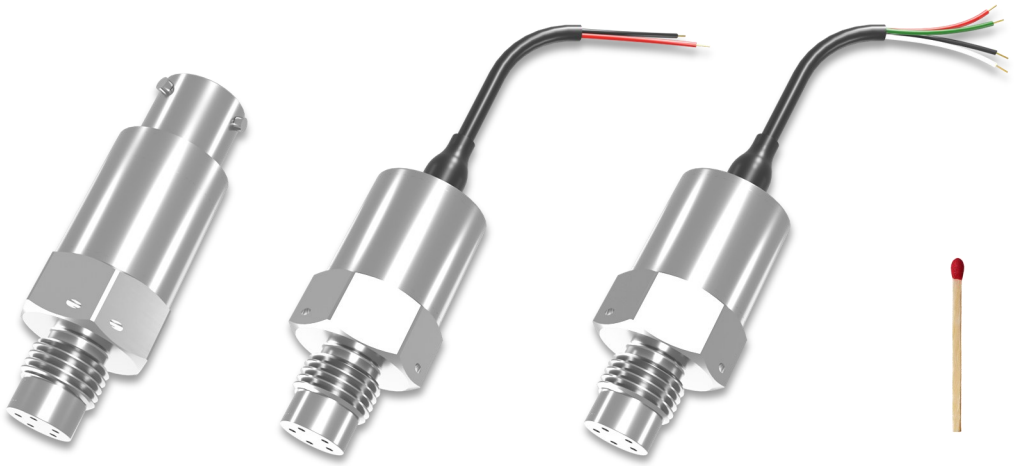


P10 Series

Miniature Pressure Transducer

XRI's P10 series pressure transducer is a small, multi-function, high-precision pressure sensor, utilizing advanced micro-machined silicon MEMS technology, unique oil-filled sensing capsule, robust EMI anti-interference design, stainless steel internal and external parts. All make P10 a pressure sensor with high precision, high reliability, and suitable for a variety of measurement applications. It's small, with a selectable pressure range and strong over pressure protection capability. The sensor can provide a variety of different electrical output methods. Currently, this series offers absolute and sealed gauge measurement modes.

About Us

- *XR Innovation, Inc. (XRI) is a vertically integrated company aimed at reaching the pinnacle of sensing with innovative and modern designs and manufacturing technologies.*
- *XRI is committed to offering high-end products with technology innovation, quality control and production efficiency.*
- *Portfolio includes pressure, temperature, flow, position, displacement, rotational speed, gas and others. The products are positioned for high-end applications, especially in aerospace, precision manufacturing, oil and gas and transportation vehicles.*
- *XRI adheres to the principle that company employees as a team are the most valuable asset, and focuses on building a company that values reliability, devotion and innovation.*
- *XRI firmly believes that 'Satisfying Customers' Wants is the Primary Mission of XRI.*

XRI is a "continuous improvement" company. Its product datasheets evolve as technology advances. Most update versions are on www.XRIINC.com

Specifications

Physical properties

Item	Description	
Range[1]	Absolute or Sealed gage	
Unit	MPa	PSI
Measurement Range	0-1	0-150
	0-2	0-300
	0-5	0-700
	0-10	0-1500
	0-35	0-5000
	0-70	0-10000
	Note: Other non-standard ranges or units can be customized	
Accuracy (Combined Non-Linearity, Hysteresis and Repeatability[7])	A1: 0.2% FS[5] BFSL	
	A2: 0.1% FS[5] BFSL	
	*Other choices available upon request	
Over Presssure[2]	2 x FS[5]	
Burst Presssure[3]	3 x FS[5]	
Working Principle	Full four arm Wheatstone bridge MEMS sensor	
Sensor Resonant Frequency	＞400KHz	

Mechanical Properties

Item	Description
Pressure Connection	See configuration guide
Vibration Sensitivity	＜1ppmFS[5]/g
Vibration Resistance	20g, Max 10-2500Hz; Shock<20ms
Housing Material	Typically 316L/17-4PH (*Other choices available upon request)
Test Medium	All gases and fluids compatible with 316L/17-4PH
Weight	⩽24.5g; Cable and connector weight extra

Temperature Properties[4]

Item	Description	
Compensated Temperature Range	-40°C~125°C or within this range	
Operating and Storage Temperature Range	-55°C~150°C	
Temperature Change Coefficient or Total Error Band[7]	EA、EB	
	Thermal Zero Shift	＜ ±1.5% FS[5]/100°C
	Thermal Sensitivity Shift	＜ ±1.5%FS[5]/100°C
	EC、ED、EE、EF	
	Total Error Band[6]	＜ 0.5% FS[5]/100°C

Electrical Properties

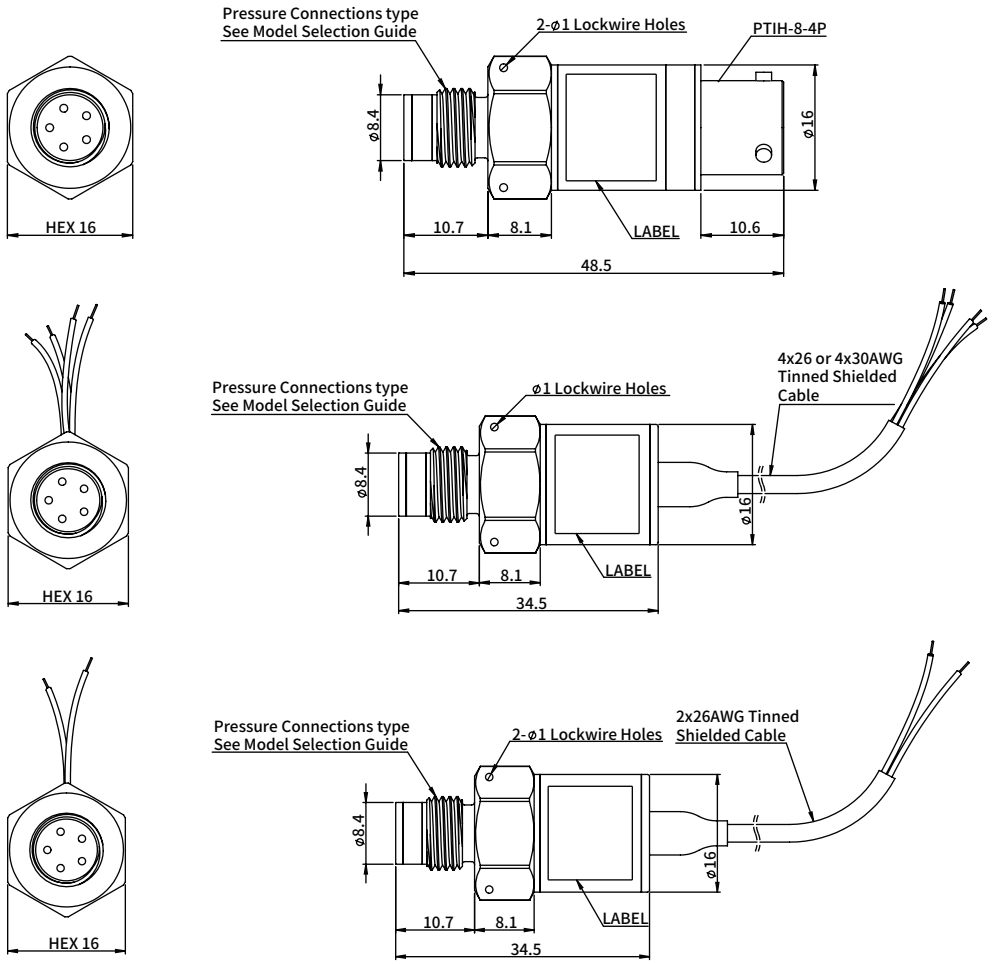
Item	Description
Excitation/Output	See configuration guide
Electrical Circuit Bandwidth	EA、EB MEMS sensor resonant frequency ⩾ 400KHz
	EC、ED、EE、EF Electrical Circuit bandwidth approx 5Hz @3DB
Actual Frequency Response	EA、EB ⩽ MEMS sensor resonant frequency @3DB
	EC、ED、EE、EF ⩽ 5Hz @3DB
	Note: Transducer frequency response is also related to how the transducer is installed. See XRI's official website www.XRIINC.com—Application Notes Section or consult XRI's after-sales service department for details.
Power-up Time	EA、EB ＜ 1ms
	EC、ED、EE、EF ＜ 200ms
Zero and Full Scale Output (Room Temperature)	Within ±5% of nominal value
	*Other choices can be customized
Insulation Resistance	⩾ 100MΩ @50VDC
Dielectric Strength	Leakage current ⩽ 5mA @50VAC RMS
Max operating current	EC、ED、EE、EF ＜ 25mA
Input Impedance	EA、EB ＞ 5000Ω
Output Impedance	EA、EB 5000Ω (Typical)
	EC、ED、EE、EF < 150Ω
Long-term Stability	Typically within ±0.1%FS[5]
Electrical Connection	See configuration guide, customizable

Electrical Connection Definition

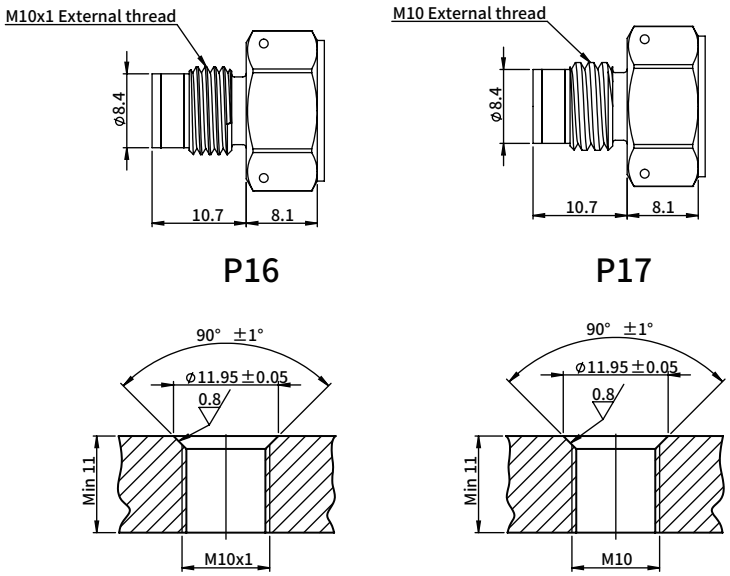
Connection Type	Pin or wire color	Purpose					
		EA	EB	EC	ED	EE	EF
E5	A/1	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	B/2	Vout+	Vout+		Vout+	Vout+	Vout+
	C/3	Vout-	Vout-			Vout-	Vout-
	D/4	Vin-	Vin-	Vin-	Vin-	Vin-	Vin-
E8、E14	Red	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	Green	Vout+	Vout+		Vout+	Vout+	Vout+
	White	Vout-	Vout-			Vout-	Vout-
	Black	Vin-	Vin-	Vin-	Vin-	Vin-	Vin-
E9	Red			Vin+			
	Black			Vin-			

1: Offers composite ranges such as from 5~100kPa Absolute Pressure.
2: Pressure exposure not exceeding proof pressure does not affect transducer performance.
3: Burst Pressure is a safety upper limit. Over this value transducer may be permanently damaged.
4: Temperature effects are related to sensor accuracy variations within the compensation temperature range.
5: FS= Full scale.
6: Error based on deviations away from the best endpoint fit straight line calibration.
7: Reference to ISA 37.1-1975(R1982).

Transducer outline dimensions



Pressure connection and Installation guide



Mounting Torque: 0~35MPaA, 10N.m
35~70MPaA, 22N.m

O-Ring: ID 7.65mm, Cross Section Diameter 1.63mm, O-Ring property needs be compatible to measurement media types

Configuration guide

Base Model P10

Electrical Properties

- **EA** 0~100mv output, 10VDC supply, output proportional to supply voltage, 4-wire
- **EB** 0~100mv output, 8-16VDC supply, output independent of supply voltage, 4-wire
- **EC** 4~20mA output , 12~28VDC power supply, high precision digital compensation, 2-wire
- **ED** 0.5~4.5V output, 8~32VDC power supply, high precision digital compensation, 3-wire
- **EE** 0~5V output, 8~32VDC power supply, high precision digital compensation, 4-wire, output common mode 2.5V (typical)
- **EF** 0~10V output, 14~32VDC power supply, high precision digital compensation, 4-wire, output common mode 5V (typical)

Electrical Connector

- **E5** PTIH-8-4P
- **E8** 4x30AWG (1m length) Tinned Shielded cable
- **E9** 2x26AWG (1m length) Tinned Shielded cable
- **E14** 4x26AWG (1m length) Tinned Shielded cable
- **Other choices available upon request**

Pressure Connections

- **P15** 3/8-24 UNJF External Thread
- **P16** M10×1 External Thread
- **P17** M10 External Thread
- **Other choices available upon request**

Temperature Compensation

- **TA** 25°C~80°C
- **TB** -20°C~125°C
- **TC** -40°C~125°C
- **TE** -10°C~50°C
- **TF** -20°C~80°C
- **TG** -40°C~80°C

Accuracy

- **A1** 0.2%FS BFSL
- **A2** 0.1%FS BFSL
- **Other choices available upon request**

Calibration report

- **CA** 6 points room temperature pressure calibration data
- **CB** 5 temperature points pressure data

Range	Unit	Pressure types
(0-70)	**MPaA**	Absolute
(0-70)	**MPaS**	Sealed Gage

Special requests

- **S**： Refer to the purchase contract

Example: P10 -EA -E9 -P17 -TA -A1 -CA -(0-20) MpaA -S