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M7100

Pressure Transducer

SPECIFICATIONS

- Performance standard on and off highway engine and vehicle OEMs
- Rugged for heavy equipment and outdoor use
- Designed specifically for high volume applications
- Stainless steel wetted surfaces
- Medium to high pressures
- CE Approved
- UL Certified
- Gage

The M7100 pressure transducer from the Microfused line of MEAS sets a new price performance standard for demanding engine and vehicle, and industrial applications. This transducer is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam and corrosive fluids.

The transducer pressure cavity is machined from a solid piece of 17-4 PH stainless steel. The standard version includes a 1/4 NPT pipe thread allowing a leak-proof, all metal sealed system. There are no o-rings or organics exposed to the pressure media and the durability is excellent. This automotive grade pressure transducer with stainless steel hermetic pressure ports and integral electrical connector can boast up to 10,000psi (700Bar). The M7100 is UL certified and exceeds the latest industrial CE requirements including surge protection and is overvoltage protected in both positive and reverse polarity.

FEATURES

- Hermetic Pressure Ports
- Integral Electrical Connector
- Survives High Vibration
- $\pm 0.25\%$ Accuracy
- Water Resistant 1M Immersion

APPLICATIONS

- On and Off Highway Engines and Vehicles
- HVAC Refrigeration Controls
- Compressors
- Hydraulics
- Energy and Water Management

STANDARD RANGES

| Range (psi) | Range (Bar) | Gage |
|-------------|-------------|------|
| 0 to 150 | 0 to 010 | • |
| 0 to 200 | 0 to 014 | • |
| 0 to 300 | 0 to 020 | • |
| 0 to 500 | 0 to 035 | • |
| 0 to 01K | 0 to 070 | • |
| 0 to 1K5 | 0 to 100 | • |
| 0 to 03K | 0 to 200 | • |
| 0 to 05K | 0 to 350 | • |
| 0 to 7K5 | 0 to 500 | • |
| 0 to 10K | 0 to 700 | • |

PERFORMANCE SPECIFICATIONS

Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS | MIN | TYP | MAX | UNITS | NOTES |
|---|-------|-----|------|------------|-------|
| Load Resistance | 10 | | | KΩ | |
| Accuracy (combined linearity, hysteresis & repeatability) | -0.25 | | 0.25 | %Span | 1 |
| Total Error Band | -1.0 | | 1.0 | %Span | 2 |
| Compensated Temperature | -20 | | +85 | °C | |
| Operating Temperature | -40 | | +125 | °C | 3 |
| Storage Temperature | -50 | | +125 | °C | |
| Insulation Resistance (500Vdc) | 100 | | | MΩ | 4 |
| Short Circuit Protected | | Yes | | | |
| Output Noise @ 1kHz | | 10 | | mV | |
| Long Term Stability | -0.25 | | 0.25 | %Span/Year | |
| Frequency Response @ -3dB | | 1 | | KHz | |

Notes

1. Best fit straight line.
2. TEB includes all accuracy errors, thermal errors, span and zero tolerances over the compensated temperature range.
3. Temperature range for product with standard cable is -20°C to +105°C.
4. Between sensor body to any pins of connector.

ENVIRONMENTAL SPECIFICATIONS

Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS | MIN | TYP | MAX | UNITS | NOTES |
|----------------------|---|-----|-----|--------|-------|
| Humidity (@40°C) | | | 93 | %RH | |
| Pressure Overload | | | 2X | Rated | 5 |
| Pressure Burst | | | 5X | Rated | 6 |
| Pressure Cycle | 10M | | | Cycles | |
| Media, Pressure Port | Fluids compatible with 17-4PH Stainless Steel | | | | |
| Mechanical Vibration | 20g, 10 ~ 2000Hz MIL-STD-810C, Method 514.2, Curve L | | | | |
| Mechanical Shock | Half-Sine, Peak: 50g, 11ms MIL-STD-202, Method 213B, Condition A | | | | |
| Package Protection | IP67 (IEC60529) | | | | |

Notes

5. The maximum pressure that can be applied without changing the transducer's performance or accuracy.
6. The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer.

Agency Approvals

RoHS: RoHS 2 (Directive 2011/65/EU)

UL 508 Certified: Industrial Control Equipment, CSA 22.2 No. 14-10

EMC Performance Criteria: Output Change < ±1.5% FSO

IEC61000-4-2 ESD: 8kV Contact / 15kV Air; Discharge Rate > 10s

IEC61000-4-3 EM Field: 100V/m, 1kHz 80% Modulation, 80 ~ 1000MHz

IEC61000-4-4 Electrical Fast Transient: Level 2, 1KV each line, Capacitance coupling

IEC61000-4-5 Surge: Level 2, 42Ω Impedance, Figure 11 (L-L 500V, L-E 1KV)

IEC61000-4-6 Conducted RF: Level 2, 3V/130dB, 150KHz ~ 80MHz, 2s Dwell, Clamp Injection

IEC61000-4-9 Pulse Magnetic Field: Level 3, 100A/m, 10 Second pulse interval

IEC55022 Emission: Class B, 30dB @ 30-230MHz, 37dB @ 230-1000MHz

M7100

Pressure Transducer

| Pressure Port Options | Dim A | Tightening Torque (Nm) |
|--|------------|------------------------|
| 2 = G1/4, BS5380, Male | .43 [11.0] | 30~35 |
| 4 = 7-16-20 UNF, SAE J1926-2, Male, w/ O-Ring | .36 [9.1] | 18~20 |
| 5 = 1/4-18 NPT Male | .56 [14.2] | 2~3 T.F.F.T. |
| 6 = 1/8-27 NPT Male | .38 [9.7] | 2~3 T.F.F.T. |
| E = R1/4-19, Male | .56 [14.2] | 2~3 T.F.F.T. |
| F = G1/4-19, BS5380, Female | .64 [16.3] | 30~35 |
| P = 7/16-20UNF Female w/ Integral Valve Depressor; 1/4 Flare Gasket SAE J513C, Copper | .64 [16.3] | 15~16 |
| Q = M10 x 1.0, ISO 6149-2, Male | .37 [9.5] | 15~16 |
| S = M12 x 1.5, ISO 6149-2, Male | .43 [11.0] | 28~30 |
| G = M14 x 1.5, ISO 6149-2, Male | .43 [11.0] | 30~35 |
| U = G1/4, DIN 3852-E, Male | .47 [12.0] | 30~35 |

Notes: Installation

*T.F.F.T.: Turns From Finger Tight

Transducers can be installed by either spanner or deep socket. Torque values provided are for reference: actual torque depends upon mating port material, surface finish, lubrication and sealing mechanism. Transducers calibration and/or zero may shift if part is over-torqued during installation. Check for a zero shift after installing.

| Connector | Connector, Pin Plating | | Connector, Mating |
|------------------------------------|---------------------------|--|--|
| Packard Metri-Pack 150 Series | <i>powerandsignal.com</i> | 0.003 – 0.005 mm Sn | Housing P/N: 12065287 Terminals P/N: 12103881 |
| Sumitomo HV040 Series | <i>sumitomokenki.com</i> | 0.003 mm Sn over 0.0005 – 0.001 mm Cu | Housing P/N: 6189-6907 Terminals P/N: 8100-3067/8 |
| AMP Econoseal-J Mark II 070 Series | <i>te.com</i> | 0.0004 mm Au over 0.0013 mm Ni | Housing P/N: 174357 Terminals P/N: 171630 |

Notes: Connector

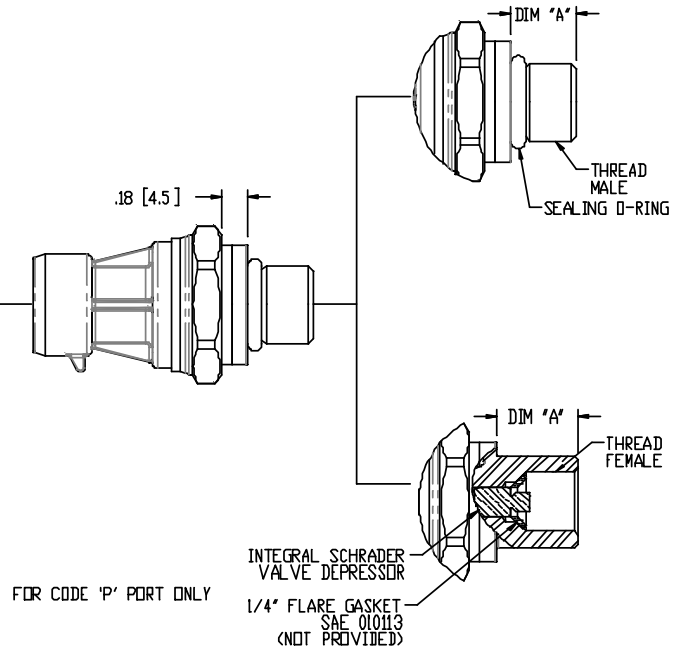
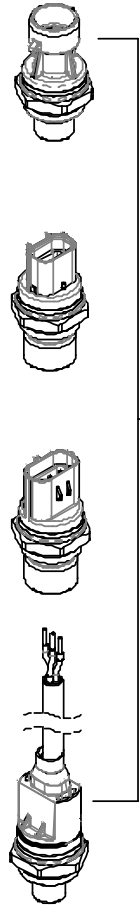
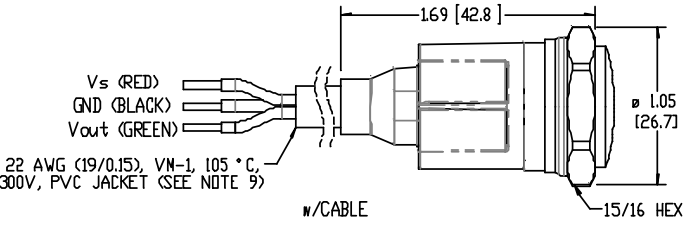
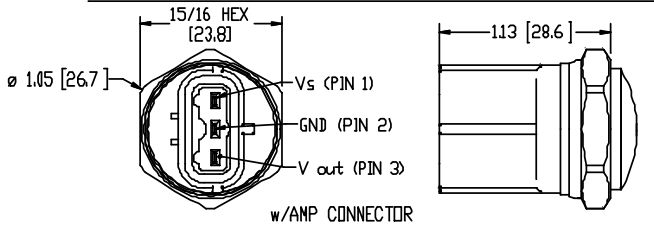
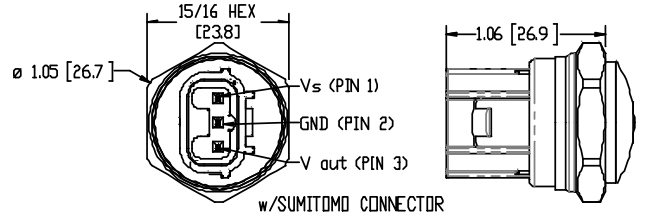
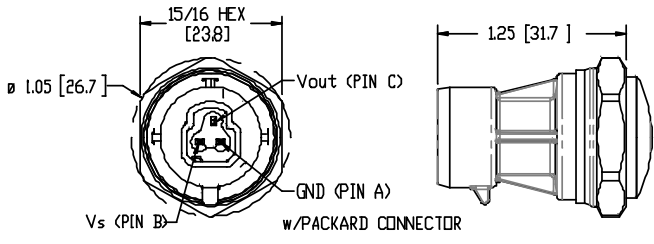
Do not apply torque to the connector housing of transducer.

To ensure proper environmental sealing and electrical connection when using a mating connector, follow the manufacturer's installation guidelines.

M7100

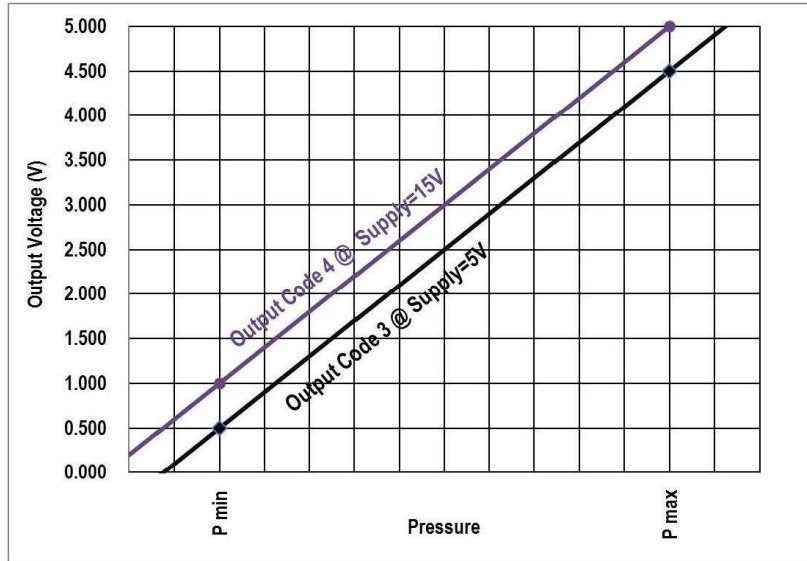
Pressure Transducer

DIMENSIONS



CHARTS

Pressure Transfer Function



Output Type vs. Supply

| | | |
|------------------------|---------------|------------|
| Output Type (Code) | 3 | 4 |
| Supply Voltage | 4.75 ~ 5.25V* | 8 ~ 32V |
| Supply Current | 4.0 ~ 10.0mA | |
| Output Voltage | 0.5 ~ 4.5V* | 1.0 ~ 5.0V |
| Reverse Voltage | 16V | |
| Overvoltage Protection | 16V | 32V |

* Output ratiometric to supply voltage

ORDERING INFORMATION

| M71 | 3 | 8 | - | 100P | G | - | 2 | 0 | 0000 |
|-------|---|--|---|--|--|---|---|-------------------|------|
| Model | Output Type | Connection Type | - | Pressure Range | Pressure Type | - | Pressure Port | Port Material | |
| M71 | 3 = 0.5 – 4.5V Ratiometric 4 = 1.0 – 5.0V | 1 = Cable 2 ft 2 = Cable 4 ft 3 = Cable 10 ft 7 = AMP070 Connector 8 = Sumitomo HV040 Connector 9 = Packard Connector M = Cable 1 m N = Cable 2 m P = Cable 5 m R = Cable 10 m | - | 150P 200P 300P 500P 01KP 1K5P 03KP 05KP 7K5P 10KP | 010B 014B 020B 035B 070B 100B 200B 350B 500B 700B | - | G = Gage 2 = G1/4, BS5380, Male 4 = 7/16-20 UNF, SAE J1926-2, Male, w/ O-Ring 5 = 1/4-18 NPT Male 6 = 1/8-27 NPT Male E = R1/4-19, Male F = G1/4-19, BS5380, Female P = 7/16-20 UNF Female w/ Integral Valve Depressor; 1/4 Flare Gasket SAE J513C, Copper Q = M10 x 1.0, ISO 6149-2, Male S = M12 x 1.5, ISO 6149-2, Male G = M14 x 1.5, ISO 6149-2 Male U = G1/4, DIN 3852-E Male | 0 = 17-4PH ST STL | |

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