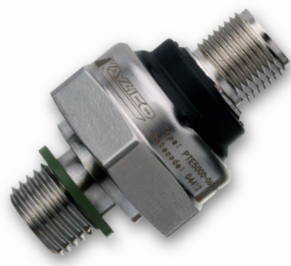


# Pressure Sensors, Transducers and Transmitters

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- Standard Products and Custom Solutions
  - Robust Designs for Demanding Applications
  - Quality Products, Quality Service
  - Multiple Sensing Technologies

## Kavlico Pressure Sensors

State-of-the-art pressure sensing and signal treatment technologies innovatively packaged to fit the highest quality requirements in the harshest environments.

For more than 50 years Kavlico Pressure Sensors has been a leading expert in designing, developing, and manufacturing a broad range of precision, pressure, pressure and temperature, fluid level, and specialty sensors.

Focused on premium products, and adapting innovative technologies to meet customer needs, Kavlico Pressure Sensors is the reliable solutions provider for the harshest and most demanding applications across the globe.

Kavlico Pressure Sensors is a brand of CST.

## Custom Sensors and Technologies

Custom Sensors & Technologies (CST) is a specialist in designing and manufacturing sensing, control and motion products.

Through its brands, BEI Kimco, BEI Sensors, BEI PSSC, Crouzet, Crydom, Kavlico, Newall and Systron Donner Inertial, CST offers customizable, reliable and efficient components for mission-critical systems in Aerospace & Defense, Transportation, Energy & Infrastructure, Medical, Food and Beverage and Building Equipment markets.

Focused on premium value offers and committed to excellence, CST, with 4,500 employees worldwide and sales of \$600M US in 2013, is the dependable and adaptable partner for the most demanding customers.

## Custom Design Solutions

Your Options, Your Choice. At Kavlico Pressure Sensors, we put the custom in customer. By matching our sensor technology to your application-specific design criteria, your performance is maximized. This essential element of our approach supports your program development and creates a long-term strategic partnership.

## Outstanding Sensor Features

All Kavlico Pressure sensors are rugged by design, allowing for installation in hostile measurement environments.

Our sensors feature:

- Repeatable, accurate measurements over the lifetime of your equipment
- High shock and vibration tolerance on heavy machinery
- EMI/RFI and ESD protection, high overpressure protection, and high humidity tolerance
- Compensation over a wide temperature range

With a 10-year minimum shelf life and a lifetime in millions of cycles, Kavlico Pressure sensors are built to last. And with so many OEM and custom options, choosing Kavlico for your measurement requirements just makes sense.

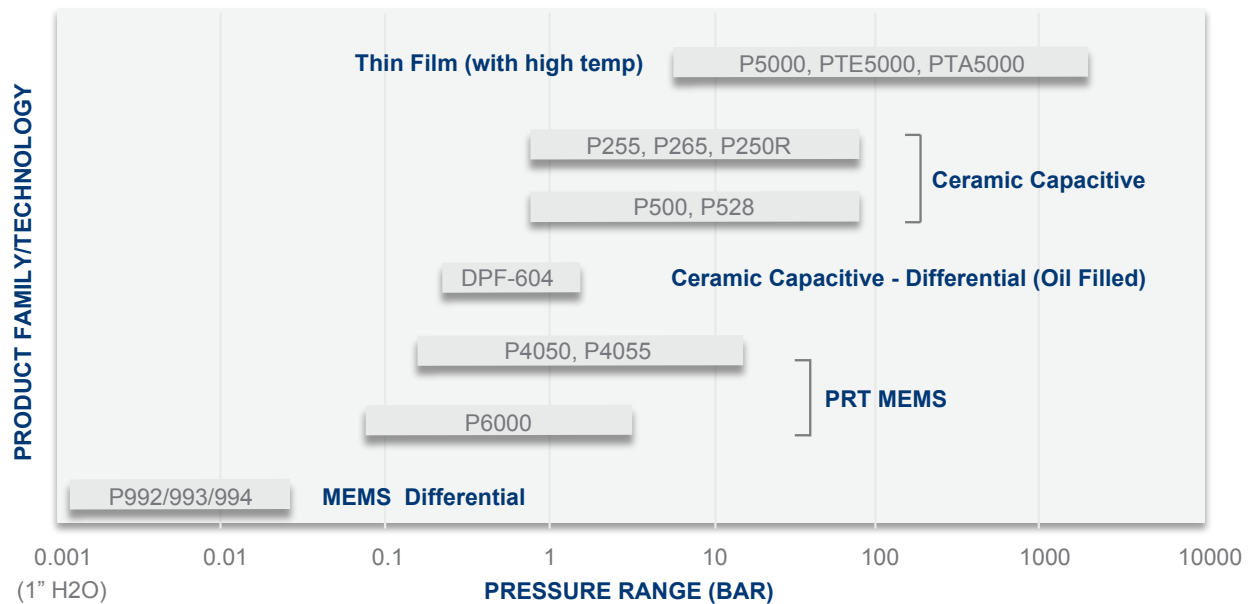
## Types of Pressure References

**Absolute Pressure** - Absolute Pressure sensors measure pressure compared with a vacuum.

**Gage Pressure** - Gage Pressure sensors measure pressure using the ambient outside pressure as the reference rather than a vacuum. This outside pressure varies with altitude so sensor output will adjust to altitude.

**Sealed Gage** - Sealed Gage Pressure sensors are Absolute Pressure sensors with the reference shifted from a vacuum to atmospheric pressure at sea level (14.7 PSI). The output of these sensors will not vary with altitude.

# Pressure Sensor Application Matrix



## Sensor Selection Guide

| TYPICAL APPLICATIONS               | COMMON PRESSURE RANGE   | RECOMMENDED PRODUCT FAMILY          |
|------------------------------------|-------------------------|-------------------------------------|
| HVAC - Refrigeration and Chillers  | 0-7 Bar to 0-42 Bar     | P528, P250, P5000, PTE5000, PTA5000 |
| HVAC - Duct Air Flow               | 0-2.5 mBar to 0-25 mBar | P992, P993                          |
| Compressors                        | 0-7 Bar to 0-35 Bar     | P255, P265, P4055, PTE5000, PTA5000 |
| Standby Power Generation           | 0-7 Bar to 0-20 Bar     | P500, P4055, P255, P265, P2000      |
| Filter Restriction                 | 0-35 mBar to 0-350 mBar | P4055, P6000                        |
| Vacuum Sensors                     | -1-0 Bar to 0-7 Bar     | P4055, P6000                        |
| Engine Oil, Coolant, Fuel Pressure | 0-1 to 0-20 Bar         | P500, P4055, P255, P265, P2000      |
| Urea Dosing                        | 0.2 to 25 Bar           | PE2000                              |
| EGR Sensors                        | 0-350 mBar to 0-3.5 Bar | P321                                |
| DPF Sensors                        | 0-350 mBar to 0-3.5 Bar | DPF-P604, P321                      |
| Aerospace Cabin Pressure           | 0-2.5 mBar to 0-25 mBar | P992, P993                          |
| Anesthesia/Oxygen Control          | 0-2.5 mBar to 0-25 mBar | P992, P993                          |
| Crankcase Ventilation              | -200 to +200 mBar       | P4055, PE2000                       |
| Test Instrumentation               | 0-6 Bar to 0-400 Bar    | P265, P500, P5000, PTE5000, PTA5000 |
| Leak Detection                     | 0-35 to 0-350 mBar      | P356, P6000, P992, P993             |
| Sterilizers                        | 0-7 Bar                 | P500, P255, P265                    |
| CNG & LPG                          | 0 to 200 Bar            | PTE5000, PTA5000                    |
| Industrial Transmitters            | 0-10 Bar to 0-600 Bar   | PTE5000, PTA5000                    |
| Hydraulics                         | 0-100 Bar to 0-600 Bar  | P5000, PTE5000, PTA5000             |

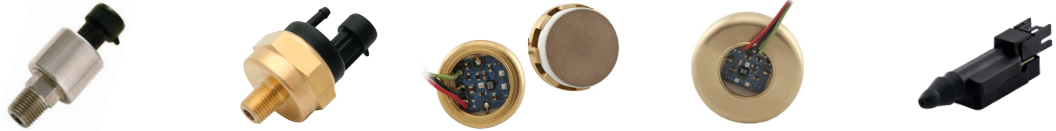
Application Considerations for Product Selection include: Media Compatibility, Physical Requirements (Vibration, Thermal, EMC), Accuracy, and Production Volume.



|  | <b>P500</b><br>Next Generation Ceramic Pressure Sensor                               | <b>P528</b><br>Refrigeration Ceramic Pressure Sensor                                 | <b>P2000</b><br>Ceramic Capacitive OEM Pressure Sensor   | <b>PE2000</b><br>Ceramic Capacitive OEM Pressure Sensor                       | <b>P265</b><br>General Purpose Ceramic Pressure Sensor - Outside Hex   |
|--|--|--|--|---|--|
| <b>TECHNICAL SPECS:</b>  |  |  |  |   |  |
| <b>Sensor Technology</b>   | Ceramic Capacitive   | Ceramic Capacitive   | Ceramic Capacitive   | Ceramic Capacitive  | Ceramic Capacitive   |
| <b>Pressure Range</b>  | 0-15 to 0-1,000 PSI<br>0-1 to 0-70 Bar<br>Absolute or Sealed Gage                    | 0-100 to 0-1000 PSI<br>0-6 to 0-70 Bar<br>Absolute or Sealed Gage                    | 0-15 to 0-300 PSI<br>Absolute or Gage  | 0-0.2 to 0-25 Bar<br>Absolute or Gage   | 0-15 to 0-1,000 PSI<br>Absolute, Gage, or Sealed Gage  |
| <b>Nominal Output Signal</b>   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc  | 0.5Vdc to 4.5Vdc   |
| <b>Total Error Band (TEB)<sup>1</sup></b>  | ±1.5% of Span<br>(0°C ≤ T ≤ 85°C)<br>±2.0% of Span<br>(T < 0°C, T > 85°C)            | ±1.5% of Span<br>(0°C ≤ T ≤ 85°C)<br>±2.0% of Span<br>(T < 0°C, T > 85°C)            | ±1.5% of Span<br>(10°C ≤ T ≤ 85°C)<br>±3.0% of Span<br>(T < 10°C, T > 85°C)  | ±1.0% of Span<br>(20°C ≤ T ≤ 80°C)<br>±2.0% of Span<br>(T < 20°C, T > 80°C)   | ±2.0% of Span<br>(-20°C ≤ T ≤ +100°C)<br>±3.0% of Span<br>(T < -20°C, T > +100°C)                                  |
| <b>Accuracy<sup>2</sup></b>  | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span  | < 0.5% of Span   |
| <b>Supply Current</b>  | < 5mA  | < 5mA  | < 5mA  | < 5mA   | < 5mA  |
| <b>Supply Voltage</b>  | 5Vdc ± 0.5Vdc  | 5Vdc ± 0.5Vdc  | 5Vdc ± 0.5Vdc  | 5Vdc ± 0.25Vdc  | 5Vdc ± 0.5Vdc  |
| <b>Over Voltage Protection</b>   | 36Vdc  | 36Vdc  | 16Vdc  | 16Vdc   | 16Vdc  |
| <b>Reverse Polarity Protection</b>   | -36Vdc   | -36Vdc   | -5Vdc  | +/- 16Vdc Vsupply<br>-0.5 / +16Vdc Vout                                       | -5Vdc  |
| <b>Output Impedance</b>  | <100Ω  | <100Ω  | <100Ω  | <100Ω   | <100Ω  |
| <b>Response Time</b>   | < 2ms to 63% of Final Output Voltage with step change in Input Pressure              | < 2ms to 63% of Final Output Voltage with step change in Input Pressure              | < 15ms to 63% of Final Output Voltage with step change in Input Pressure   | < 10ms to 63% of Final Output Voltage with step change in Input Pressure      | < 15ms to 63% of Final Output Voltage with step change in Input Pressure   |
| <b>Housing Material Options</b>  | Brass<br>(P ≤ 350 PSIA [24 BarA])<br>304 Stainless Steel<br>(P > 350 PSIA [24 BarA]) | Brass<br>(P ≤ 350 PSIA [24 BarA])<br>304 Stainless Steel<br>(P > 350 PSIA [24 BarA]) | 304 Stainless Steel  | 303 Stainless Steel   | 303 Stainless Steel  |
| <b>Standard Seal Material Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>            | Fluorocarbon; Fluorosilicone; Ethylene Propylene                                     | Neoprene; Ethylene Propylene; HNBR   | Fluorocarbon; Fluorosilicone   | Silicone; Nitrile; Neoprene; Fluorocarbon; Fluorosilicone; Ethylene Propylene | Nitrile; Neoprene; Fluorocarbon; Fluorosilicone; Ethylene Propylene  |
| <b>Seal Type</b>   | O-Ring   | O-Ring   | O-Ring   | O-Ring  | O-Ring   |
| <b>Wetted Surface</b>  | Ceramic  | Ceramic  | Ceramic  | Ceramic   | Ceramic  |
| <b>Media Compatibility</b>   | Seal Dependent   | Seal Dependent   | Seal Dependent   | Seal Dependent  | Seal Dependent   |
| <b>Operating Temperature</b>   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)                                  | -40°C to +125°C<br>(Seal Material Dependent)   |
| <b>Storage Temperature</b>   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)                                  | -40°C to +125°C<br>(Seal Material Dependent)   |
| <b>Vibration</b>   | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)                                   | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  |
| <b>Mechanical Shock</b>  | 75g's, 1/2 Sine Wave   | 75g's, 1/2 Sine Wave   | 75g's, 1/2 Sine Wave   | 75g's, 1/2 Sine Wave  | 75g's, 1/2 Sine Wave   |
| <b>Weight</b>  | < 50 grams   | < 50 grams   | < 85 grams   | < 60 grams  | < 128 grams  |
| <b>Standard Pressure Connection Port Options</b><br><i>(Contact Factory for Additional/Custom Options)</i> | 1/4-18 NPT; 1/8-27 NPT; G 1/4; G 1/4 (Internal); 3/8-24 UNF-2A; 3/8-24 UNF-2B        | 1/4-18 NPT; 1/4 SAE Female Schrader Deflator; 7/16-20 UNF-2A; 1/8-27 NPT             | 1/8-27 NPT; 1/4-18 NPT   | 1/4-18 NPT  | 1/4-18 NPT; 3/8-24 UNF-2A; 1/8-27 NPT  |
| <b>Standard Electrical Connector Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>     | Packard Metripack 150 with mating connector with 12" Leads; Packard Metripack 150    | Packard Metripack 150 with mating connector with 12" Leads; Packard Metripack 150    | Packard Metripack 150 with mating connector with 12" leads; Packard Metripack 150; DIN 72585; DIN 72585 with mating connector with 12" leads | Packard Metripack 150; DIN 72585  | Packard Metripack 150 with mating connector with 12" leads; 3-Lead Wires, 20 AWG, Insulated; Packard Metripack 150 |
| <b>QUALITY CERTIFICATIONS:</b>   |  |  |  |   |  |
| <b>RoHS Compliant</b>  | Yes  | Yes  | No   | Yes   | No   |
| <b>CE Mark</b>   | Yes  | Yes  | No   | **  | **   |
| <b>UL Certification</b>  | Yes  | Yes  | No   | **  | **   |

1) TEB = Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance  
\*\*Contact Factory

2) Accuracy = Linearity (best fitted straight line) including Hysteresis + Repeatability



|  | <b>P255</b>  | <b>P356</b>  | <b>PS162</b>   | <b>PS312</b>   | <b>P6000</b>   |
|--|--|--|--|--|--|
|  | <b>General Purpose Ceramic Pressure Sensor - Inside Hex</b>  | <b>Low Pressure Differential/Gage Pressure Sensor</b>  | <b>OEM High Pressure Sensing Module</b>  | <b>OEM Low Pressure Sensing Module</b>   | <b>Remote Mount Miniature Pressure Sensor</b>  |
| <b>TECHNICAL SPECS:</b>  |  |  |  |  |  |
| <b>Sensor Technology</b>   | Ceramic Capacitive   | Ceramic Capacitive   | Ceramic Capacitive   | Ceramic Capacitive   | Piezo Resistive  |
| <b>Pressure Range</b>  | 0-15 to 0-1,000 PSI<br>Absolute, Gage, or Sealed Gage  | 0-0.5 to 0-5.0 PSI<br>Gage or Differential   | 0-200 mBar to 0-60 Bar   | 50 mBar to 20 Bar  | 0-2.5 to 0-5 PSI (Gage)<br>0-15 to 0-100 PSI (Absolute or Gage)<br>0-200 to 0-500 mBar (Gage)<br>0-1 to 0-7 Bar (Absolute or Gage) |
| <b>Nominal Output Signal</b>   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc or<br>1Vdc to 4Vdc  | 0.5Vdc to 4.5Vdc or<br>1Vdc to 4Vdc  | 0.5Vdc to 4.5Vdc   |
| <b>Total Error Band (TEB)<sup>1</sup></b>  | ±2.0% of Span<br>(-20°C ≤ T ≤ +100°C)<br>±3.0% of Span<br>(T < -20°C, T > +100°C)                  | ±3% of Span<br>(-30°C to +100°C)   | ±1% of Span (typical)<br>(20°C to 85°C)  | ±1% of Span (typical)<br>(20°C to 85°C)  | ±2% of Span above 2.5 PSI<br>and 200 mBar and ±3% of<br>Span for 2.5 PSI and 200 mBar<br>(0°C to 85°C)                             |
| <b>Accuracy<sup>2</sup></b>  | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span   |
| <b>Supply Current</b>  | < 5mA  | < 3mA  | < 3mA  | < 3mA  | < 5mA  |
| <b>Supply Voltage</b>  | 5Vdc ± 0.5Vdc  | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.25Vdc   |
| <b>Over Voltage Protection</b>   | 16Vdc  | 16Vdc  | 16Vdc  | 16Vdc  | 16Vdc  |
| <b>Reverse Polarity Protection</b>   | -5Vdc  | -5Vdc  | +/- 16Vdc Vsupply<br>-0.5 / +16Vdc Vout  | +/- 16Vdc Vsupply<br>-0.5 / +16Vdc Vout  | -6Vdc  |
| <b>Output Impedance</b>  | < 100Ω   | < 100Ω   | < 100Ω   | < 100Ω   | < 100Ω   |
| <b>Response Time</b>   | < 15ms to 63% of Final Output<br>Voltage with step change in Input<br>Pressure                     | < 15ms to 63% of Final Output<br>Voltage with step change in Input<br>Pressure                     | < 10ms to 63% of Final Output<br>Voltage with step change in Input<br>Pressure     | < 10ms to 63% of Final Output<br>Voltage with step change in Input<br>Pressure     | < 10ms to 63% of Final Output<br>Voltage with step change in Input<br>Pressure   |
| <b>Housing Material Options</b>  | 316 Stainless Steel  | CA360 Brass  | Brass spacer   | Brass spacer   | PA 66, 30% Glass   |
| <b>Standard Seal Material Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>            | Nitrile; Neoprene;<br>Fluorocarbon;<br>Fluorosilicone;<br>Ethylene Propylene                       | Fluorocarbon; Fluorosilicone   | **   | **   | Fluorosilicone   |
| <b>Seal Type</b>   | O-Ring   | O-Ring   | N/A  | N/A  | Adhesive   |
| <b>Wetted Surface</b>  | Ceramic  | Ceramic  | Ceramic  | Ceramic  | Ceramic, Silicon,<br>PA66 (30% GF)   |
| <b>Media Compatibility</b>   | Seal Dependent   | Seal Dependent   | Broad Compatibility  | Broad Compatibility  | Air and Compatible Fluids  |
| <b>Operating Temperature</b>   | -40°C to +125°C<br>(Seal Material Dependent)   | -30°C to +100°C<br>(Seal Material Dependent)   | -40°C to +125°C  | -40°C to +125°C  | 0°C to +85°C   |
| <b>Storage Temperature</b>   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C<br>(Seal Material Dependent)   | -40°C to +125°C  | -40°C to +125°C  | -30°C to +100°C  |
| <b>Vibration</b>   | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(5 to 2,000 Hz)   |
| <b>Mechanical Shock</b>  | 75g's, 1/2 Sine Wave   | 75g's, 1/2 Sine Wave   | 50g's, 1/2 Sine Wave   | 50g's, 1/2 Sine Wave   | 50g's, 1/2 Sine Wave   |
| <b>Weight</b>  | < 100 grams  | < 128 grams  | < 20 grams   | < 40 grams   | < 1.3 grams  |
| <b>Standard Pressure Connection Port Options</b><br><i>(Contact Factory for Additional/Custom Options)</i> | 1/4-18 NPT;<br>3/8-24 UNF-2A;<br>3/8-24 UNF-2B;<br>1/8-27 NPT                                      | 1/4-18 NPT;<br>9/16-18 UNRF-2vVA;<br>M16x1.5   | Custom Connection<br>(contact factory)   | Custom Connection<br>(contact factory)   | Barb for 3/16 ID tubing  |
| <b>Standard Electrical Connector Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>     | Packard Metripack 150<br>with mating connector<br>with 12", 16 AWG Leads;<br>Packard Metripack 150 | Packard Metripack 150<br>with mating connector<br>with 12", 16 AWG Leads;<br>Packard Metripack 150 | 3 Isolated Wires 0.15mm,<br>2-75mm Long<br>(Red: +Vcc, Green: +Out,<br>Black: GND) | 3 Isolated Wires 0.15mm,<br>2-75mm Long<br>(Red: +Vcc, Green: +Out,<br>Black: GND) | Pin Header;<br>Pin Header with Mating Con-<br>nector with Lead wires 12" long  |
| <b>QUALITY CERTIFICATIONS:</b>   |  |  |  |  |  |
| <b>RoHS Compliant</b>  | Yes  | No   | Yes  | Yes  | Yes  |
| <b>CE Mark</b>   | **   | **   | **   | **   | Yes  |
| <b>UL Certification</b>  | **   | **   | **   | **   | **   |

1) TEB = Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance  
 \*\*Contact Factory

2) Accuracy = Linearity (best fitted straight line) including Hysteresis + Repeatability



|  | <b>P312</b>  | <b>DPF-P604 Ceramic</b>   | <b>P5000</b>   | <b>P4055/P4056</b>   | <b>DPF-P4050 PRT</b>  |
|--|--|---|--|--|---|
|  | <b>Pressure Sensing Module</b>   | <b>Diesel Particulate Filter (DPF) Pressure Sensor</b>                      | <b>Hermetically Sealed High Pressure Sensor</b>  | <b>Piezo Resistive OEM Pressure Sensor</b>   | <b>Low Profile Diesel Particulate Filter (DPF) Pressure Sensor</b>      |
| <b>TECHNICAL SPECS:</b>  |  |   |  |  |   |
| <b>Sensor Technology</b>   | Ceramic Capacitive   | Oil-Filled Ceramic Capacitive   | Thin Film  | Piezo Resistive  | Piezo Resistive   |
| <b>Pressure Range</b>  | 0-5 to 0-100 PSI<br>Absolute or Gage   | 0-5 to 0-50 PSI<br>Differential   | 0-1,000 to 0-8,000 PSI<br>0-65 to 0-600 Bar<br>Gage  | 0-3 to 0-300 PSI<br>0-200 mBar to 0-20 Bar<br>Absolute, Gage, or Sealed Gage                             | 0 to 90 kPa<br>Differential   |
| <b>Nominal Output Signal</b>   | 0.5Vdc to 4.5Vdc<br>(Ratiometric to Supply Voltage)                          | 0.5Vdc to 4.5Vdc  | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc   | 0.5Vdc to 4.5Vdc  |
| <b>Total Error Band (TEB)<sup>1</sup></b>  | ±3.0% of Span<br>(-30°C to +100°C)   | ±3.0% of Span<br>(25°C ≤ T ≤ 125°C)<br>±5.0% of Span<br>(-40°C ≤ T ≤ +25°C) | ±1.5% of Span<br>(0°C ≤ T ≤ 100°C)<br>±3.0% of Span<br>(T < 0°C, T > 100°C)  | ±2.0% of Span<br>(-20°C ≤ T ≤ +100°C)<br>±3.0% of Span<br>(T < -20°C, T > +100°C)                        | ±1.5% of Span<br>(0°C to 100°C)   |
| <b>Accuracy<sup>2</sup></b>  | < 0.5% of Span   | < 2% of Span  | < 0.5% of Span   | < 0.5% of Span   | < 0.5% of Span  |
| <b>Supply Current</b>  | < 7mA  | < 5mA   | < 5mA  | < 5mA  | < 5mA   |
| <b>Supply Voltage</b>  | 4.75Vdc to 7Vdc  | 5Vdc ± 0.25Vdc  | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.5Vdc   |
| <b>Over Voltage Protection</b>   | 7Vdc   | 16Vdc   | 16Vdc  | 16Vdc  | 16Vdc   |
| <b>Reverse Polarity Protection</b>   | **   | -5Vdc   | -5Vdc  | -5Vdc  | -5Vdc   |
| <b>Output Impedance</b>  | < 100Ω   | <100Ω   | <100Ω  | < 100Ω   | < 100Ω  |
| <b>Response Time</b>   | < 10ms to 63% of Final Output Voltage with step change in Input Pressure     | < 140ms to 63% of Final Output Voltage with step change in Input Pressure   | < 5ms to 63% of Final Output Voltage with step change in Input Pressure  | < 10ms to 63% of Final Output Voltage with step change in Input Pressure                                 | < 5ms to 63% of Final Output Voltage with step change in Input Pressure |
| <b>Housing Material Options</b>  | 304 Stainless Steel  | Valox 420   | 304L Stainless Steel   | Brass  | PPS (40% glass)   |
| <b>Standard Seal Material Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>            | Silicone; Nitrile; Neoprene; Fluorocarbon; Fluorosilicone                    | Silicone  | External seal options: Nitrile; Fluorosilicone; Aluminum Washer; Copper Washer   | Fluorosilicone   | Fluorosilicone  |
| <b>Seal Type</b>   | O-Ring   | O-Ring  | Weld   | O-Ring   | Adhesive  |
| <b>Wetted Surface</b>  | Ceramic  | Ceramic   | Stainless Steel  | Ceramic  | Ceramic, Silicon, PPS (40% GF)  |
| <b>Media Compatibility</b>   | Seal Material Dependent  | Diesel Exhaust  | Broad Compatibility  | Broad compatibility  | Broad compatibility (including diesel exhaust)                          |
| <b>Operating Temperature</b>   | -30°C to +100°C<br>(Seal Material Dependent)                                 | -40°C to +125°C   | -40°C to +140°C  | -40°C to +125°C  | -40°C to +140°C   |
| <b>Storage Temperature</b>   | -40°C to +125°C<br>(Seal Material Dependent)                                 | -40°C to +130°C   | -55°C to +150°C  | -40°C to +125°C  | -40°C to +155°C   |
| <b>Vibration</b>   | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)                                  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)                                 | 25g's Peak-to-Peak Random<br>(10 to 2,000 Hz)  | 10g's Peak-to-Peak Sine<br>(10 to 2,000 Hz)  | 20g's Peak-to-Peak Random<br>(10 to 2,000 Hz)                           |
| <b>Mechanical Shock</b>  | 50g's, 1/2 Sine Wave   | 100gs, 1/2 Sine Wave  | 50g's, 1/2 Sine Wave   | 75g's, 1/2 Sine Wave   | 50g's, 1/2 Sine Wave  |
| <b>Weight</b>  | < 100 grams  | <90 grams   | < 60 grams   | < 50 grams   | < 30 grams  |
| <b>Standard Pressure Connection Port Options</b><br><i>(Contact Factory for Additional/Custom Options)</i> | Custom Connection<br>(contact factory)                                       | Pressure Hose Fitting<br>Connection   | 1/4-18 NPTF; 7/16-20 UNF-2A; 1/8-27 NPTF; G1/4; M10x1; M12x1.5; M14x1.5; 1/4-19 BSPT (R1/4); 3/8-24 UNF-2A; 9/16-18 UNF-2A | 1/4-18 NPT; 1/8-27 NPT; M10x1; M12x1.5; M14x1.5; M16x1.5; G1/4; 1/4-19 BSPT; 7/16-20 UNF-2A; 1/8-28 BSPT | Dependent on Requested Design; Custom Connection (contact factory)      |
| <b>Standard Electrical Connector Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>     | 3 Isolated Wires 0.15mm, 2-75mm Long<br>(Red: +Vcc, Green: +Out, Black: GND) | Framatome FCI Connector   | Packard Metripack 150; M12; 9.4mm; 18mm; Quad-Lok; Quad-Lok with mating connector with 12" leads                           | Packard Metripack 150 with mating connector with 12" leads; Packard Metripack 150                        | **  |
| <b>QUALITY CERTIFICATIONS:</b>   |  |   |  |  |   |
| <b>RoHS Compliant</b>  | No   | No  | Yes  | Yes  | Yes   |
| <b>CE Mark</b>   | **   | No  | **   | Yes  | No  |
| <b>UL Certification</b>  | **   | No  | **   | **   | No  |

1) TEB = Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance

2) Accuracy = Linearity (best fitted straight line) including Hysteresis + Repeatability

\*\*Contact Factory



|  | <b>P992</b>  | <b>P993</b>   | <b>P994</b>  | <b>PTA5000</b>  | <b>PTE5000</b>  |
|--|--|---|--|---|---|
|  | <b>Low Range Differential Pressure Sensor</b>  | <b>Low Range Differential Pressure PCB Sensor</b>   | <b>Low Range Differential Pressure PCB Mount Sensor</b>                                      | <b>Hermetically Sealed Modular Pressure Sensor</b>  | <b>Hermetically Sealed Modular Pressure Sensor</b>  |
| <b>TECHNICAL SPECS:</b>  |  |   |  |   |   |
| <b>Sensor Technology</b>   | Capacitive MEMS  | Capacitive MEMS   | Capacitive MEMS  | Thin Film   | Thin Film   |
| <b>Pressure Range</b>  | 2, 5, 10, ±1, ±2, and ±5 inches of H2O Differential<br>0-5 mBar to 0-25 mBar Differential                                  | 2, 5, 10, ±1, ±2, and ±5 inches of H2O Differential<br>0-5 mBar to 0-25 mBar Differential | 1, 2, 5, 10, ±1, ±2, and ±5 inches of H2O Differential<br>0-5 mBar to 0-25 mBar Differential | 0-100 to 0-10,000 PSI Gage  | 0-6 to 0-600 Bar Gage   |
| <b>Nominal Output Signal</b>   | 0.25Vdc to 4Vdc  | 0.25Vdc to 4Vdc   | 0.25Vdc to 3,75Vdc   | 4mA to 20mA;<br>0Vdc to 10Vdc;<br>0.5Vdc to 4.5Vdc ratiometric  | 4mA to 20mA; 0.5Vdc to 4.5Vdc ratiometric;<br>0Vdc to 5Vdc;<br>0Vdc to 10Vdc  |
| <b>Total Error Band (TEB)<sup>1</sup></b>  | ±2.0% of Span (10°C to 40°C)   | ±2.0% of Span (10°C to 40°C)  | ±2.0% of Span (10°C to 40°C)   | TC zero 0.2% / 10 K<br>+ TC span 0.2% / 10 K<br>+ Accuracy  | TC zero 0.2% / 10 K<br>+ TC span 0.2% / 10 K<br>+ Accuracy  |
| <b>Accuracy<sup>2</sup></b>  | < 0.5% of Span   | < 0.5% of Span  | <0.5% of Span  | < 0.5% of Span  | < 0.5% of Span  |
| <b>Supply Current</b>  | < 4mA  | < 4mA   | <4mA   | < 5mA   | < 5mA   |
| <b>Supply Voltage</b>  | 5Vdc ± 0.25Vdc   | 5Vdc ± 0.25Vdc  | 5Vdc ± 0.25Vdc   | 8-30Vdc for output 4 to 20 mA;<br>5Vdc ± 5% for output 0.5 to 4.5Vdc; 14-30Vdc for output 0 to 10Vdc                  | 8-30Vdc for output 4 to 20 mA (0 to 5Vdc);<br>5Vdc ± 5% for output 0.5 to 4.5Vdc; 14-30Vdc for output 0 to 10Vdc      |
| <b>Over Voltage Protection</b>   | 16Vdc  | 16Vdc   | 16Vdc  | 33Vdc   | 33Vdc   |
| <b>Reverse Polarity Protection</b>   | -6Vdc  | -6Vdc   | -6Vdc  | Yes   | Yes   |
| <b>Output Impedance</b>  | < 100Ω   | < 100Ω  | < 100Ω   | < 100Ω  | < 100Ω  |
| <b>Response Time</b>   | < 10ms to 63% of Final Output Voltage with step change in Input Pressure   | < 10ms to 63% of Final Output Voltage with step change in Input Pressure                  | < 10ms to 63% of Final Output Voltage with step change in Input Pressure                     | < 2ms to 63% of Final Output Voltage with step change in Input Pressure   | < 2ms to 63% of Final Output Voltage with step change in Input Pressure   |
| <b>Housing Material Options</b>  | PET, 30% Glass   | PET, 30% Glass  | PET, 30% Glass   | 304 Stainless Steel   | 304 Stainless Steel   |
| <b>Standard Seal Material Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>            | Fluorosilicone   | Fluorosilicone  | Silicone   | Fluorocarbon; Aluminium Washer; Copper Washer   | Fluorocarbon; Aluminium Washer; Copper Washer   |
| <b>Seal Type</b>   | Adhesive   | Adhesive  | Adhesive   | Weld  | Weld  |
| <b>Wetted Surface</b>  | Ceramic, Fluorosilicon, PET (30% GF)   | Ceramic, Fluorosilicon, PET (30% GF)  | Ceramic, Silicone, PET (30% GF)  | Stainless Steel   | Stainless Steel   |
| <b>Media Compatibility</b>   | Dry Air  | Dry Air   | Dry Air  | Broad Compatibility   | Broad Compatibility   |
| <b>Operating Temperature</b>   | -10°C to +60°C   | -10°C to +60°C  | -0°C to +60°C  | -30°C to +100°C (limitations according to exact sensor configuration; broader temperature range for other connectors) | -30°C to +100°C (limitations according to exact sensor configuration; broader temperature range for other connectors) |
| <b>Storage Temperature</b>   | -40°C to +95°C   | -40°C to +95°C  | -40°C to +95°C   | -30°C to +100°C   | -30°C to +100°C   |
| <b>Vibration</b>   | 1g Peak-to-Peak Sine (20 to 1,200 Hz)  | 1g Peak-to-Peak Sine (20 to 1,200 Hz)   | 1g Peak-to-Peak Sine (20 to 1,200 Hz)  | According to EN 600 68-2-27   | According to EN 600 68-2-27   |
| <b>Mechanical Shock</b>  | 10g's, 1/2 Sine Wave   | 10g's, 1/2 Sine Wave  | 10g's, 1/2 Sine Wave   | 1/2 Sine Wave   | 1/2 Sine Wave   |
| <b>Weight</b>  | < 20 grams   | < 20 grams  | <3.5 grams   | < 60 grams  | < 60 grams  |
| <b>Standard Pressure Connection Port Options</b><br><i>(Contact Factory for Additional/Custom Options)</i> | 1/8" diameter tube fitting with barb for 3/16 ID tubing  | 1/8" diameter tube fitting with barb for 3/16 ID tubing                                   | Barb for 5/32 ID soft tubing   | 1/4-18 NPT  | G1/4; 7/16-20 UNF-2A; 7/16-20 UNF-2B;   |
| <b>Standard Electrical Connector Options</b><br><i>(Contact Factory for Additional/Custom Options)</i>     | PCB Mount; 3 Foot PCB (Compatible with Kavlico P892); 2 Foot PCB with lead wires (Compatible with Kavlico P592/ P593/P792) | 3 solderable pins, tin plated   | PCB Plug-in (Mates to PCB installed receptacle)  | Packard Metripack 150; M12-4 pole   | M12-4 pole; 18mm DIN; 9.4 mm GDS 307; Packard Metripack 150   |
| <b>QUALITY CERTIFICATIONS:</b>   |  |   |  |   |   |
| <b>RoHS Compliant</b>  | Yes  | Yes   | Yes  | Yes   | Yes   |
| <b>CE Mark</b>   | Yes  | Yes   | **   | Yes   | Yes   |
| <b>UL Certification</b>  | Yes  | **  | **   | Yes   | Yes   |

1) TEB = Linearity + Hysteresis + Repeatability + Temp. Coeff. + Zero + Span Tolerance  
\*\*Contact Factory

2) Accuracy = Linearity (best fitted straight line) including Hysteresis + Repeatability



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