)	12.1 (340)
<b>Connector 350 mbar</b>	7.9 (220)	8.6 (240)	8.6 (240)	8.6 (240)	8.6 (240)	8.6 (240)

Select P1500 models, when correctly installed, are CE certified to comply with the EMC Directive 89/336/EEC Generic Standards for Residential, Commercial, Light Industrial and Industrial Environments.



**P1500 Series**  
Pressure Ranges: 0-1.5 to 0-5 psi  
(0-100 to 350 mbar)  
Accuracy:  $\leq \pm 0.25\%$  F.R.O.

## Common Specifications

### Pressure Ranges

**Low** (psi) ..... 0-1.5; 3.0; 5.0  
(mbar) ..... 0-100; 200; 350

**Pressure References** ..... Vented gauge<sup>1</sup> and Absolute

**Pressure Limit** .....  $\geq 10\times$  full range pressure. Will not cause a zero offset exceeding 0.05% FRO (recoverable within one hour)

**Burst Pressure** .....  $\geq 20\times$  full range pressure

**Pressure Media** ..... Liquids or gases compatible with 17-4 pH and 17-7 pH stainless steel

**Shunt Calibration** ..... 80%  $\pm 5\%$  full range pressure (not fitted in P1580 Series)

### Combined Nonlinearity, Hysteresis

**and Nonrepeatability** .....  $\leq \pm 0.25\%$  F.R.O. (BSL)

### Temperature Range

**Operable** ..... -65°F to 250°F (-54°C to 120°C)

**Compensated** ..... 32°F to 212°F (0°C to 100°C)

**Storage** ..... -65°F to 300°F (-54°C to 150°C)

### Humidity

**Connector Version** ..... 95% Relative humidity

**Cable Version** ..... Immersible to IP67 (fluid must not enter the ends of the cable)

### Acceleration Response

**0-100 mbar** .....  $\pm 1.0\%$  F.R.O./g nominal

**0-200 mbar** .....  $\pm 0.5\%$  F.R.O./g nominal

**0-350 mbar** .....  $\pm 0.4\%$  F.R.O./g nominal

**Vibration** ..... Surpasses MIL STD810C Method 514-2 Curve L and EUROCAE ED 14A/RTCA 160A

**Shock** ..... 1000 g for 5 msec will not damage the sensor

**EMC** ..... The P1540, P1550, P1560, P1580 and P1590 Series are CE marked, and when correctly installed comply with the EMC Directive 89/336/EEC Generic Standards for Residential Commercial, Light Industrial and Industrial environments. Note: The P1580 Series when used in Intrinsic Safety applications does not comply with the Industrial environment directive.

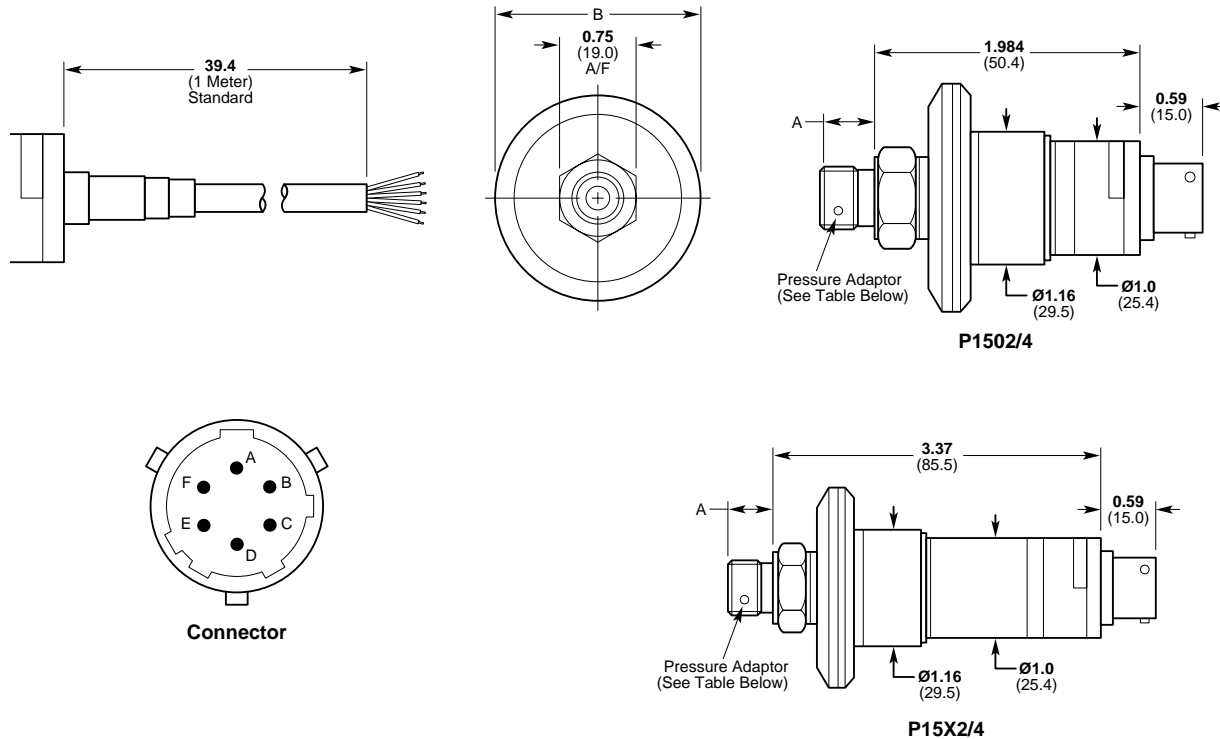
**Insulation Resistance** ..... 500 Mohm at 50 VDC at 25°C

<sup>1</sup> Vented gauge units must only be used in dry, noncorrosive environments and will breathe through the cable vent tube or hole in the 6-way receptacle.

# P1500 Series

## High Performance Low Level Pressure Sensor

### Dimensions in (mm)

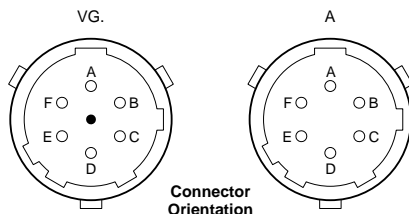


### Adapters

Thread Size	Code	Dimensions in (mm)
	Welded	A
1/4" BSP (F)	0001	0.47 (11.9)
1/4" BSP (M)	0002	0.46 (11.7)
M14 x 1.5 (M)	0003	0.40 (10.2)
7/16"-20UNF-SA (M)	0004	0.56 (14.2)
1/4"-18NPT (M)	0005	0.55 (14.0)
M10 x 1.0 (F)	0006	0.39 (9.9)
1/4"-18NPT (F)	0009	0.57 (14.4)

Range	Diameter B in (mm)
1.5 psi (100 mbar)	1.976 (50.19)
3.0 psi (200 mbar)	1.976 (50.19)
5.0 psi (350 mbar)	1.644 (41.75)

### Connector Orientation



### Connections

Cable	Connector <sup>2</sup>
<b>Red<sup>1</sup></b>	Pin A <sup>1</sup> Excitation (+)
<b>White</b>	Pin D Excitation (-) <sup>4</sup>
<b>Yellow</b>	Pin B Output (+)
<b>Blue<sup>1,3</sup></b>	Pin C <sup>1,3</sup> Output (-) <sup>4</sup>
<b>Violet</b>	Pin E } 80% shunt calibration <sup>5</sup>
<b>Grey</b>	Pin F }

Note: Screen is connected to the case for CE marked units.

Screen is not connected to the case for optional IS units (P1580). IS certification revokes CE certification.

<sup>1</sup> 2-wire transmitter connections (max cable length is 20 meters when I.S.)

<sup>2</sup> Vented gauge units must breathe through the receptacle (mating connector must have a vent hole)

<sup>3</sup> 0 Volt P1590 Series

<sup>4</sup> Connected internally for P1540, P1550, P1560 Series (3-wire)

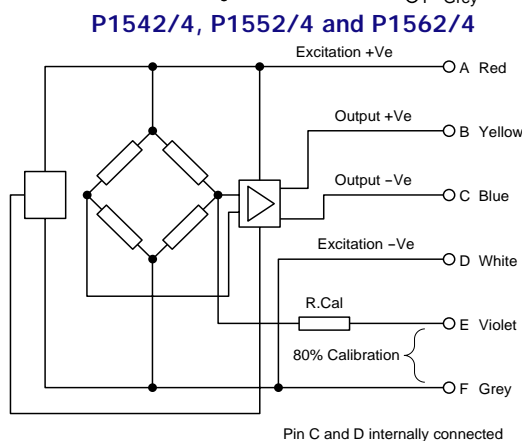
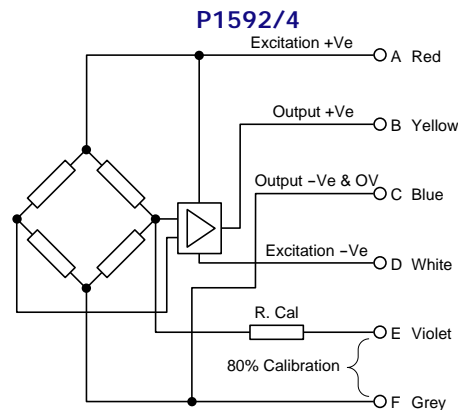
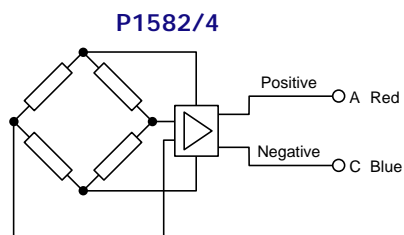
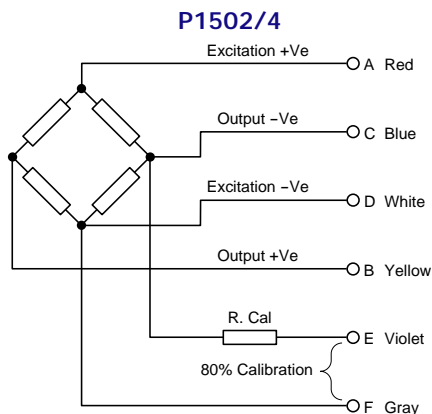
<sup>5</sup> Shunt calibration not fitted to P1580 Series

Select P1500 models, when correctly installed, are CE certified to comply with the EMC Directive 89/336/EEC Generic Standards for Residential, Commercial, Light Industrial and Industrial Environments.



**P1500 Series**  
Pressure Ranges: 0-1.5 to 0-5 psi  
(0-100 to 350 mbar)  
Accuracy:  $\leq \pm 0.25\%$  F.R.O.

## Wiring



## How to Order

Specify by transducer excitation, electrical interface, pressure port, pressure range, units, and pressure reference. Example: P562-0005-200 mbar A signifies a pressure transducer with 0 to 5 VDC output operating from 18-32V, cable outlet and 1/4 inch-18 NPT male pressure port, ranged 0 to 200 mbar, with an absolute pressure reference.

Model Number Code P15   — 0

**Input/Output**  
0 – 20 mV output  
4 – 5 V output (10 V supply)  
5 – 2.5 V output (11-18 V supply)  
6 – 5 V output (18-32 V supply)  
8 – 4-20 mA output (10-36 V supply)  
9 – 5 V output ( $\pm 15$  V supply)

**Intrinsic Safety**  
0 – Non IS  
9 – IS (P1580 only)

**Adaptor**  
0 – Welded  
2 – Screw in

**Unit**  
B: mbar  
P: psi

**Pressure Reference**  
A: absolute  
VG: vented gauge

**Pressure Range**  
(Enter full scale pressure range without units)  
Low (psi) 0-1.5; 3.0; 5.0  
(mbar) 0-100; 200; 350

**Cable/Connector**  
(Please reference to selected pressure range)  
2 – Low Range – cable outlet  
4 – Low Range – connector outlet

**Pressure Port**  
1 – 1/4 in BSP female  
2 – 1/4 in BSP male  
3 – M14 x 1.5 male  
4 – 7/16 in 20 UNF 2A male  
5 – 1/4 in 18 NPT male (taper)  
6 – 10 x 1 mm Arsero Ermeto female  
9 – 1/4 in 18 NPT female