

## M5200 Industrial Pressure Transducer



- CE Compliant
- Wide Temperature Range
- Compact
- Variety of Pressure Ports and Electrical Configurations
- Optional Stainless Steel Snubber
- Weatherproof
- Gage, Sealed, Compound Gage

### DESCRIPTION

The M5200 pressure transducers from the Microfused™ line of MEAS, with their modular design, offer maximum flexibility for different configurations. This latest series sets a new price performance standard for demanding commercial and heavy industrial applications. This series is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids.

The pressure port material is machined from a solid piece of 17-4 PH stainless steel. Its durability is excellent and there are no o-rings, welds or organics exposed to the pressure media. The M5200 is weatherproof and exceeds the latest heavy industrial CE requirements including surge protection. The circuit is protected from reverse wiring at input and short circuit at output.

This product is geared to the OEM customer for low to high volumes. MEAS stands ready to provide a custom design of the M5200 where the volume and application warrants. Additional configurations not listed are either available or possible. Please inquire for further information.

### FEATURES

- Heavy Industrial CE Approval
- 10 V/m EMI Protection
- Reverse Polarity Protection on Input
- Short Circuit Protection on Output
- $\pm 0.25\%$  Accuracy
- $\pm 1.0\%$  Total Error Band
- Compact Outline
- $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  Operating Temperature
- Weatherproof

### APPLICATIONS

- Industrial Process Control and Monitoring
- Advanced HVAC Systems
- Refrigeration Systems
- Automotive Test Stands
- Off-Road Vehicles
- Pumps and Compressors
- Hydraulic/Pneumatic Systems
- Agriculture Equipment
- Energy Generation and Management

### STANDARD RANGES

| Range (psi) | Gage | Sealed | Compound | Range (Bar) | Gage | Sealed | Compound |
|-------------|------|--------|----------|-------------|------|--------|----------|
| 0 to 50     | •    |        | •        | 0 to 3.5    | •    |        | •        |
| 0 to 100    | •    |        | •        | 0 to 007    | •    |        | •        |
| 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 03k    | •    | •      | •        | 0 to 200    | •    | •      | •        |
| 0 to 05k    | •    | •      | •        | 0 to 350    | •    | •      | •        |
| 0 to 07k    | •    | •      | •        | 0 to 500    | •    | •      | •        |
| 0 to 10k    | •    | •      | •        | 0 to 700    | •    | •      | •        |
| 0 to 15k    | •    | •      | •        | 0 to 01k    | •    | •      | •        |

Intermediate ranges available upon request.

# M5200 Industrial Pressure Transducer

## PERFORMANCE SPECIFICATIONS

**Ambient Temperature: 25°C (unless otherwise specified)**

| PARAMETERS                                                          | MIN                                                                    | TYP                            | MAX     | UNITS       | NOTES                              |
|---------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------|---------|-------------|------------------------------------|
| Accuracy<br>(combined non linearity, hysteresis, and repeatability) | -0.25                                                                  |                                | 0.25    | %F.S.       | BFSL                               |
| Isolation, Body to any Lead                                         | 100                                                                    |                                |         | MΩ          | @500VDC                            |
| Dielectric Strength                                                 |                                                                        |                                | 2       | mA          | @500VAC, 1min                      |
| Pressure Cycles                                                     | 1.00E+6                                                                |                                |         | 0~FS Cycles |                                    |
| Proof Pressure                                                      | 2X                                                                     |                                |         | Rated       |                                    |
| Burst Pressure                                                      | 5X                                                                     |                                | 20k psi | Rated       |                                    |
| Long Term Stability (1 year)                                        | -0.25                                                                  |                                | 0.25    | %F.S.       |                                    |
| Total Error Band                                                    | -1.0                                                                   |                                | 1.0     | %F.S.       | Over compensated temperature range |
| Compensated Temperature                                             | -20                                                                    |                                | +85     | °C          |                                    |
| Operating Temperature                                               | -40                                                                    |                                | +125    | °C          | Except cable 105°C max             |
| Storage Temperature                                                 | -40                                                                    |                                | +125    | °C          |                                    |
| Load Resistance (R <sub>L</sub> )                                   |                                                                        | R <sub>L</sub> > 100k          |         | Ω           | Voltage Output                     |
| Load Resistance (R <sub>L</sub> )                                   |                                                                        | < (Supply Voltage -9V) / 0.02A |         | Ω           | Current Output                     |
| Current Consumption                                                 |                                                                        | 5                              |         | mA          | Voltage Output                     |
| Rise Time (10% to 90%)                                              | <2ms (Voltage Output); <3ms (Current Output); Without Snubber          |                                |         |             |                                    |
| Wetted Material                                                     | 17-4PH Port, 316 Stainless Steel Snubber                               |                                |         |             |                                    |
| Gage Pressure Reference Vent                                        | Under 1k psi, customer to ensure venting through mating connector      |                                |         |             |                                    |
| Bandwidth                                                           | DC to 1KHz (Typical)                                                   |                                |         |             |                                    |
| Shock                                                               | 50g, 11msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A |                                |         |             |                                    |
| Vibration                                                           | ±20g, MIL-STD-810C, Procedure 514.2, Fig 514.2-2, Curve L              |                                |         |             |                                    |

For custom configurations, consult factory.

### Notes

All configurations are built with supply voltage reverse and output short-circuit protections.

### CE Compliance

EN 55022 Emissions Class A & B

IEC 61000-4-2 Electrostatic Discharge Immunity (8kV contact/15kV air)

IEC 61000-4-3 Radiated, Radio-Frequency Electromagnetic Field Immunity (10V/m, 80M-1GHz)

IEC 61000-4-4 Electrical Fast Transient Immunity (1kV)

IEC 61000-4-5 Surge Immunity (V+ to V-: ±2KV/42Ω; L to Case: ±1KV/12Ω; V- to V<sub>0</sub>: ±1KV/42Ω)

IEC 61000-4-6 Immunity to Conducted Disturbances Induced by Radio Frequency

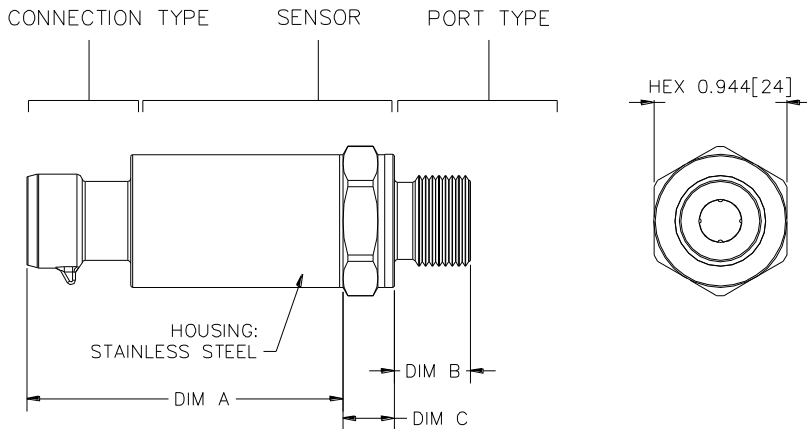
Fields (150K~80MHz, 10V level for voltage output models, 3V level for current output model)

IEC 61000-4-9 Pulse Magnetic Field Immunity (100A/m peak)

For all CE compliance tests, max allowed output deviation ±1.5 %F.S.

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## DIMENSIONS [mm]



| CODE | CONNECTION TYPE     | DIM A       |
|------|---------------------|-------------|
| 1    | CABLE 2 FT          | 2.19 [55.6] |
| E    | CABLE 3 FT          | 2.19 [55.6] |
| 2    | CABLE 4 FT          | 2.19 [55.6] |
| 3    | CABLE 10 FT         | 2.19 [55.6] |
| 4    | PACKARD CONNECTOR A | 2.25 [57.2] |
| 5    | BAYONET CONNECTOR   | 2.11 [53.6] |
| 6    | FORM C              | 1.95 [49.5] |
| 7    | FORM A              | 2.10 [53.3] |
| 9    | PACKARD CONNECTOR B | 2.25 [57.2] |
| D    | M12 CONNECTOR       | 1.95 [49.5] |
| M    | CABLE 1 M           | 2.19 [55.6] |
| N    | CABLE 2 M           | 2.19 [55.6] |
| P    | CABLE 5 M           | 2.19 [55.6] |
| R    | CABLE 10 M          | 2.19 [55.6] |
| A    | AMP CONNECTOR       | 2.10 [53.3] |
| S    | SUMITOMO CONNECTOR  | 1.95 [49.5] |
| C    | 1/2" NPT CONDUIT    | 2.10 [53.3] |

|                                                                                         |                           |
|-----------------------------------------------------------------------------------------|---------------------------|
| <p>FORM C</p> <p>INCLUDE MATING CONNECTOR AND SEAL.      MATING CONNECTOR AND SEAL.</p> |                           |
| <p>CABLE</p>                                                                            | <p>FORM A</p>             |
| <p>BAYONET CONNECTOR</p>                                                                | <p>1/2" NPT CONDUIT</p>   |
| <p>PACKARD CONNECTOR</p>                                                                | <p>SUMITOMO CONNECTOR</p> |
| <p>M12 CONNECTOR</p>                                                                    | <p>AMP/TE CONNECTOR</p>   |

| PRESSURE PORT TYPE |                                                                                   |                 |                  |
|--------------------|-----------------------------------------------------------------------------------|-----------------|------------------|
| CODE               | PORT                                                                              | DIM B           | DIM C REF.       |
| 2                  | 1/4-19 BSPP                                                                       | 0.47<br>[11.94] | 0.366<br>[9.3]   |
| 3                  | G3/8 JIS B2351                                                                    | 0.54<br>[13.72] | 0.366<br>[9.3]   |
| 4                  | 7/16-20UNF MALE SAE J514<br>STRAIGHT THREAD                                       | 0.45<br>[11.43] | 0.366<br>[9.3]   |
| 5                  | 1/4-18 NPT                                                                        | 0.60<br>[15.24] | 0.366<br>[9.3]   |
| 6                  | 1/8-27 NPT                                                                        | 0.39<br>[9.91]  | 0.366<br>[9.3]   |
| B                  | G1/4 JIS B2351                                                                    | 0.47<br>[11.94] | 0.366<br>[9.3]   |
| E                  | 1/4-19 BSPT                                                                       | 0.50<br>[12.7]  | 0.366<br>[9.3]   |
| F                  | 1/4-19 BSPP FEMALE                                                                | 0.70<br>[17.78] | 0.366<br>[9.3]   |
| P                  | 7/16-20UNF FEMALE SAE<br>J514 STRAIGHT THREAD<br>WITH INTEGRAL VALVE<br>DEPRESSOR | 0.43<br>[10.92] | 0.506<br>[12.85] |
| Q                  | M10 x 1.0 mm ISO 6149-2                                                           | 0.42<br>[10.67] | 0.366<br>[9.3]   |
| S                  | M12 x 1.5 mm ISO 6149-2                                                           | 0.53<br>[13.46] | 0.366<br>[9.3]   |
| U                  | G/14 DIN 3852 FORM E<br>GASKET DIN3869-14 NBR                                     | 0.47<br>[11.94] | 0.445<br>[11.3]  |
| W                  | M20 x 1.5 mm ISO 6149-2                                                           | 0.70<br>[17.78] | 0.366<br>[9.3]   |
| G                  | M14 x 1.5 mm ISO 6149-2                                                           | 0.40<br>[10.16] | 0.366<br>[9.3]   |

**Note:** For Sumitomo and 1/2" NPT Conduit, contact factory for additional information.

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## WIRING

| Current Output Wiring |         |         |          |                           |
|-----------------------|---------|---------|----------|---------------------------|
| CONNECTION            | +SUPPLY | -SUPPLY | NC. PINS | P REF VENT                |
| Bayonet               | A       | B       | C,D,E    | F                         |
| Packard, A            | A       | B       | C        | Hole Through Connector    |
| Packard, B            | B       | A       | C        | Hole Through Connector    |
| Cable                 | RED     | BLK     |          | In Cable                  |
| 1/2NPT CONDUIT        | RED     | BLK     |          | In Cable                  |
| M12                   | 1       | 3       | 2,4      | Hole Through Connector    |
| AMP/TE                | 1       | 2       | 3        | Hole Through Connector    |
| FORM C                | 1       | 2       | 3,4      | Threads Through Connector |
| FORM A                | 1       | 2       | 3,4      | Threads Through Connector |
| Sumitomo              | 1       | 2       | 3        | Hole Through Connector    |

| Voltage Output Wiring |         |         |        |          |                           |
|-----------------------|---------|---------|--------|----------|---------------------------|
| CONNECTION            | +SUPPLY | +OUTPUT | COMMON | NC. PINS | P REF VENT                |
| Bayonet               | A       | B       | C      | D,E      | F                         |
| Packard, A            | A       | C       | B      |          | Hole Through Connector    |
| Packard, B            | B       | C       | A      |          | Hole Through Connector    |
| Cable                 | RED     | WHT     | BLK    |          | In Cable                  |
| 1/2NPT CONDUIT        | RED     | WHT     | BLK    |          | In Cable                  |
| M12                   | 1       | 2       | 3      | 4        | Hole Through Connector    |
| AMP/TE                | 1       | 3       | 2      |          | Hole Through Connector    |
| FORM C                | 1       | 2       | 3      | 4        | Threads Through Connector |
| FORM A                | 1       | 3       | 2      | 4        | Threads Through Connector |
| Sumitomo              | 1       | 3       | 2      |          | Hole Through Connector    |

**Notes:**

1. NC pins are reserved for factory use only. **Customers should not use these connections.**
2. For cable connection, the drain wire is internally terminated to pressure port.

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## CONNECTION TYPES

| CONNECTION TYPES                          |                                                   |                                                             |                                                         |                                                                                                             |
|-------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| CONNECTION                                | DESCRIPTION                                       | MATING HOUSING<br>P/N                                       | MATING TERMINAL<br>P/N                                  | RUBBER SEAL<br>P/N                                                                                          |
| <b>Bayonet</b>                            | BAYONET PTH-10-6P OR EQUIV                        | PT06A-10-6S MIL-C-26482                                     | -                                                       | -                                                                                                           |
| <b>Packard</b>                            | 3-PIN METRI-PACK 150                              | 12078090                                                    | 12103881, QTY 3                                         | -                                                                                                           |
| <b>Cable &amp;<br/>1/2NPT<br/>Conduit</b> | 4-WIRE, 22 AWG, SHIELDED,<br>PVC JACKET, 105 DEGC | -                                                           | -                                                       | -                                                                                                           |
| <b>M12</b>                                | BINDER SERIES 713,<br>09 0439 387 04 OR EQUIV     | 4-POS FEMALE CONNECTOR                                      | -                                                       | -                                                                                                           |
| <b>AMP/TE</b>                             | AMP / TE 3-PIN ECONOSEAL<br>J SERIES              | 174357-2 & 174358-7                                         | 171630-1 (AWG 20~24)<br>171662-1 (AWG 16~20)<br>QTY 3   | 172746-1 (AWG 20~24)<br>172888-2 (AWG 16~20)<br>QTY 3                                                       |
| <b>FORM C</b>                             | INDUSTRIAL STANDARD 9.4MM<br>FORM C               | HIRSCHMANN 933 024-100, OR,<br>ATAM KD046000B7 (SEAL INCL.) | -                                                       | HIRSCHMANN 730 185-002                                                                                      |
| <b>FORM A</b>                             | DIN EN 175 301-803-A 18MM                         | HIRSCHMANN 931 969-100, OR,<br>ATAM KA245000B4 (SEAL INCL.) | -                                                       | HIRSCHMANN 730 801-002                                                                                      |
| <b>Sumitomo</b>                           | SUMITOMO 3-PIN HV040                              | 6189-6907                                                   | 8100-3067 (AWG 20~22)<br>8100-3068 (AWG 16~18)<br>QTY 3 | 7165-1075 (INS. DIA 1.1~1.6MM)<br>7176-0621 (INS. DIA 1.6~1.9MM)<br>7165-0622 (INS. DIA 1.8~2.2MM)<br>QTY 3 |

**Note:** Transmitter of gage pressure type requires vent to atmosphere on the pressure reference side. This is accomplished via cable from the transmitter (the end of the cable should be terminated to clean and dry area) or through the customer mating connector/cable assembly which has internal vent path.

## WEATHERPROOF

| WEATHER-PROOF RATING  |           |
|-----------------------|-----------|
| CONNECTION            | IP CODE   |
| <b>Bayonet</b>        | IP67      |
| <b>Packard</b>        | IP66      |
| <b>Cable</b>          | IP67      |
| <b>1/2NPT CONDUIT</b> | IP67      |
| <b>M12</b>            | IP67      |
| <b>AMP/TE</b>         | NOT RATED |
| <b>FORM C</b>         | IP65      |
| <b>FORM A</b>         | IP65      |
| <b>Sumitomo</b>       | IP67      |

**Note:** Weatherproof ratings are met when the mating connectors are installed properly and the cable termination is to dry and clean area.

## OUTPUTS

| CODE     | OUTPUT SIGNAL             | SUPPLY VOLTAGE                |
|----------|---------------------------|-------------------------------|
| <b>3</b> | 0.5 - 4.5V<br>RATIOMETRIC | 5 ± 0.25V<br>PROTECTED to 30V |
| <b>4</b> | 1 - 5V                    | 8 - 30V                       |
| <b>5</b> | 4 - 20mA                  | 9 - 30V                       |
| <b>6</b> | 0 - 5V                    | 8 - 30V                       |
| <b>7</b> | 0 - 10V                   | 12 - 30V                      |
| <b>8</b> | 1 - 6V                    | 8 - 30V                       |
| <b>9</b> | 0.5 - 4.5V                | 5 - 30V                       |

# M5200 Industrial Pressure Transducer

## ORDERING INFORMATION

|       |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                   |   |               |                                                                       |    |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |                                                                                      |                                                                                      |                                                       |
|-------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------|-----------------------------------------------------------------------|----|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------|
| M52   | 3                                                                                                                        | 1                                                                                                                                                                                                                                                                                                                                                 | - | 0             | 0                                                                     | 00 | 0                                       | 5                                                                                                                                                                                                                                                                                                                                                                                                                                         | - | 100P                                                                                 |                                                                                      | G                                                     |
| Model | Output Signal                                                                                                            | Connection Type                                                                                                                                                                                                                                                                                                                                   | - | Port Material | Snubber                                                               | 00 | Label                                   | Pressure Port                                                                                                                                                                                                                                                                                                                                                                                                                             | - | Pressure Range                                                                       |                                                                                      | Pressure Type                                         |
| M52   | 3 = 0.5 – 4.5V<br>Ratiometric<br>4 = 1 – 5V<br>5 = 4 – 20mA<br>6 = 0 – 5V<br>7 = 0 – 10V<br>8 = 1 – 6V<br>9 = 0.5 – 4.5V | 1 = Cable 2 ft<br>E = Cable 3 ft<br>2 = Cable 4 ft<br>3 = Cable 10 ft<br>4 = Packard Connector A<br>5 = Bayonet Connector<br>6 = Form C<br>7 = Form A<br>9 = Packard Connector B<br>D = M12 Connector<br>M = Cable 1 m<br>N = Cable 2 m<br>P = Cable 5 m<br>R = Cable 10 m<br>A = Amp Connector<br>S = Sumitomo Connector<br>C = 1/2" NPT Conduit | - | 0 = 17-4PH    | 0 = No Snubber<br>1 = Oxygen Clean B40.1 Level IV<br>2 = With Snubber | 00 | 0 = Adhesive Label<br>1 = Laser Marking | 2 = 1/4-19 BSPP<br>3 = G3/8 JIS B2351<br>4 = 7/16-20UNF Male SAE J514 Straight Thread<br>5 = 1/4-18 NPT<br>6 = 1/8-27NPT<br>B = G1/4 JIS B2351<br>E = 1/4-19 BSPT<br>F = 1/4-19 BSPP Female<br>P = 7/16-20UNF Female SAE J514 with Integral Valve Depressor<br>Q = M10 x 1.0 mm ISO 6149-2<br>S = M12 x 1.5 mm ISO 6149-2<br>U = G1/4 DIN 3852 Form E Gasket DIN3869-14 NBR<br>W = M20 x 1.5 mm ISO 6149-2<br>G = M14 x 1.5 mm ISO 6149-2 | - | 050P<br>100P<br>200P<br>300P<br>500P<br>01KP<br>03KP<br>05KP<br>07KP<br>10KP<br>15KP | 3.5B<br>007B<br>010B<br>020B<br>035B<br>070B<br>200B<br>350B<br>500B<br>700B<br>01KB | G = Gage<br>S = Sealed (≥1k psi)<br>C = Compound Gage |

**Note:** For Sumitomo and 1/2" NPT Conduit, contact factory for additional information.

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