

# PWT10 Series

## Miniature Pressure Transducer

XRI's PWT10 series pressure transducer is a wide compensated temperature range, 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 PWT10 a pressure sensor with high precision, high reliability, and suitable for a variety of measurement applications and provides electronic circuits with a frequency bandwidth of 10kHz. 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

- *XRI 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](http://www.XRIINC.com)

# Specifications

## Physical properties

Item	Description	
Range <sup>1</sup>	Absolute or Sealed gage	
Unit	MPa	PSI
	0-1	0-150
	0-2	0-300
	0-5	0-700
Measurement Range	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 <sup>7</sup> )	A1: 0.2% FS <sup>5</sup> BFSL	
	A2: 0.1% FS <sup>5</sup> BFSL	
	*Other choices available upon request	
Over Pressure <sup>2</sup>	2 x FS <sup>5</sup>	
Burst Pressure <sup>3</sup>	3 x FS <sup>5</sup>	
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 <sup>5</sup> /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<sup>4</sup>

Item	Description
Compensated Temperature Range	-55°C~150°C or within this range
Operating and Storage Temperature Range	-55°C~150°C
	EA, EB
Temperature Change Coefficient or Total Error Band <sup>7</sup>	Thermal Zero Shift < ±1.5% FS <sup>5</sup> /100°C
	Thermal Sensitivity Shift < ±1.5% FS <sup>5</sup> /100°C
	EC, ED, EE, EF
	Total Error Band <sup>6</sup> < 0.25% FS <sup>5</sup> /100°C

## Electrical Properties

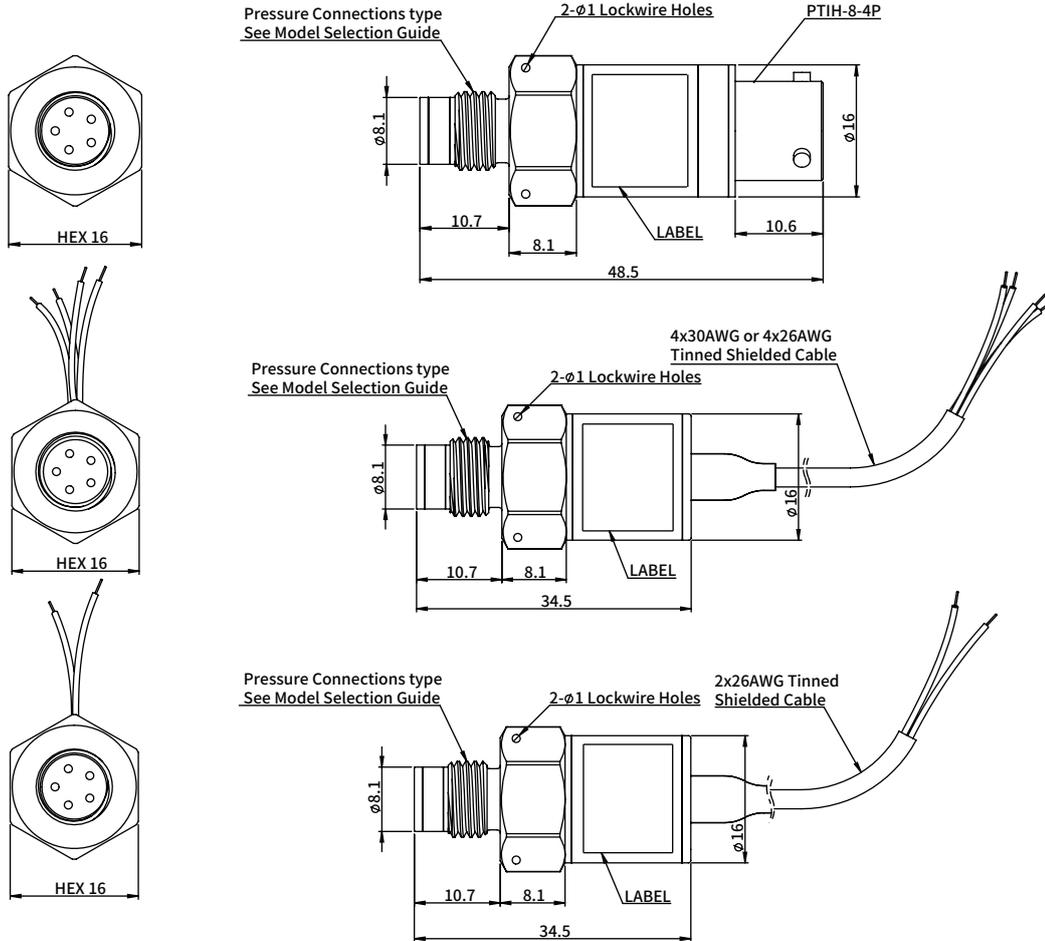
Item	Description
Excitation/Output	See configuration guide
Electrical Circuit Bandwidth	EA, EB MEMS sensor resonant frequency ≥ 400KHz EC, ED, EE, EF Electrical Circuit bandwidth approx 10KHz @3DB
Actual Frequency Response	EA, EB ≤ MEMS sensor resonant frequency @3DB EC, ED, EE, EF ≤ 10KHz @3DB Note: 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 > 5000 Ω
Output Impedance	EA, EB 5000 Ω (Typical) EC, ED, EE, EF < 150 Ω
Long-term Stability	Typically within ±0.1%FS <sup>5</sup>
Electrical Connection	See configuration guide, customizable

## Electrical Connection Definition

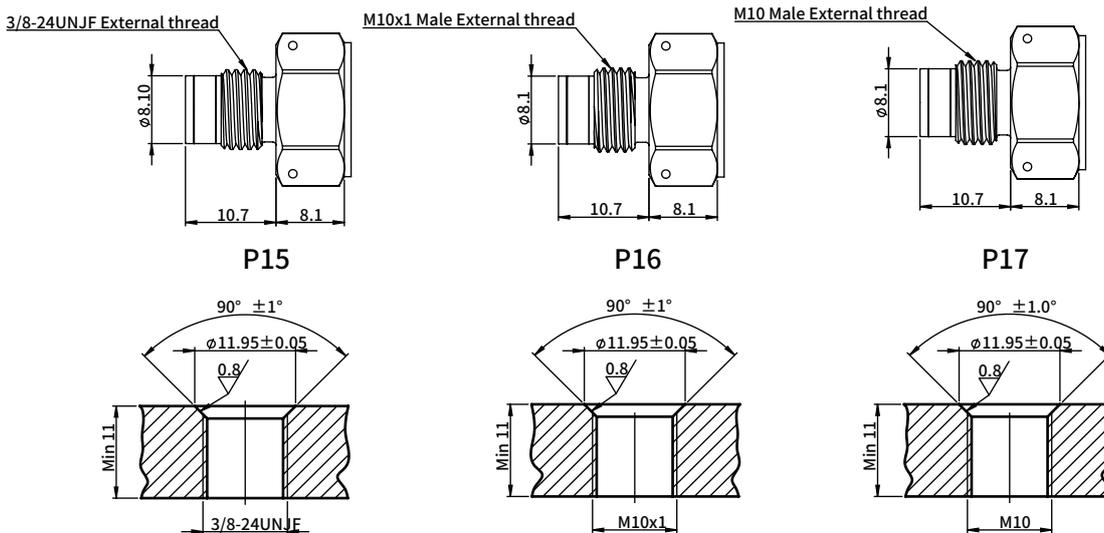
Conne- ction Type	Pin or wire color	Purpose					
		EA	EB	EC	ED	EE	EF
E5	A/1	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	B/2	Vout+	Vout+		Vout+	Vout+	Vout+
	C/3	Vout-	Vout-			Vout-	Vout-
	D/4	Vin-	Vin-	Vin-	Vin-	Vin-	Vin-
E8、E14	Red	Vin+	Vin+	Vin+	Vin+	Vin+	Vin+
	Green	Vout+	Vout+		Vout+	Vout+	Vout+
	White	Vout-	Vout-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

- Offers composite ranges such as from 5~100kPa Absolute Pressure.
- Pressure exposure not exceeding proof pressure does not affect transducer performance.
- Burst Pressure is a safety upper limit. Over this value transducer may be permanently damaged.
- Temperature effects are related to sensor accuracy variations within the compensation temperature range.
- FS= Full scale.
- Error based on deviations away from the best endpoint fit straight line calibration.
- 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 PWT10

### 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 TE -10°C~50°C
- TB -20°C~125°C TF -20°C~80°C
- TC -40°C~125°C TG -40°C~80°C
- TD -55°C~150°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: PWT10 -EA -E9 -P17 -TA -A1 -CA -(0-20) MPaA -S