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

Customer Selectable Features
Fast Delivery
High Accuracy
Up to ±0.03% Linearity
Available Accuracies:
±0.05% FS BSL Accuracy
±0.08% FS BSL Accuracy
±0.20% FS BSL Accuracy
±0.40% FS BSL Accuracy

Premium Temperature Performance
Broad Compensated Range
Gage, Absolute, Barometric, Vacuum, Compound and Differential
5-Point NIST Traceable Calibration

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

1 Week Delivery on Custom Configurations

Note: BSL = Best Straight Line.
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!
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: IEC650022 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 ¼ 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
Using Micro-Machined Silicon Technology

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 ≤ 5 psi:
Zero: -1.00%
Span: -0.70%
Ranges > 5 psi:
Zero: -0.80%
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
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

High Accuracy Pressure Transducers
Piezoresistive Design With High Temperature Performance

Cable style.
PX409S Series

Mini DIN and M12 style.
PX419S Series

Twist-lock style.
PX429S Series

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

Specifications (mV/V Output)
Output: 10 mV/V; ratiometric
5 to 10 Vdc
Supply: 5 to 10 Vdc

Specifications (Amplified Voltage Output)
Output: 5 to 10 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
Supply: 9 to 30 Vdc
[9 to 20 Vdc above 105°C (229°F)]
max loop res Ω = (Vs-9) x 50

Pressure Rating:
½ 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)

Dimensions: mm (inch)

Conduit backend PX409C

Integral cable backend PX409

Twist-lock backend PX429

Mini DIN backend PX419

NC = No Connection.

All images shown smaller than actual size.

Cable style.

mini DIN and M12 style.

Twist-lock style.

PX409S Series
PX419S Series
PX429S Series

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.
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%

Ranges > 5 psi:
Zero: 0.80%
Span: 0.50%

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

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

Minimum Isolation Between Case and Output Terminations: 100MΩ @ 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)

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.

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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

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)
2.5 to 1000 psi: -29 to 85°C (-20 to 185°F)
Thermal Accuracy:
% Span Shift over compensated temperature range
Zero Span
10 inH2O to 1 psi: ±1.00% ±1.00% (±0.5% ±0.5%)
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):
Ranges 10 inH2O to 5 psi: 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

Dimensions: mm (inch)
ø = diameter

71.1 (2.8)
50.8 (2.0)
78.7 (3.1)
22.8 (0.875) hex each end
30 psid and above

25.4 (1.0) hex each end
15 psid and below

Serial # and range identify high port
**ELECTRICAL TERMINATION**

**6-Pin, Vented or Non-Vented Bendix PT06F10-6S mating connector, sold separately.**

**M12 Connector**

- Ø 20.2 (0.8)
- 5 (0.2)
- Vent with porous plug (gage units only)

**4-Pin, Vented or Non-Vented mini DIN**

- 4.8 (0.19)

**4-Conductor Integral Cable, 2 Meter**

**Cable with ½ NPT Conduit Fitting**

- 9.4 (0.37)

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**DIMENSIONS**

**Low Range Pressure Transducer <15 psi Units**

- Ø 22.3 (0.88)
- 45.2 (1.78)
- 20.8 (0.82)
- Hex
- 25 (1) Wrench Flats

**Mid Range Pressure Transducer Barometric Transducer ≥15 psi Units**

- Ø 22.3 (0.88)
- 57.1 (2.25)
- 9.4 (0.37)
- Hex
- 22.2 (0.875) Wrench Flats

**Low Range Differential Pressure Transducer <15 psi Units**

- Ø 22.3 (0.88)
- 65.2 (2.57)
- 25 (1) Wrench Flats

**Mid Range Differential Pressure Transducer ≥15 psi Units**

- Ø 22.3 (0.88)
- 63.7 (2.51)
- 22.2 (0.875) Wrench Flats

**PRESSURE PORTS**

- Ø = diameter
- Dimensions: mm (inch)

**Male**

- M12 x 1.5-6g
- 9/16-18 UNF-2A
- G 1/4B-19TPI
- G 1/8-28TPI
- 7/16-20 UNJF-2A
- 1/4-18 NPT
- 1/8-27 NPT

**Female**

- M12 x 1.5-6H
- 9/16-18 UNF-2B
- G 1/4B-19TPI
- G 1/8-28TPI
- 7/16-20 UNJF-2B
- 1/4-18 NPT
- 1/8-27 NPT

*Dimensions may vary slightly for ranges >1000 psi.*