

U5100 High Accuracy Pressure Sensor



- EMI Protected per CE Compliance
- Wide Temperature Range
- High Accuracy
- CE Compliance



DESCRIPTION

The U5100 series pressure transducers from the UltraStable™ line of MEAS, set a new price performance standard for demanding commercial and heavy industrial applications where high accuracy is required. 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 U5100 uses MEAS' UltraStable™ technology that provides stability over a wide temperature range, performance previously available only in much higher priced sensors. The UltraStable™ technology employs a silicon-based strain gage isolated by an oil-filled capsule and a stainless steel diaphragm. The high stability rating is provided through MEMS-based technology and obtains excellent repeatability and minimal hysteresis. The U5100 exceeds the latest heavy industrial CE requirements including surge protection, and is over voltage protected in both positive and reverse polarity. The 100% 316L media isolation covers all but the most corrosive environments. Custom OEM designs available including exotic metals and various ports and output options. The durability is excellent. The U5100 exceeds the latest heavy industrial CE requirements including surge protection, and is over voltage protected to 16Vdc in both positive and reverse polarity.

This product is geared to the OEM customer who uses medium to high volumes. The standard version is suitable for many applications, but the dedicated design team at our Transducer Engineering Center stands ready to provide a semi-custom design where the volume and application warrants.

FEATURES

- Heavy Industrial CE Approval
- 100 V/m EMI Protection
- 0.75% Total Error Band
- Compact Outline
- -40°C to +125°C Operating Temperature Range

APPLICATIONS

- Advanced HVAC Controllers
- Refrigeration Systems
- Automotive Test Stands
- Industrial Process Control
- Pumps and Compressors
- Hydraulic/Pneumatic Systems
- Agriculture Equipment
- Energy and Water Management

U5100 High Accuracy Pressure Sensor

STANDARD RANGES

| Range | psig | psia | Range | Barg | Bara |
|-----------|------|------|------------|------|------|
| *0 to 1 | • | • | *0 to 0.07 | • | • |
| 0 to 5 | • | • | 0 to 0.35 | • | • |
| 0 to 15 | • | • | 0 to 1 | • | • |
| 0 to 30 | • | • | 0 to 2 | • | • |
| 0 to 50 | • | • | 0 to 3.5 | • | • |
| 0 to 100 | • | • | 0 to 7 | • | • |
| 0 to 300 | • | • | 0 to 20 | • | • |
| 0 to 500 | • | • | 0 to 35 | • | • |
| 0 to 1k | • | • | 0 to 70 | • | • |
| 0 to 1.5k | • | • | 0 to 100 | • | • |
| 0 to 3k | • | • | 0 to 200 | • | • |
| 0 to 5k | • | • | 0 to 350 | • | • |

| DIN Range | Barg | Bara |
|-----------|------|------|
| 0 to 1 | • | • |
| 0 to 1.6 | • | • |
| 0 to 2.5 | • | • |
| 0 to 4 | • | • |
| 0 to 6 | • | • |
| 0 to 10 | • | • |
| 0 to 16 | • | • |
| 0 to 25 | • | • |
| 0 to 40 | • | • |
| 0 to 60 | • | • |
| 0 to 100 | • | • |
| 0 to 160 | • | • |
| 0 to 250 | • | • |

*Gage only for 1psi

Intermediate ranges available upon request.

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PERFORMANCE SPECIFICATIONS

Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS | MIN | TYP | MAX | UNITS | NOTES |
|---|--|-----|------|------------|-------------------------------|
| Accuracy | -0.5 | | 0.5 | %F.S. BFSL | 001psiG @ 25°C |
| (combined non linearity, hysteresis, and repeatability) | -0.25 | | 0.25 | %F.S. BFSL | 005psi @ 25°C |
| | -0.1 | | 0.1 | %F.S. BFSL | >005psi, <01Kpsi @ 25°C |
| | -0.25 | | 0.25 | %F.S. BFSL | ≥01Kpsi, ≤05Kpsi @ 25°C |
| | | | | | |
| Isolation, Body to any Lead | 1 | | | MΩ | @ 25Vdc |
| Pressure Cycles | 1.00E+6 | | | FS Cycles | |
| Proof Pressure | | | 3X | Rated | |
| Burst Pressure | | | 4X | Rated | |
| Long Term Stability (1 year) | -0.25 | | 0.25 | %F.S. | 001psiG |
| | -0.1 | | 0.1 | %F.S. | ≥005psi, ≤05Kpsi |
| | | | | | |
| Total Error Band (over compensated range) | -1.25 | | 1.25 | %F.S. | 001psiG |
| | -1 | | 1 | %F.S. | 005psi |
| | -0.75 | | 0.75 | %F.S. | >005psi, ≤05Kpsi |
| Compensated Temperature | 0 | | 50 | °C | 001psiG |
| | 0 | | 70 | °C | 005psi |
| | -20 | | +85 | °C | ≥005psi, ≤05Kpsi |
| Operating Temperature | -40 | | +125 | °C | 001psi |
| | -40 | | +125 | °C | ≥005psi, ≤05Kpsi, Cable 105°C |
| Storage Temperature | -40 | | +125 | °C | Cable 105°C |
| Load Resistance (R _L) | R _L > 100k | | | Ω | Voltage Output |
| Bandwidth | DC to 1KHz (Typical) | | | | |
| Shock (11ms) | 50g, 11msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A | | | | |
| Vibration (20 to 200kHz) | ±20g, MIL-STD-810C, Procedure 514.2, Fig 514.2-2, Curve L | | | | |

For custom configurations, consult factory.

CE Compliance

- EN55022 Emissions Class A & B
- IEC61000-4-2 Electrostatic Discharge Immunity (6kV contact/8kV air)
- IEC61000-4-3 EM Field Immunity (30V/m)
- IEC61000-4-4 Electrical Fast Transient Immunity (1kV)
- IEC61000-4-5 Surge (1kV)
- IEC61000-4-6 Conducted Immunity (10V)
- IEC61000-4-9 Pulsed Magnetic Field Immunity (100A/m)

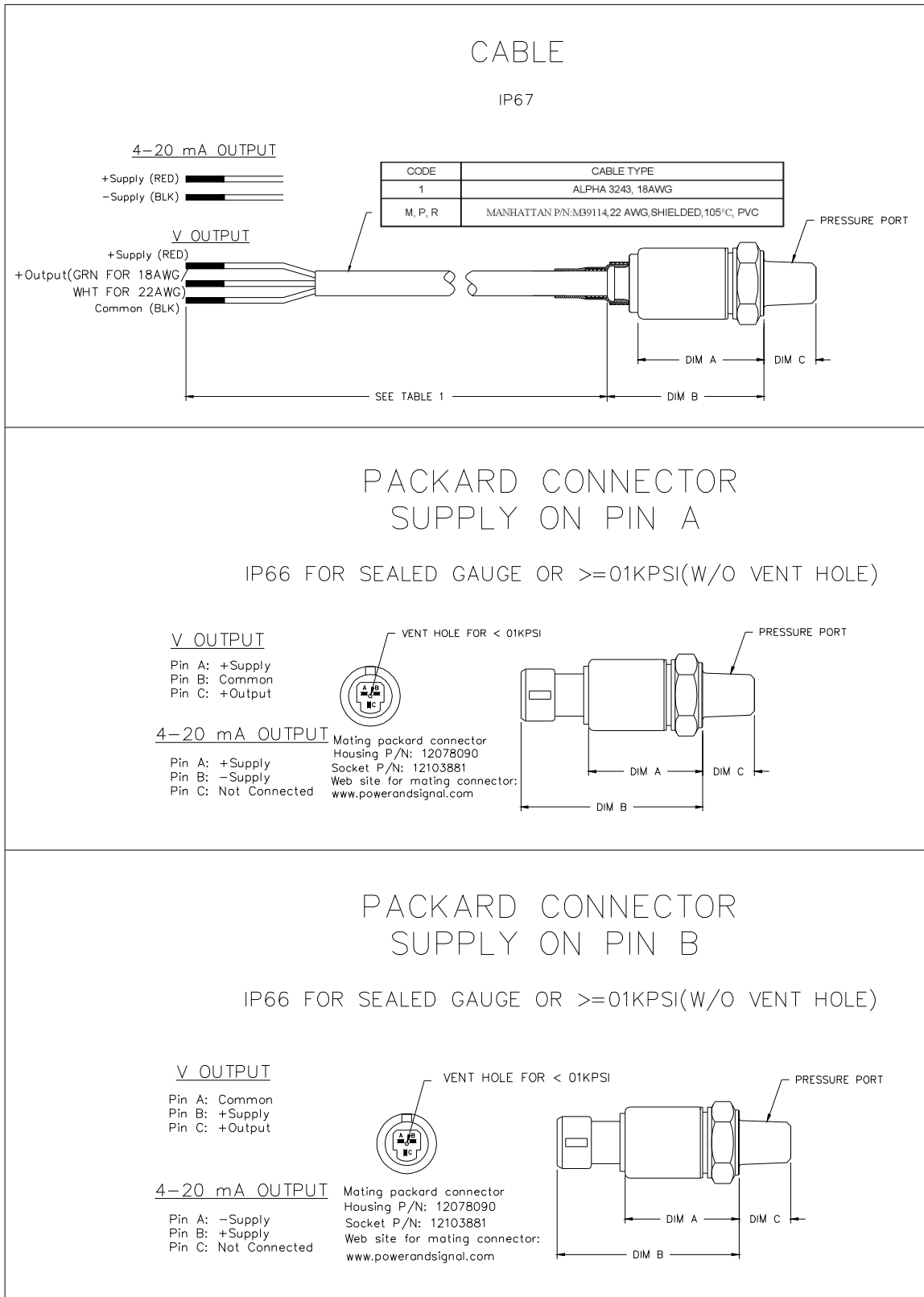
U5100 High Accuracy Pressure Sensor

| CONNECTION/ PRESSURE REF | | | |
|--------------------------|---|-------|---------------|
| 1 | CABLE 2 FEET ALPHA#3243,18AWG | DIM A | 2.02 [51.3] |
| | | DIM B | 2.48 [63.0] |
| 4 | PACKARD CONNECTOR SUPPLY ON PIN A | DIM A | 2.01 [51.1] |
| | | DIM B | 2.83 [71.9] |
| 5 | BENDIX PTIH-10-6P CONNECTOR | DIM A | 2.05 [52.1] |
| | | DIM B | 2.48 [63.0] |
| 6 | HIRSCHMANN CONNECTOR DIN 43650 FORM C | DIM A | 1.87 [47.5] |
| | | DIM B | 2.35 [59.7] |
| 7 | HIRSCHMANN CONNECTOR DIN 43650 FORM A | DIM A | 2.08 [52.8] |
| | | DIM B | 2.55 [64.8] |
| 9 | PACKARD CONNECTOR SUPPLY ON PIN B | DIM A | 2.01 [51.1] |
| | | DIM B | 2.83 [71.9] |
| D | M12 CONNECTOR | DIM A | 1.98 [50.2] |
| | | DIM B | 2.53 [64.2] |
| M | CABLE 1 METER MANHATTAN#M39114,22AWG | DIM A | 2.02 [51.3] |
| | | DIM B | 2.48 [63.0] |
| R | CABLE 10 METER MANHATTAN#M39114,22AWG | DIM A | 2.02 [51.3] |
| | | DIM B | 2.48 [63.0] |

| PRESSURE PORT | | |
|---------------|---|--------------|
| CODE | PORT | DIM C |
| 2 | 1/4-19 BSPP | 0.46 [11.56] |
| 4 | 7/16-20 UNF MALE SAE J514 STRAIGHT THREAD O-RING BUNA-N 70SH -904 ID 8.92mm X W 1.83mm | 0.33 [8.38] |
| 5 | 1/4-18 NPT | 0.50 [12.57] |
| F | 1/4-19 BSPP FEMALE | 0.70 [17.78] |
| P | 7/16-20 UNF FEMALE SAE J514 STRAIGHT HREAD | 0.36 [9.14] |
| Q | M10 X 1.0 mm | 0.39 [10.01] |
| S | M12 X 1.5 mm | TBD |
| U | G1/4 DIN3852 FORM E GASKET DIN3869-14 NBR | 0.47 [12.01] |

U5100 High Accuracy Pressure Sensor

DIMENSIONS



U5100 High Accuracy Pressure Sensor

BENDIX PTIH-10-6P CONNECTOR

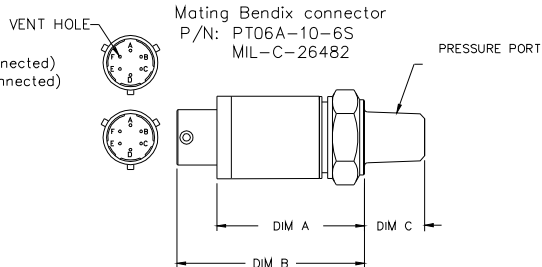
IP66 FOR SEALED GAUGE OR ≥ 01 KPSI(W/O VENT HOLE)

4-20 mA OUTPUT

Positive supply Pin A and B (internally connected)
Negative supply Pin C and D (internally connected)
Pin E: Not Connected
Pin F: Vent (Pulled out for < 01 KPSI)

V OUTPUT

Pin A: +Supply
Pin B: +Output
Pin C: Common
Pin D: Common
Pin E: Not Connected
Pin F: Vent (Pulled out for < 01 KPSI)



HIRSCHMANN CONNECTOR DIN 43650 FORM C

IP65 FOR SEALED GAUGE OR ≥ 01 KPSI(W/O VENT HOLE)

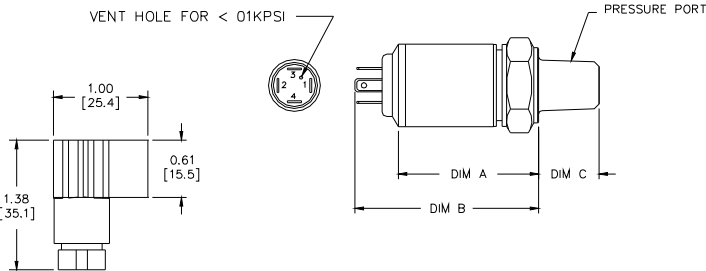
P/N 933-114-100

V OUTPUT

Pin 1: +Supply
Pin 2: +Output
Pin 3: Common
Pin 4: Case Ground

4-20 mA OUTPUT

Pin 1: +Supply
Pin 2: -Supply
Pin 3: Not Connected
Pin 4: Case Ground



MATING CONNECTOR
P/N: 933 024-100 (Mating Connector Supplied)

GASKET SUPPLIED WITH TRANSDUCER

HIRSCHMANN MATING
CONNECTOR DIN 43650 FORM C

HIRSCHMANN CONNECTOR DIN 43650 FORM A

P/N: 933 376-100

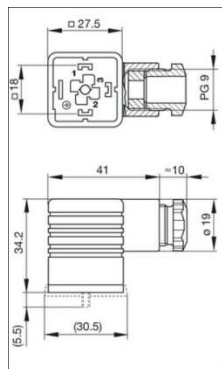
IP65 FOR SEALED GAUGE OR ≥ 01 KPSI(W/O VENT HOLE)

V OUTPUT

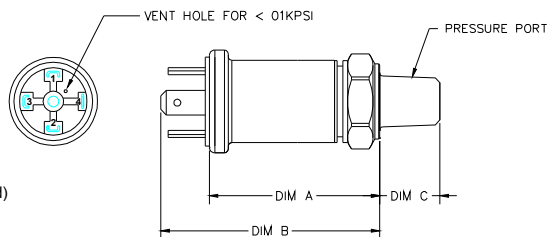
Pin 1: +Supply
Pin 2: Common
Pin 3: +Output
Pin 4: Case Ground

4-20 mA OUTPUT

Pin 1: +Supply
Pin 2: -Supply
Pin 3: Not Connected
Pin 4: Case Ground



MATING CONNECTOR
Dim Unit: MM (Mating Connector Not Supplied)
P/N: 931 969-100
Gasket(NBR) P/N: 730 801-002
Knurled Screw P/N: 732 574-001
HIRSCHMANN MATING
CONNECTOR DIN 43650 FORM A



U5100 High Accuracy Pressure Sensor

M12 CONNECTOR

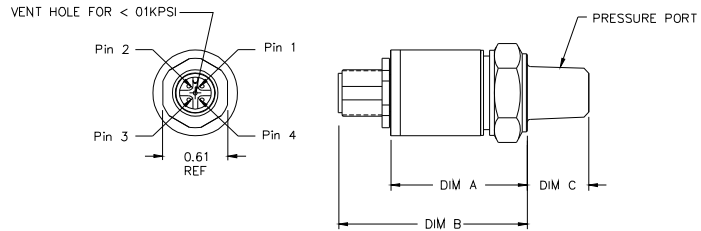
IP67 FOR SEALED GAUGE OR $\geq 01\text{KPSI}$ (W/O VENT HOLE)

V OUTPUT

Pin 1: +Supply
Pin 2: +Output
Pin 3: Common
Pin 4: Not Connected

4-20 mA OUTPUT

Pin 1: +Supply
Pin 2: Not Connected
Pin 3: -Supply
Pin 4: Not Connected



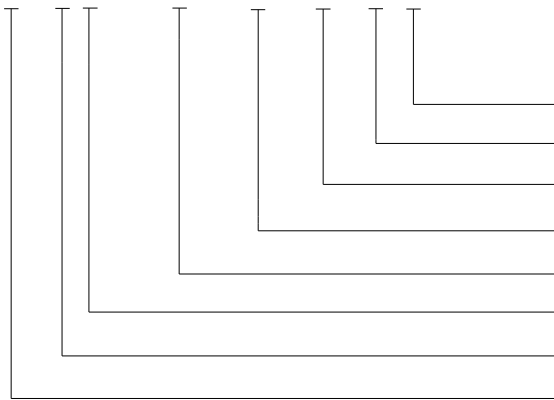
U5100 High Accuracy Pressure Sensor

OUTPUT OPTIONS

| Code | Output | Supply (V) |
|------|--------------------------|----------------------|
| 3 | 0.5 – 4.5V (ratiometric) | 5 ± 0.25 Ratiometric |
| 4 | 1 – 5V | 8 – 30 |
| 5 | 4 – 20mA | 9 – 30 |
| 6 | 0 – 5V | 8 – 30 |
| 7 | 0 – 10V | 15 – 30 |
| 8 | 1 – 6V | 8 – 30 |

ORDERING INFORMATION

U5131-000005-300PG



Type (G = Gage, A = Absolute, S = Sealed)
 Units (P = psi, B = Bar)
 Pressure Range (See Pressure Range Table)
 Pressure Port (See Pressure Port Options Table)
 Specials (nnnnn = Custom Drawing)
 Connection (See Electrical Connection Options Table)
 Output (See Output Options Table)
 Model

NORTH AMERICA

Measurement Specialties
 45738 Northport Loop West
 Fremont, CA 94538
 Tel: 1-800-767-1888
 Fax: 1-510-498-1578
 Sales: pfg.cs.amer@meas-spec.com

EUROPE

Measurement Specialties
 (Europe), Ltd.
 26 Rue des Dames
 78340 Les Clayes-sous-Bois, France
 Tel: +33 (0) 130 79 33 00
 Fax: +33 (0) 134 81 03 59
 Sales: pfg.cs.emea@meas-spec.com

ASIA

Measurement Specialties
 (China), Ltd.
 No. 26 Langshan Road
 Shenzhen High-Tech Park (North)
 Nanshan District, Shenzhen 518057
 China
 Tel: +86 755 3330 5088
 Fax: +86 755 3330 5099
 Sales: pfg.cs.asia@meas-spec.com

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