



FPP900 series Pressure Transducer

- Field proven rugged construction
- High overpressure capability
- High reliability for demanding environments
- Application specific customization
- Excellent media compatibility
- Shock and vibration resistant



FPP900 Series Strain Gauge Pressure Transducers are premium grade sensors that provide highly precise measurement of absolute, vented gauge, or sealed gauge pressures over wide temperature ranges.

Standard versions of this transducer use a 17-4 PH stainless steel diaphragm to sense pressure (Inconel versions are available for operation in highly corrosive environments). 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, attitude, and shock.

The FPP900 Series Pressure Sensors are available in a range of electrical inputs and outputs. Zero and span potentiometers are available as a special option with the FPP940, FPP950, FPP960, and FPP990 models. Non-standard pressure ranges are available in all models of the FPP900 Series.

Features

- High Overload capability
- Operation in High Temperatures
- Shock and Vibration Resistant
- 2-wire, 4-20 mA option; Intrinsic Safety
Approval to E Exia IIC T4 (T_{amb}=60°C)
BASEEFA, CENELEC EN50-020

Applications

- Hydraulic Pressure Monitoring
- Torpedo Depth Sensing
- Vehicle Brake System Monitoring
- Military and Commercial Aircraft

■ Performance specs

Series	FPP900	FPP910	FPP940	FPP950	FPP960	FPP970	FPP980	FPP990
Model Number	P901/904	P911/4	P941/4	P951/4	P961/4	P971/4	P981/4	P991/4
Input Voltage	10VDC (12 V max)	10VDC (12 V max)	10VDC	11-18VDC	18-32VDC	15-36VDC	10-36VDC	±15VDC
Current Consumption(mA)	13	30	20	20	20	20	-	20
Full Range Output (±1%)	20mV	20mV	5VDC	2.5VDC	5VDC	10VDC	4-20mA	5VDC
Impedance (ohm)	1000 ±5%	350	<10	<10	<10	<10	Load Resist. 1300 max. at 36VDC	<10
Current (mA max)	-	-	5	5	5	5	-	5
Frequency Response	Approx. 2.5 kHz to 40 kHz for .7 bar	Approx. 2.5 kHz to 40 kHz for .7 bar	1 kHz	1 kHz	1 kHz	1 kHz	100 Hz	1 kHz
Combined Thermal – Zero & Sensitivity Shift								
% F.R.O./°F	±0.008	-	±0.008	±0.008	±0.008	±0.008	±0.008	±0.008
% F.R.O./°C	±0.015	±0.007	±0.015	±0.015	±0.015	±0.015	±0.015	±0.015
Residual Unbalance								
% F.R.O.	±1	±1	±1	±1	±1	±1	±1	±1
Weight oz (gm)								
Connector Version	4.4 (125)	4.4 (125)	5.1 (145)	5.1 (145)	5.1 (145)	5.1 (145)	5.1 (145)	5.1 (145)
Cable Version	5.6 (160)	5.6 (160)	6.3 (180)	6.3 (180)	6.3 (180)	6.3 (180)	6.3 (180)	6.3 (180)

■ Common specifications

Pressure Ranges

High (psi) 0-75, 100, 150, 200, 250, 350, 500, 750, 1000, 1500, 2200, 3500, 5000, 7500, 10,000
(bar) 0-5, 7, 10, 15, 25, 35, 50, 70, 100, 150, 200, 250, 350, 500, 700

Medium (psi) 0-10, 15, 20, 25, 35
(bar) 0-0.7, 1.0, 1.5, 1.7, 2.5

DIN (bar) 1, 1.6, 2.5, 4, 6, 10, 16, 25, 40, 60, 100, 160, 250, 400, 600

Pressure References

High Pressure Range Vented gauge 1: 0-75 to 0-350 psi
 Absolute and sealed gauge: 0-75 to 0-10,000 psi

Medium Pressure Range Vented gauge 1 and absolute: 0-10, 15, 20, 25, 35 psi (0-0.7, 1.0, 1.5, 1.7, 2.5 bar)

Pressure Limit 5x full range pressure or 12,000 psi (830 bar), whichever is less. Will not cause a zero offset exceeding 0.04%
 FRO (recoverable within a few hours)

Burst Pressure 20 x full range pressure or 22,000 psi (1,520 bar), whichever is less

Pressure Media Liquids or gases compatible with 17-4 PH and 17-7 PH stainless steel or Inconel 625

Shunt Calibration 80% ±5% full range pressure (not fitted in P980 Series)

Combined Non-linearity, Hysteresis

and Non-repeatability High Range: <±0.10% F.R.O. (BSL); Medium Range: <±0.20% F.R.O. (BSL)

Temperature Range

Operable -65°F to 250°F (-54°C to 120°C) **FPP91X** -65°F to 300°F (-54°C to 150°C)

Compensated 32°F to 212°F (0°C to 100°C) **FPP91X** -65°F to 250°F (-54°C to 120°C) or -4°F to 176°F (-20°C to +80°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 Above 500 psi (35 bar) ±0.02% F.R.O./g; below 500 psi (35 bar) ±0.10% F.R.O./g

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 FPP940, FPP950, FPP960 and FPP980 and FPP990 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 FPP980 Series when used in Intrinsic Safety applications does not comply with the Industrial environment directive.

Insulation Resistance

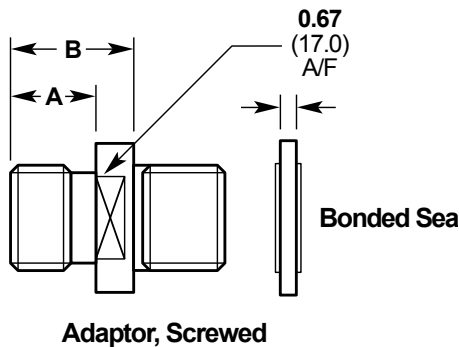
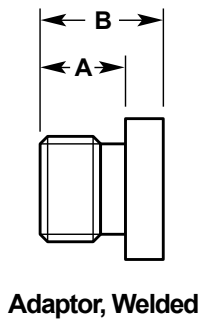
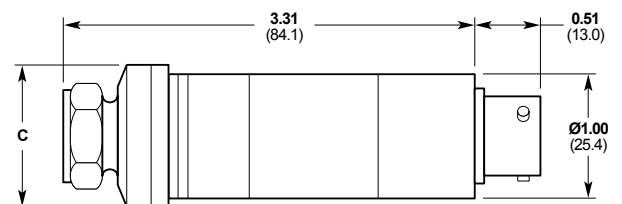
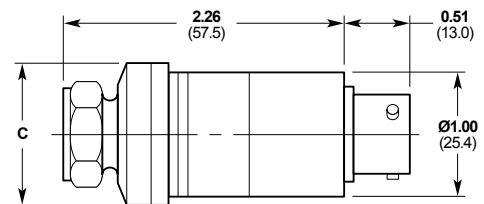
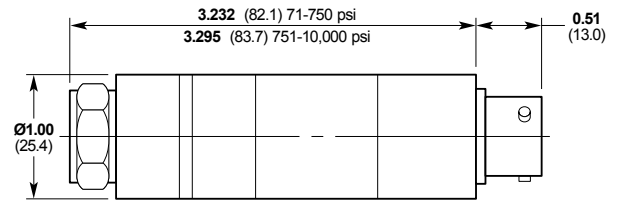
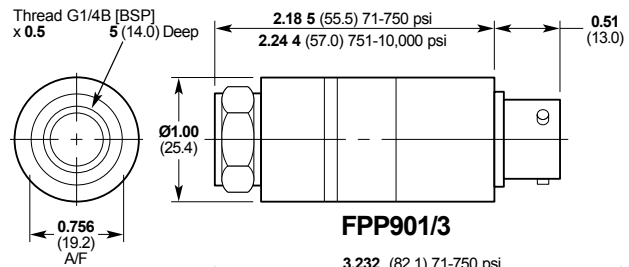
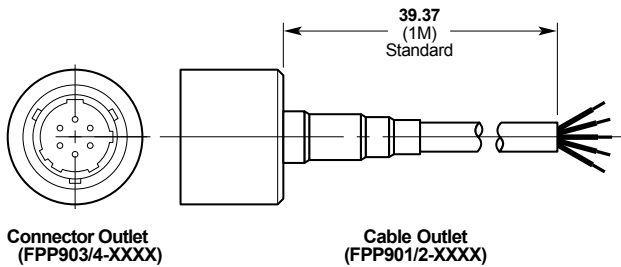
500 MOhm at 50 VDC at 25°C

¹ 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.

Total Thermal Error Band (FPP91X only)

-20°C to +80°C <±0.4% FRO Typical, <±0.6% FRO Maximum
 -54°C to +120°C <±0.7% FRO Typical, <±1.0% FRO Maximum

■ Dimensions



Adapters

Code Thread Size	Dimensions in (mm)		
	Welded	A	B 1/4" BSP (F)
G1/4A (BSP) (M)	0002	0.46 (11.7)	0.67 (16.9)
M14 x 1.5 (M)	0003	0.40 (10.2)	0.61 (15.4)
7/16"-20UNF-2A (M)	0004	0.56 (14.3)	0.77 (19.5)
1/4"-18NPT (M)	0005	0.55 (14.0)	0.76 (19.2)
M10 x 1.0 (F)	0006	—	0.60 (15.2)
1/4-18NPT (F)	0009	—	0.76 (19.2)
Thread Size	Screwed	A	B
G1/4A (BSP) (M)	0022	0.46 (11.7)	0.70 (17.8)
M14 x 1.5 (M)	0023	0.40 (10.2)	0.62 (15.8)
7/16"-20UNF-2A (M)	0024	0.56 (14.3)	0.78 (19.8)
1/4"-18NPT (M)	0025	0.55 (14.0)	0.80 (20.4)
M10 x 1.0 (M)	0026	—	0.60 (15.2)
Range	Diameter C in (mm)		
10 psi (0.7 mbar)	1.143 (29.05)		
15 psi (1.0 mbar)	1.043 (26.50)		
20 psi (1.5 mbar)	0.888 (22.50)		
25 psi (1.7 mbar)	0.807 (20.50)		
35 psi (2.5 mbar)	0.748 (19.00)		

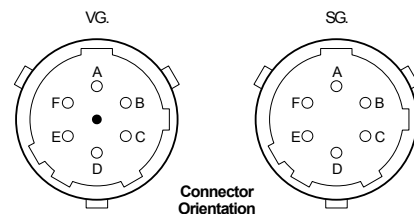
Connections

Cable	Connector ²
Red ¹	Pin A ¹ Excitation (+)
White	Pin D Excitation (-) ³
Yellow	Pin B Output (+)
Blue ^{1,3}	Pin C ^{1,2} Output (-) ³
Violet	Pin E } 80% shunt calibration ⁴
Grey	Pin F }

Note: Screen is connected to the case for CE marked units.
Screen is not connected to the case for optional IS units (FPP980).
IS certification revokes CE certification.

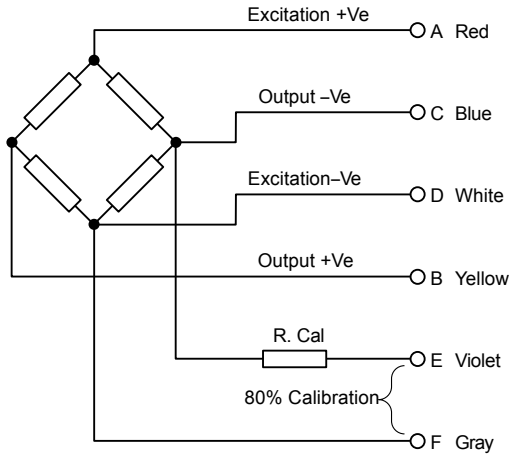
1. 2-wire transmitter connections
2. Vented gauge units must breathe through the receptacle (mating connector must have a vent hole)
3. 0 Volt P990 series
4. Connected internally for FPP940, FPP950, FPP960 Series (3-wire)
5. Shunt calibration not fitted to FPP980 Series

Connector Orientation

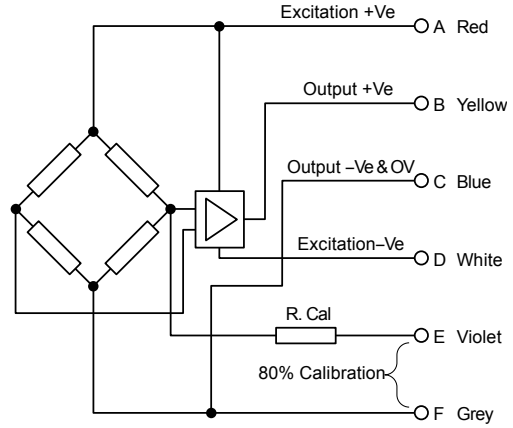


■ Wiring

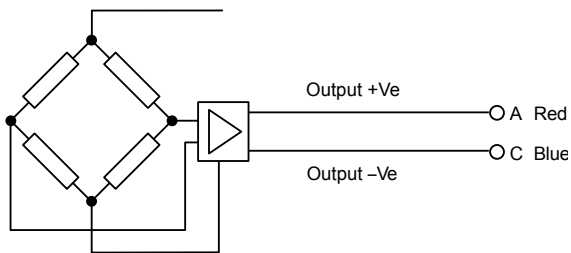
FPP901/9, FPP910/9



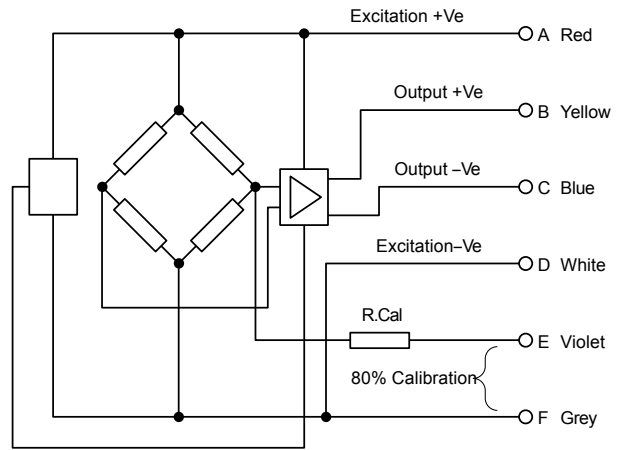
FPP991/9



FPP981/9

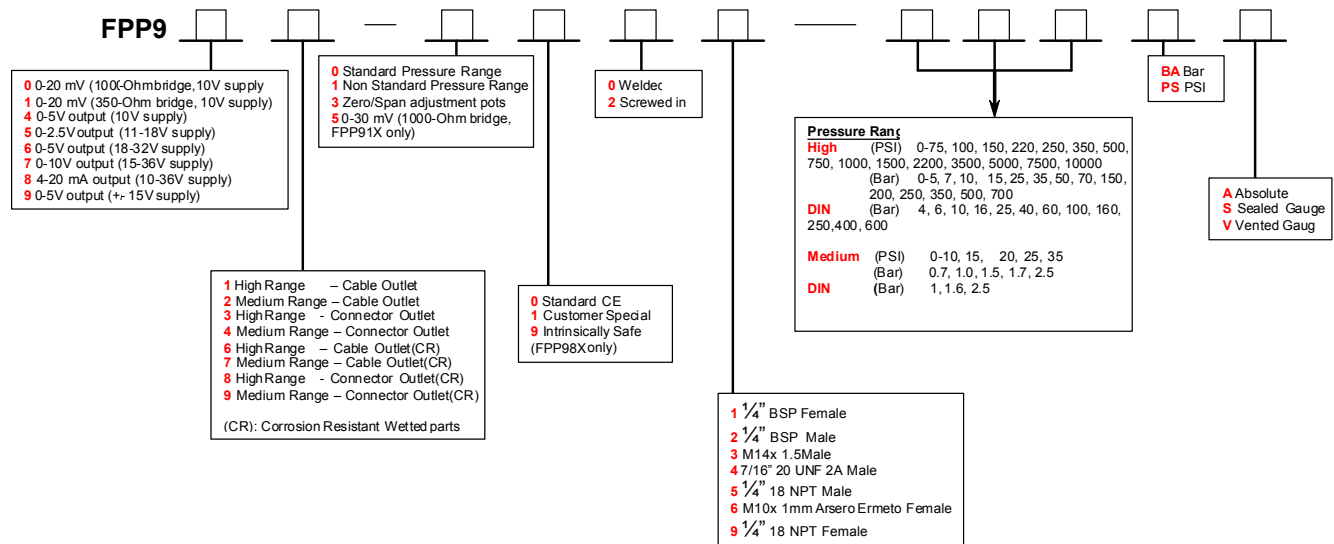


FPP941/9, FPP951/9, FPP961/9, FPP971/9



Pin C and D internally connected

Ordering information



Examples : FPP963-0025-150PSS = 0 to 5V output from 18 to 32V supply, connector outlet, screwed in 1/4" NPT port, 150 psi sealed gauge
 FPP914-0001-2.5BAA = 20mV output, connector outlet, welded 1/4" BSP female port, 2.5 bar absolute

ALTHEERIS bv

Scheveningseweg 15
 2517 KS DEN HAAG
 The Netherlands

+31 (0)70 3924421

+31 (0)70 3644249

Offices in : Benelux | Germany | France | UK | Italy | USA

www.altheris.com

sales@altheris.nl

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