

MICROMACHINED SILICON MODULAR PRESSURE SENSOR



**Configurable—High Accuracy—High Temperature Performance
For Industrial, Test and Measurement, and Aerospace Applications**

Low Pressure from 10 in-H₂O to 2.5 psi
and Standard Ranges from 5 to 5000 psi
Metric Ranges: 25 mbar to 350 bar

**Most Popular
Models in Stock!
Fast Delivery for
Thousands of
Configurations!**

MM Series Pressure Transducers



Standard Optional

- ✓ Customer Selectable Features
- ✓ Fast Delivery
- ✓ High Accuracy
- ✓ Up to $\pm 0.03\%$ Linearity
- Available Accuracies:
 - $\pm 0.05\%$ FS BSL Accuracy
 - $\pm 0.08\%$ FS BSL Accuracy
 - $\pm 0.20\%$ FS BSL Accuracy
 - $\pm 0.40\%$ FS BSL Accuracy
- ✓ Premium Temperature Performance
- ✓ Broad Compensated Range
- ✓ Gage, Absolute, Barometric, Vacuum, Compound and Differential
- ✓ 5-Point NIST Traceable Calibration



MMG050VP5C0T3A5,
features 50 psig, mV
output, 0.40% accuracy,
cable termination.



MMG100C1P5C6T3A5,
features 100 psig
4 to 20 mA output,
0.40% accuracy,
mini DIN termination.



MMDWU015VP5C1T3A5,
features 15 psid,
mV output, 0.40% accuracy,
twist-lock termination.

**1 Week Delivery
on Custom
Configurations**



MMG10WVP3C1T2A2,
features 0 to 10 in-H₂O,
mV output, 0.08% accuracy,
twist-lock termination.

All models shown actual size.

Note: BSL = Best Straight Line.

ONE SOURCE FOR ALL YOUR PRESSURE MEASUREMENT APPLICATIONS



Gage Pressure
Low Pressure
Absolute Pressure
Differential Pressure
Vacuum Ranges
Compound Ranges
Barometric Pressure

Adjustable
zero and span
potentiometers

MMG1.0KC1P2J0T3A5P,
4 to 20 mA output,
1000 psig, 0.05% accuracy,
2 m (6') cable, and
optional potentiometers.

MMG100C1P5C6T3A5,
features 100 psig
4 to 20 mA output,
0.40% accuracy,
mini DIN termination.

All models shown
actual size.

MMS20A015C1P31T6A5,
15 psia 4 to 20 mA output,
2" sanitary fitting,
0.08% accuracy,
twist-lock termination.

OMEGA has developed a rapid delivery system for its new Micro Machined Silicon product line.

You can have your pick of pressure ports, electrical connections, pressure range and units, thermal range and accuracy and accessories like trim pots. There are over 1-million possible combinations. OMEGA can deliver reasonable quantities of almost any combination within 5 working days. We have an easy-to-use configurator online at omega.com where you can select the transducer with the exact specifications for your project.

We also have the most popular configurations stocked for same day shipment!

OMEGA's micro-machined piezoresistive pressure transducers have a proven record in high performance commercial, automotive, test and measurement and aerospace applications. The piezoresistive process uses strain gages molecularly embedded into a highly stable silicon wafer. The silicon wafer is diced into individual die which each contain a full strain gage bridge. The die is mounted in a sealed chamber protected from the environment by glass to metal seals and a pressure sensitive stainless steel diaphragm. A small volume of silicone oil transfers the pressure from the diaphragm to the strain bridge. The construction provides a very rugged transducer with exceptional accuracy, stability and thermal effects.

A unique design ruggedizes the transducers by providing secondary fluid containment in the event of a diaphragm rupture.

- ✓ Five Accuracies
- ✓ Ninety-Two Pressure Ranges
- ✓ Ten Electrical Outputs
- ✓ Four Thermal Ranges
- ✓ Fourteen Pressure Ports
- ✓ Five Electrical Terminations
- ✓ Over 1,000,000 Combinations!

MMG1.0KC1P4J0T3A5P,
4 to 20 mA output, 1000
psig, 0.20% accuracy with
potentiometers.



MMG100C1P5C6T3A5,
features 100 psig,
4 to 20 mA output, 0.40%
accuracy, mini DIN
termination.



MMG1.0KC1P2C2T3A5,
features 1000 psig, 4 to 20
mA output, 0.05% accuracy,
cable termination with ½ NPT
conduit fitting.



| CABLE CONNECTION | | | |
|------------------|-------|--------|-------|
| COLOR | mV | 5/10V | mA |
| BLACK | - EXC | Common | - EXC |
| WHITE | + SIG | + Out | + CAL |
| GREEN | - SIG | SHUNT | SHUNT |
| RED | + EXC | + EXC | + EXC |

| M12, MINI DIN AND SOLDER PINS CONNECTION | | | |
|---|-------|----------|----------|
| PIN | mV | 5/10V | mA |
| 1 | + EXC | + EXC | + Supply |
| 2 | - EXC | Common | - Supply |
| 3 | + OUT | + Output | NC |
| 4 | - OUT | NC | NC |

| TWIST-LOCK CONNECTION | | | |
|-----------------------|-------|---------|---------|
| PIN | mV | 5/10V | mA |
| A | + EXC | + EXC | + EXC |
| B | - EXC | Common | - EXC |
| C | + OUT | + OUT | + SHUNT |
| D | - OUT | + SHUNT | + SHUNT |
| E | NC | NC | NC |
| F | NC | NC | NC |

COMMON SPECIFICATIONS G/A/V/CG/BARO

- Approvals: RoHS and CE
- Calibration: 5-point NIST traceable
- Bandwidth: DC to 1 kHz typical
- Response Time: < 1 ms
- CE Compliant: IEC61326
- Emissions: IEC550022 Class B
- Electrostatic Discharge Immunity: IEC1000-4-2
- EM Field Immunity: IEC61000-4-3
- EFT Immunity: IEC61000-4-4
- Surge Immunity: IEC61000-4-5
- Conducted RF: IEC61000-4-6
- Rate Power Frequency Magnetic Field: IEC61000-4-8
- Minimum Resistance Between Body and Any Wire: 100 MΩ @ 50 Vdc
- Weight: 115 to 200 g (4 to 7 oz) (depending upon configuration)
- Environmental**
- Operating Temperature: -45 to 121°C (-49 to 250°F)
- Protection:
 - Cable: 2 m (6') IP67
 - mini DIN: IP65
 - Twist-Lock and M12: IP65
 - Conduit 2 m (6') Cable with ½ NPT Conduit Fitting: IP67

Mechanical

- Wetted Parts: 316L stainless steel
- Media: Compatible with 316L SS
- Pressure Cycles: 1 million minimum

- Long Term Stability (1-Year): ±0.1% FS typical
- Shock: 50 g, 11 mS half sine, vertical and horizontal axis
- Vibration: 5-2000-5 Hz, 30 minute cycle, curve L, mil-spec 810 figure 514-2-2, vertical and horizontal axis

Overpressure Gage Pressure:

- 10-in H₂O: 10 times span
- 1 psi: 6 times span
- 2.5 psi to 3500 psi: 4 times span
- 5000 psi: 15,000 psi max

Overpressure Absolute Pressure:

- 5 psia: 6 times span
- 2.5 psia to 3500 psia: 4 times span
- 5000 psia: 15000 psi max

Secondary Containment

Gage/Diff/Vac/Compound:

- 10 in-H₂O to 5 psi: To 1000 psi
- 15 to 1000 psi: To 3000 psi
- 1500 to 5000 psi: To 15,000 psi

Absolute/Barometric:

- 5 to 1000 psi: To 6000 psia
- 1500 to 5000 psi: To 15,000 psia

Excitation

- 3 mV/V: 10 Vdc (ratiometric 5 to 10 Vdc)
- 10 mV/V: 10 Vdc (ratiometric 5 to 10 Vdc)
- 0 to 5 Vdc: 10 to 30 Vdc @ 10 mA
- 0 to 10 Vdc: 15 to 30 Vdc @ 10 mA
- 4 to 20 mA: 9 to 30 Vdc (9 to 20 Vdc above 229°F)

Bipolar Amplifiers: Same as corresponding outputs from above—compound and some differential pressure models

MM SERIES SANITARY PROCESS SENSORS



Using Micro-Machined Silicon Technology
10 mV/V, 0 to 5 Vdc, 4 to 20 mA Outputs

Gage Pressure: 10 inH₂O to 600 psi (25 mb to 41 bar)
Absolute Pressure: 5 to 600 psi (345 mb to 41 bar)
Compound Gage: ±10 inH₂O to ±15 psi (±25 mb to ±1 bar)
Vacuum (Negative Gage): 0 to -10 inH₂O to 0 to -15 psi (25 mb to 1 bar)
Barometric Ranges: 0 to 32 inHg to 26 to 32 inHg

Sanitary Pressure Transducers and Transmitters



- ✓ High, 0.08% Accuracy
- ✓ Solid State Sensor for Durability
- ✓ Excellent Long Term Stability
- ✓ Welded Stainless Steel Construction
- ✓ 316L SS Wetted Parts
- ✓ Shock and Vibration Rated
- ✓ High Overpressure Rating
- ✓ Ruggedized with Secondary Containment System

The MM Series micro-machined silicon transducers with 1½ or 2" sanitary fittings are ideal for pressure or level CIP applications

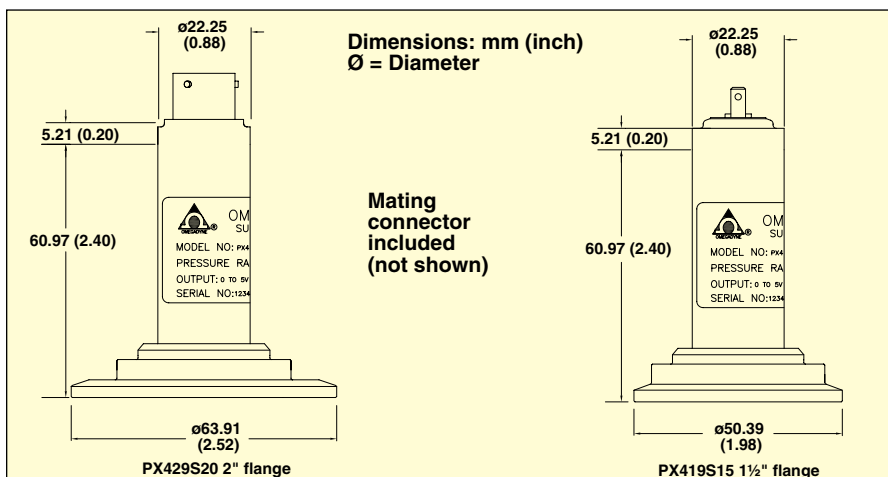
in food processing, beverage or bio/pharmaceutical applications as well as industrial applications that require a rugged, high accuracy transducer. The micro-machined silicon sensor provides a transducer with excellent long term stability. The modular construction allows for fast delivery of most configurations and fittings.

COMMON SPECIFICATIONS SANITARY

Accuracy: 0.4% to 0.05% best straight line (linearity, hysteresis and repeatability combined) bidirectional differential models calibrated in positive direction only

Calibration: 5-point NIST traceable calibration with zero and span values, calibrated in horizontal direction

Zero Balance: ±0.5% FS typical ±1% max (for ranges ≤2.5 psi ±1% typ. ±2% max)



Span Setting: ±0.5% FS typical ±1% max (for ranges ≤2.5 psi ±1% typ. ±2% max)

Operating Temperature Range: -15 to 115°C (-5 to 240°F)

Compensated Temperature Range:
 Ranges ≤ 5 psi: 4.4 to 60°C (40 to 140°F)
 Ranges > 5 psi: -4 to 85°C (25 to 185°F)

Temperature Compensation:
 Zero and Span Shift Over Compensated Range

Ranges ≤ 25 psi:
 Zero: 1.00%
 Span: 0.70%

Range = 5 psi:
 Zero: 0.80%
 Span: 0.50%

Ranges > 5psi:
 Zero: 0.50%
 Span: 0.50%

26B & 26HB Barometric Range:
 Zero: 0.90%
 Span: 0.50%

Minimum Isolation Between Case and Output Terminations:
 100M Ω @ 50 Vdc

Pressure Cycles: 1 million, min

Long Term Stability (1-Year): ±0.1% FS typ.

Shock: 50 g, 11 mS half sine shock, (under test)

Vibration: ±20 g (under test)

Bandwidth: DC to 1 kHz typical

Response Time: <1 mS

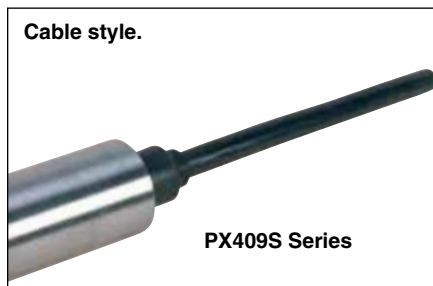
Fill Fluid: NEOBEE M5 food grade

MM SERIES SANITARY PROCESS SENSORS



High Accuracy Pressure Transducers Piezoresistive Design With High Temperature Performance

All images shown smaller than actual size.



| PX409 Cable Connection | | | |
|------------------------|-------|----------|----------|
| Color | mV | 5/10V | mA |
| Black | - EXC | Common | - Supply |
| White | + SIG | + Output | NC |
| Green | - SIG | NC | NC |
| Red | + EXC | + EXC | + Supply |

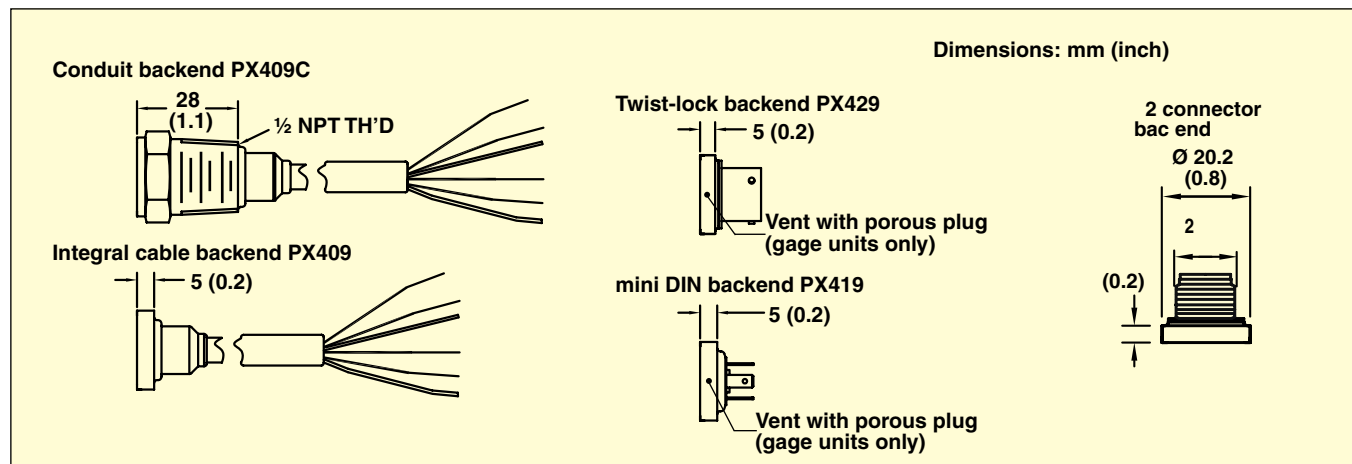


| PX419/PX459 Pinout | | | |
|--------------------|-------|----------|----------|
| Pin | mV | 5/10V | mA |
| 1 | + EXC | + EXC | + Supply |
| 2 | - EXC | Common | - Supply |
| 3 | + SIG | + Output | NC |
| 4 | - SIG | NC | NC |



| PX429 Twist-Lock Pinout | | | |
|-------------------------|-------|----------|----------|
| Pin | mV | 5/10V | mA |
| A | + EXC | + EXC | + Supply |
| B | - EXC | Common | - Supply |
| C | + SIG | + Output | NC |
| D | - SIG | NC | NC |
| E | NC | NC | NC |
| F | NC | NC | NC |

NC = No Connection.



Approved to 3A Sanitary Specification 74-03

CE Compliant: Meets industrial emissions and immunity standard IEC61326 for industrial locations

Environmental Protection: IP65 or IP67 depending upon electrical termination

Pressure Rating:

1/2 and 2" Tri-Grip™ (compatible with Tri-Clamp®)

Fitting: 600 psi using suitable clamp

Over Pressure: 4 x rated pressure to maximum rated flange pressure

Secondary Containment: 6 x rated pressure to a maximum of 2000 psi (not in clamp)

Wetted Parts: 316L SS

Weight: 285 g (10 oz)

OUTPUT SPECIFICATIONS

Specifications (mV/V Output)

Output: 10 mV/V: ratiometric
5 to 10 Vdc

Supply: 5 to 10 Vdc

Specifications (Amplified Voltage Output)

Output/Supply:
0 to 5 Vdc: 10 to 30 Vdc
0 to 10 Vdc: 15 to 30 Vdc

Specifications (4 to 20 mA Output)

Output/Supply:
Output: 4 to 20 mA dc
Supply: 9 to 30 Vdc
[9 to 20 Vdc above 105°C (229°F)]
max loop res Ω = (Vs-9) x 50

MM SERIES SANITARY PROCESS SENSORS USB OUTPUT



USB Output Sanitary Fitting Pressure Transducer

Connect Directly to Your PC or Laptop

Gage, Absolute, Compound Gage, Vacuum and Barometric Pressures
10 inH₂O to 600 psi (25 mb to 41 bar)

MM Sanitary USB Series



USB SANITARY SPECIFICATIONS

Accuracy: 0.08% typical best straight line, 0.14% max (linearity, hysteresis and repeatability combined) compound gage models calibrated in positive direction only

Calibration: 5-point NIST traceable calibration with zero and span values calibrated in horizontal direction

Zero Balance: ±0.5% FS typical ±1% max (for ranges ≤2.5 psi ±1% typical ±2% max)

Span Setting: ±0.5% FS typical ±1% max (for ranges ≤2.5 psi ±1% typical ±2% max)

Operating Temperature Range: -15 to 95°C (-5 to 203°F)

Compensated Temperature Range:

Ranges ≤ 5 psi: 4.4 to 60°C (40 to 140°F)

Ranges > 5 psi: -4 to 85°C (25 to 185°F)

Temperature Compensation

Zero and Span Shift Over

Compensated Range:

Ranges ≤2.5 psi:

Zero: 1.00%

Span: 0.70%

Range = 5 psi:

Zero: 0.80%

Span: 0.50%

Ranges > 5psi:

Zero: 0.50%

Span: 0.50%

26B/26HB Barometric Range:

Zero: 0.90%

Span: 0.50%

Minimum Isolation Between Case and Output Terminations:

100M Ω @ 50 Vdc

Pressure Cycles: 250,000, minimum

Long Term Stability (1-Year): ±0.1% FS typical

Shock: 50 g, 11 ms half sine shock, (under test)

Vibration: ±20 g (under test)

Bandwidth: DC to 3 Hz typical

A to D Conversion: 14 bit

Response Time: <1 ms

Fill Fluid: NEOBEE M5 food grade

Approved to 3A Sanitary Specification 74-03

CE Compliant: Meets industrial emissions and immunity standard IEC61326

Environmental Protection: IP65

Pressure Rating:

½ and 2" Tri-Grip™

Fitting: 600 psi using suitable clamp

Over Pressure: 4 x rated pressure to maximum rated flange pressure

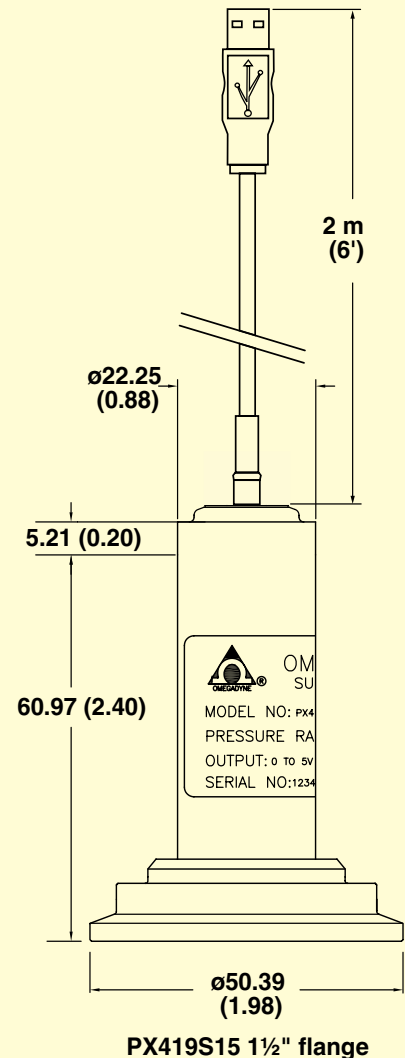
Secondary Containment: 6 x rated pressure to a maximum of 2000 psi (not in clamp)

Wetted Parts: 316L SS

Weight: 285 g (10 oz)

Dimensions: mm (inch)

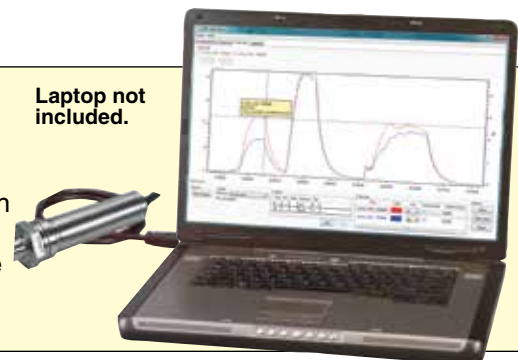
Ø = Diameter



FREE SOFTWARE INCLUDED!

Each unit includes free software that converts your PC into a strip chart recorder or data logger so readings can be saved and later printed or exported to a spread sheet file. Also included are software drivers for some of the most popular Laboratory programs.

Laptop not included.



MM SERIES

DIFFERENTIAL PRESSURE MODELS



**mV/V, 0 to 5 or 0 to 10 Vdc,
or 4 to 20 mA Outputs**
Uni-Directional or Bi- Directional
0-10 inH₂O to 0-1000 psid

MM Series



- ✓ Precision Micro-Machined Silicon Core
- ✓ 5-Point NIST Traceable Calibration
- ✓ High Stability, Low Drift
- ✓ Welded Stainless Steel Construction
- ✓ 316L SS Wetted Parts
- ✓ Premium Temperature Performance
- ✓ Broad Compensated Temperature Range
- ✓ Durable, 1 Million Cycle Life
- ✓ Ruggedized with Secondary Containment
- ✓ Customized Specifications Available

COMMON SPECIFICATIONS DIFFERENTIAL

Accuracy: 0.4% to 0.05% best straight line (linearity, hysteresis and repeatability combined) bidirectional differential models calibrated in positive direction only

Minimum Resistance Between Transducer Body and Any Wire: 100 MΩ

Operating Temperature:
mV/V and 5 to 10 Vdc Output:
 -45 to 121°C (-49 to 250°F)
mA Output: -45 to 115°C (-49 to 239°F)

Compensated Temperature Range:
10 inH₂O to 5 psi: -17 to 85°C (1 to 185°F)
15 to 1000 psi: -29 to 85°C (-20 to 185°F)

Thermal Accuracy:
 % Span Shift over compensated temperature range

| Pressure Range | Zero | Span |
|--------------------------------|--------|--------|
| 10 inH ₂ O to 1 psi | ±1.00% | ±1.00% |
| 2.5 to 1000 psi | ±0.50 | ±0.50% |

Pressure Cycles: 1 million minimum

Long Term Stability (1-Year):
 ±0.1% FS typical

Bandwidth: DC to 1 kHz typical

Response Time: <1 ms

CE Compliant: Meets EN1326-1:2006 for industrial locations

Shock: 50 g, 11 ms half sine, vertical and horizontal axis

Vibration: 5-2000-5 Hz, 30 minute cycle, Curve L, Mil-Spec 810 figure 514-2-2, vertical and horizontal axis

Wet Wet:

Wetted Parts: 316L stainless steel

Wet Dry:

Positive Side: 316L stainless steel

Negative Side: Clean, dry, non-ionic gases

Line/Static Pressure: 500 psi max applied to both sides simultaneously

Proof Pressure (Differential):

10 inH₂O range = 10 times range
 1 psi range = 6 times range
 2.5 to 750 psi ranges = 4 times range
 1000 psi range = 3 times range

Hi Side Containment Pressure (Differential):

Ranges 10 inH₂O to 5 psi: to 1000 psi
Ranges 15 to 1000 psi: to 3000 psi

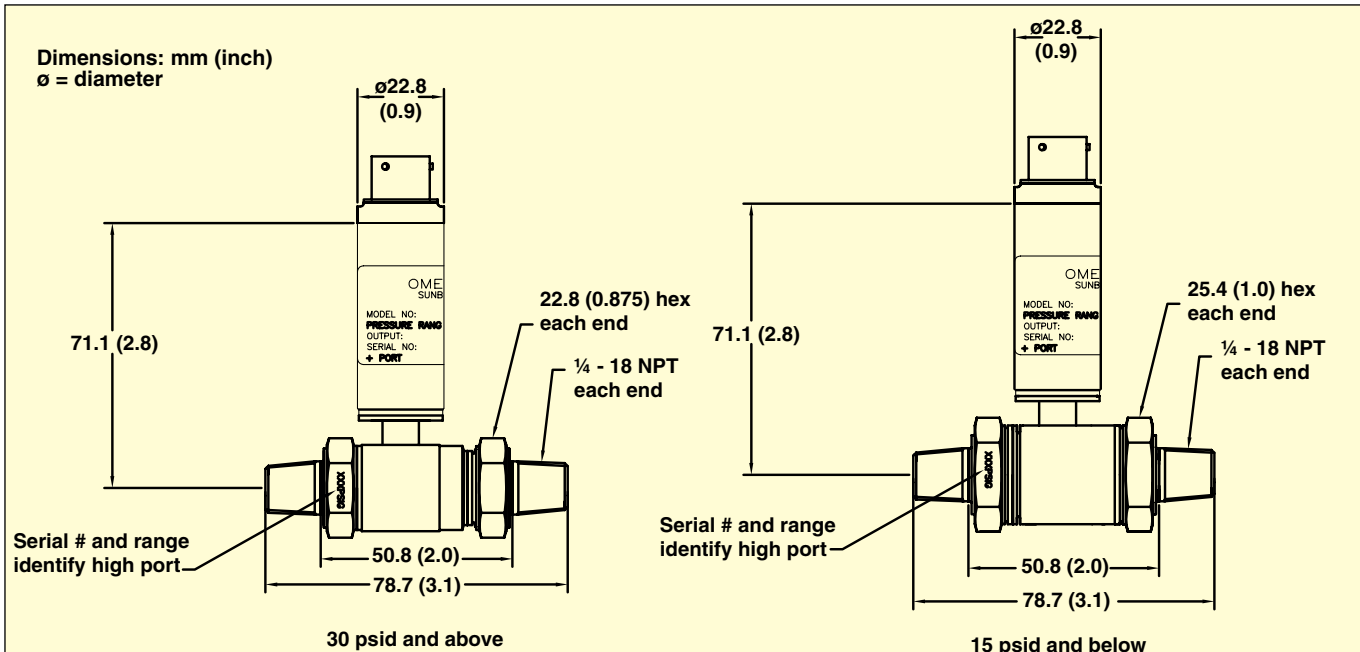
Pressure Ports: Select

Electrical Terminations:

PX409: 2 m (6') cable
PX409C: 2 m (6') cable with ½ NPT conduit thread
PX419: mini DIN (mating connector included)
PX429: Twist-lock, (mating connector sold separately)
PX459: M12 connector

PX429 Mating Connector:
 PT06F10-6S

Weight: 200 g (7 oz) max



ELECTRICAL TERMINATION

| | | | | |
|---|--|---|---|--|
| <p>6-Pin, Vented or Non-Vented Bendix</p> <p>PT06F10-6S mating connector, sold separately.</p> <p>4.3 (0.19)</p> | <p>M12 Connector</p> <p>Ø 20.2 (0.8) M12 x 1 5 (0.2) Vent with porous plug (gauge units only)</p> | <p>4-Pin, Vented or Non-Vented mini DIN</p> <p>included 4.8 (0.19)</p> | <p>4-Conductor Integral Cable, 2 Meter</p> <p>4.8 (0.19)</p> | <p>Cable with 1/2 NPT Conduit Fitting</p> <p>1/2 NPT conduit fitting 9.4 (0.37)</p> |
|---|--|---|---|--|

DIMENSIONS

| | | | |
|--|--|---|--|
| <p>Low Range Pressure Transducer <15 psi Units</p> <p>Ø22.3 (0.88) 45.2 (1.78) 20.8 (0.82) Hex 25 (1) Wrench Flats</p> | <p>Mid Range Pressure Transducer Barometric Transducer ≥15 psi Units</p> <p>Ø22.3 (0.88) 57.1 (2.25) 9.4 (0.37) Hex 22.2 (0.875) Wrench Flats</p> | <p>Low Range Differential Pressure Transducer <15 psi Units</p> <p>Ø22.3 (0.88) 65.2 (2.57) 25 (1) Wrench Flats 49 (1.93) Hex</p> | <p>Mid Range Differential Pressure Transducer ≥15 psi Units</p> <p>Ø22.3 (0.88) 63.7 (2.51) 22.2 (0.875) Wrench Flats 49.5 (1.95) Hex</p> |
|--|--|---|--|

PRESSURE PORTS*

Ø = diameter
Dimensions: mm (inch)

| | | | | | | | |
|---------------|-------------------------------------|---------------------------------------|-------------------------------------|------------------------------------|--|-----------------------------------|-----------------------------------|
| <p>Male</p> | <p>16.2 (0.64) M12 x 1.5-6g</p> | <p>17 (0.67) 9/16-18 UNF-2A</p> | <p>14 (0.55) G 1/4B-19TPI</p> | <p>10.6 (0.42) G 1/8-28TPI</p> | <p>16.5 (0.65) 7/16-20 UNJF-2A</p> | <p>14.2 (0.56) 1/4-18 NPT</p> | <p>13 (0.51) 1/8-27 NPT</p> |
| <p>Female</p> | <p>12.7 (0.50) M12 x 1.5-6H</p> | <p>18.3 (0.72) 9/16-18 UNF-2B</p> | <p>14.2 (0.56) G 1/4B-19TPI</p> | <p>10.6 (0.42) G 1/8-28TPI</p> | <p>17 (0.67) 7/16-20 UNJF-2B</p> | <p>14.2 (0.56) 1/4-18 NPT</p> | <p>14.2 (0.56) 1/8-27 NPT</p> |

* Dimensions may vary slightly for ranges >1000 psi.