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

MM Series Pressure Transducers

- 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

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.

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

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

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

All models shown actual size.

Note: BSL = Best Straight Line.
ONE SOURCE FOR ALL YOUR PRESSURE MEASUREMENT APPLICATIONS

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!
MM SERIES

COMMON SPECIFICATIONS
G/A/V/CG/BARIO
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 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 Gauge 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 psi: 6 times span
2.5 psi to 3500 psi: 4 times span
5000 psi: 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 psi
1500 to 5000 psi: To 15,000 psi

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) 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% 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%
Ranges > 5 psi:
Zero: 0.80%
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

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)

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: 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 mAdc
Supply: 9 to 30 Vdc
[9 to 20 Vdc above 105°C (229°F)]
max loop res $\Omega = (Vs-9) \times 50$

Wetted Parts:
316L SS
Weight: 285 g (10 oz)
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 > 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 spreadsheet file. Also included are software drivers for some of the most popular Laboratory programs.
**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**

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**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

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**COMMON SPECIFICATIONS**

**DIFFERENTIAL**

- **Accuracy:** 0.4% to 0.05% BSL linearity, hysteresis and repeatability combined
- **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)
- **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: 1000 psi
  - Ranges 15 to 1000 psi: 3000 psi
- **Pressure Ports:** Select
- **Electrical Terminations:**
  - PX409: 2 m (6') cable
  - PX409C: 2 m (6') cable with 1⁄2 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

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**Dimensions: mm (inch)**

Ø = diameter

- 22.8 (0.9) hex each end
- 50.8 (2.0) each end
- 78.7 (3.1) each end
- 68.5 (2.7) each end

- 25.4 (1.0) hex each end
- 50.8 (2.0) each end
- 78.7 (3.1) each end
**ELECTRICAL TERMINATION**

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

M12 Connector

4-Pin, Vented or Non-Vented mini DIN

4-Conductor Integral Cable, 2 Meter

Cable with 1/2 NPT Conduit Fitting

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**DIMENSIONS**

Low Range Pressure Transducer <15 psi Units

Mid Range Pressure Transducer Barometric Transducer ≥15 psi Units

Low Range Differential Pressure Transducer <15 psi Units

Mid Range Differential Pressure Transducer ≥15 psi Units

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**PRESSURE PORTS**

**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

**Ø = diameter**

Dimensions: mm (inch)

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*Dimensions may vary slightly for ranges >1000 psi.

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URL: [http://www.pac-tech.com](http://www.pac-tech.com)