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

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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)

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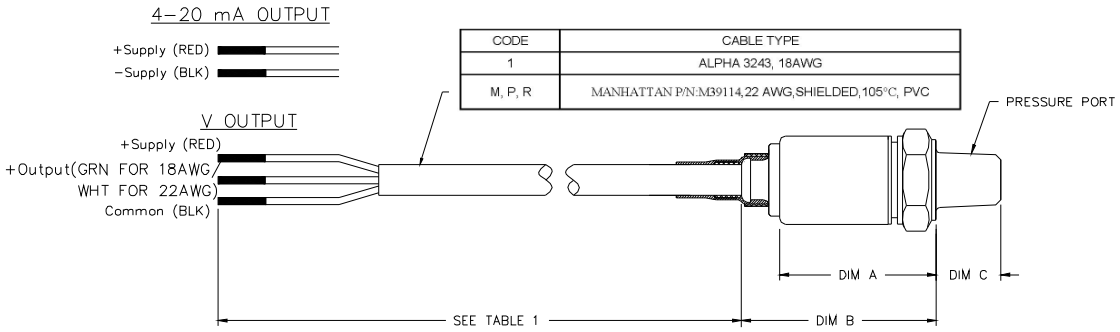
CONNECTION/ PRESSURE REF			
1	CABLE 2 FEET ALPHA#3243,18AWG	DIM A	2.02 [51.3]
		DIM B	2.48 [63.0]
4	PACKARD CONNECTOR SUPPLY ON PIN A	DIM A	2.01 [51.1]
		DIM B	2.83 [71.9]
5	BENDIX PTIH-10-6P CONNECTOR	DIM A	2.05 [52.1]
		DIM B	2.48 [63.0]
6	HIRSCHMANN CONNECTOR DIN 43650 FORM C	DIM A	1.87 [47.5]
		DIM 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]

DIMENSIONS

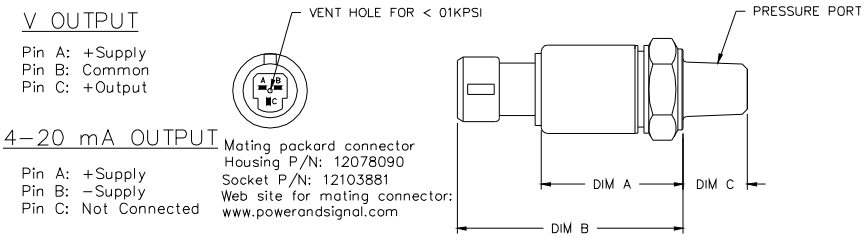
CABLE

IP67



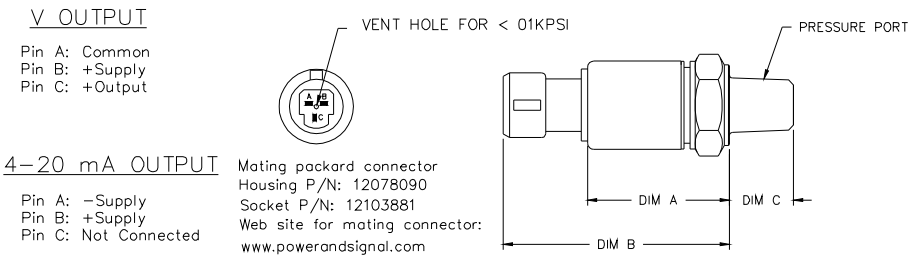
PACKARD CONNECTOR SUPPLY ON PIN A

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



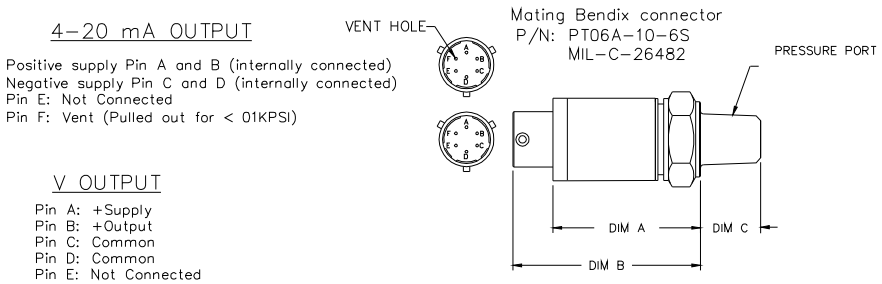
PACKARD CONNECTOR SUPPLY ON PIN B

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



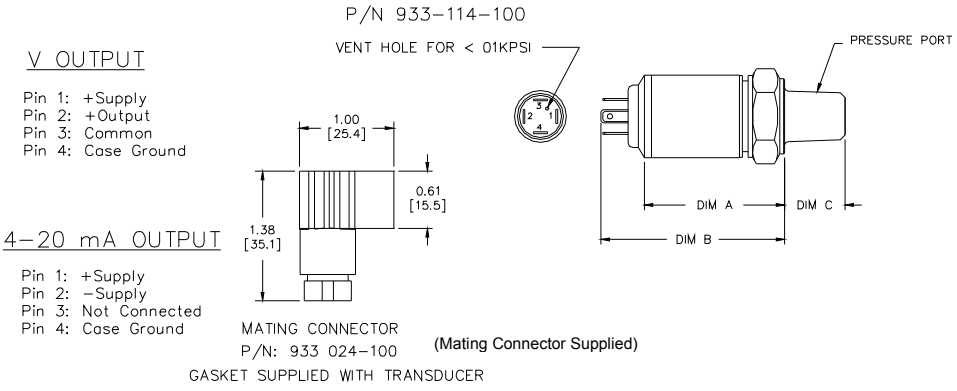
BENDIX PTIH-10-6P CONNECTOR

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

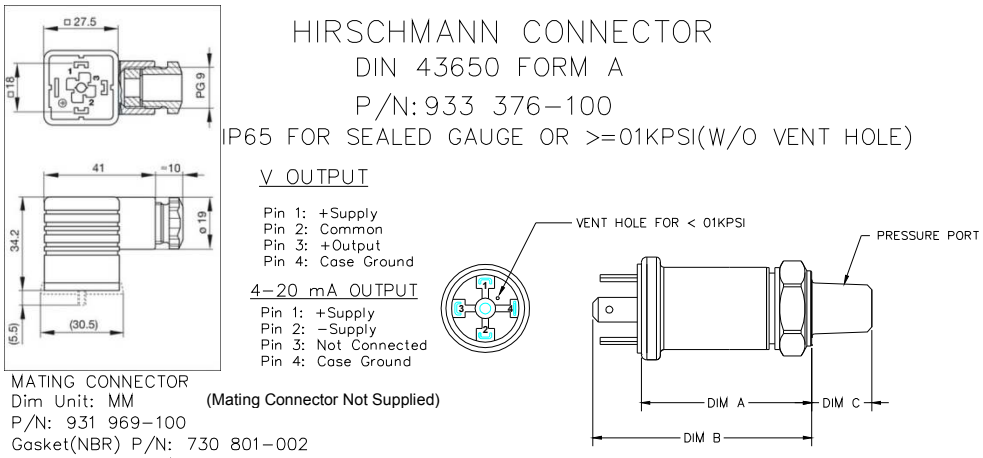


HIRSCHMANN CONNECTOR DIN 43650 FORM C

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



HIRSCHMANN CONNECTOR
DIN 43650 FORM A
P/N: 933 376-100
IP65 FOR SEALED GAUGE OR >=01KPSI(W/O VENT HOLE)



M12 CONNECTOR

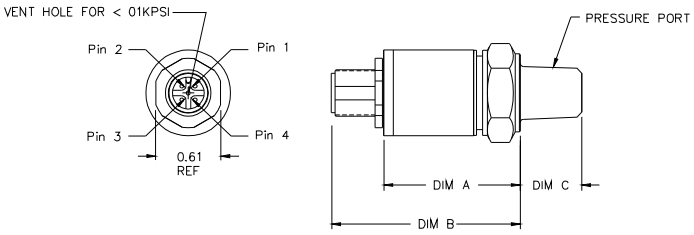
IP67 FOR SEALED GAUGE OR >=01KPSI(W/O VENT HOLE)

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



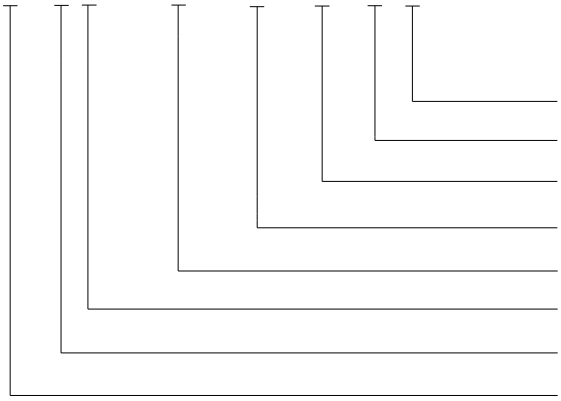
U5100 High Accuracy Pressure Sensor

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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Mouser Electronics

Authorized Distributor

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Measurement Specialties:

U5181-000005-050PG U5131-000005-100PG U5131-000005-015PA U5131-000005-030PG U5131-000005-100PA
U5131-000005-015PG U5181-000005-015PG U5131-000005-050PG U5131-000005-030PA U5181-000005-100PA
U5181-000005-030PG U5181-000005-030PA U5181-000005-015PA U5181-000005-100PG