U7100

Pressure Transducer

SPECIFICATIONS

- **Performance standard for on and off highway engine & vehicle OEMs**
- **Rugged for heavy equipment and outdoor use such as HVAC refrigeration systems**
- **Designed specifically for high volume applications**
- **Stainless steel wetted surfaces**
- **Low pressure ranges**
- **CE Approved**
- **UL Certified**
- **Gage, absolute, sealed gage**

The U7100 pressure transducer from the UltraStable 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 constructed of 316L stainless steel and there are no internal O-rings or organics exposed to the pressure media. Having excellent durability, it is available with a variety of leak-proof, all metal pressure connections. The U7100 is an automotive grade pressure transducer with hermetic pressure ports and an integral electrical connector with standard pressure ranges from 0 to 15, up to 150psi (10Bar).

This pressure sensor exceeds the latest industrial CE requirements and includes automotive electronics requirements such as surge protection, as well as being overvoltage protected to 16Vdc in both positive and reverse polarity.

This product is geared to the OEM customer for low to mid volumes. MEAS stands ready to provide a custom design of the U5700 where the volume and application warrants. Additional configurations not listed are either available or possible. Please inquire for further information.

FEATURES

- Hermetic Pressure Ports
- Integral Electrical Connector
- Survives High Vibration
- ±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	Absolute	Sealed Gage
0 to 015	0 to 001	•		
0 to 030	0 to 002	•	•	•
0 to 050	0 to 3.5	•	•	•
0 to 100	0 to 007	•	•	•
0 to 150	0 to 010	•	•	•

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	-40		+125	°C	
Insulation Resistance (500Vdc)	100			MΩ	4
Short Circuit Protected		Yes			
Output Noise @ 1kHZ		10		mV	
Response Time (10% to 90%)		1.0		ms	
Long Term Stability	-0.25		0.25	%Span/Year	

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			3X	Rated	5
Pressure Burst			4X	Rated	6
Pressure Cycle	10M			Cycles	
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

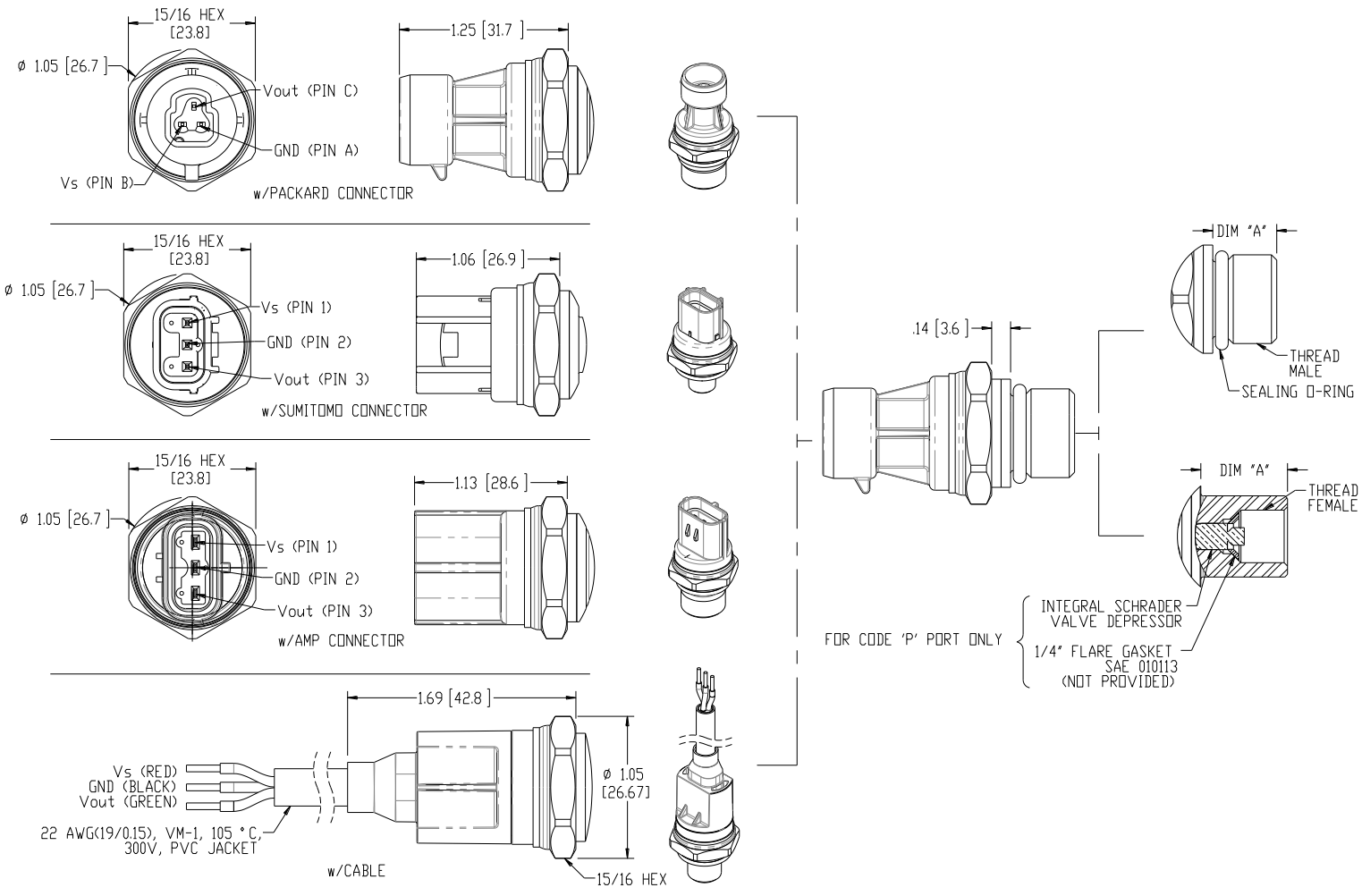
Pressure Ports		
Pressure Port Options	**Dim A**	**Tightening Torque (Nm)**
2 = G1/4, BS5380, Male	.43 [11.0]	30~35
4 = 7-16-20 UNF, SAE J1926-2, Male, w/ O-Ring	.36 [9.1]	18~20
5 = 1/4-18 NPT Male	.56 [14.2]	2~3 T.F.F.T.
6 = 1/8-27 NPT Male	.38 [9.7]	2~3 T.F.F.T.
E = R1/4-19, Male	.56 [14.2]	2~3 T.F.F.T.
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	*powerandsignal.com*	0.003 – 0.005 mm Sn	Housing P/N: 12065287 Terminals P/N: 12103881
Sumitomo HV040 Series	*sumitomokenki.com*	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	*te.com*	0.0004 mm Au over 0.0013 mm Ni	Housing P/N: 174357 Terminals P/N: 171630

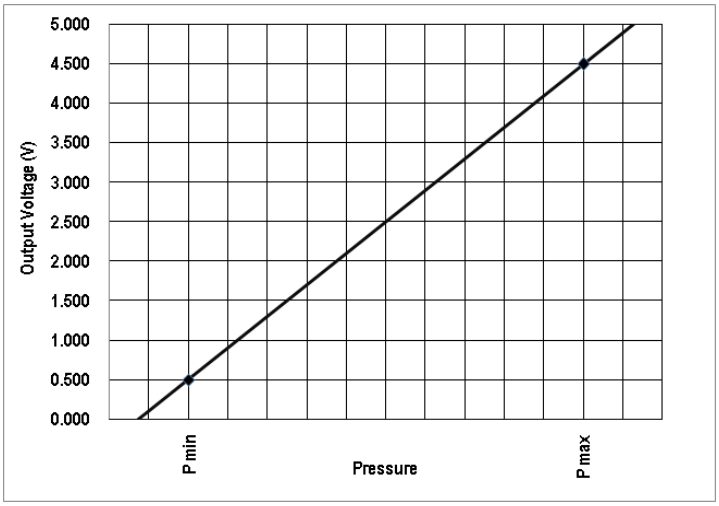
Notes: Connector
Do not apply torque to the connector housing of transducer.
To ensure proper environmental sealing and electrical connection when using a mating connector, follow the manufacturer's installation guidelines.

DIMENSIONS


15/16 HEX
[23.8]
ø 1.05 [26.7]
Vout (PIN C)
GND (PIN A)
Vs (PIN B)
1.25 [31.7]
w/PACKARD CONNECTOR
15/16 HEX
[23.8]
ø 1.05 [26.7]
Vs (PIN 1)
GND (PIN 2)
Vout (PIN 3)
1.06 [26.9]
w/SUMITOMO CONNECTOR
15/16 HEX
[23.8]
ø 1.05 [26.7]
Vs (PIN 1)
GND (PIN 2)
Vout (PIN 3)
1.13 [28.6]
w/AMP CONNECTOR
1.69 [42.8]
Vs (RED)
GND (BLACK)
Vout (GREEN)
22 AWG(19/0.15), VM-1, 105 °C,
300V, PVC JACKET
ø 1.05
[26.67]
15/16 HEX
w/CABLE
.14 [3.6]
DIM "A"
THREAD
MALE
SEALING O-RING
DIM "A"
THREAD
FEMALE
FOR CODE 'P' PORT ONLY
INTEGRAL SCHRADER
VALVE DEPRESSOR
1/4" FLARE GASKET
SAE 010113
(NOT PROVIDED)

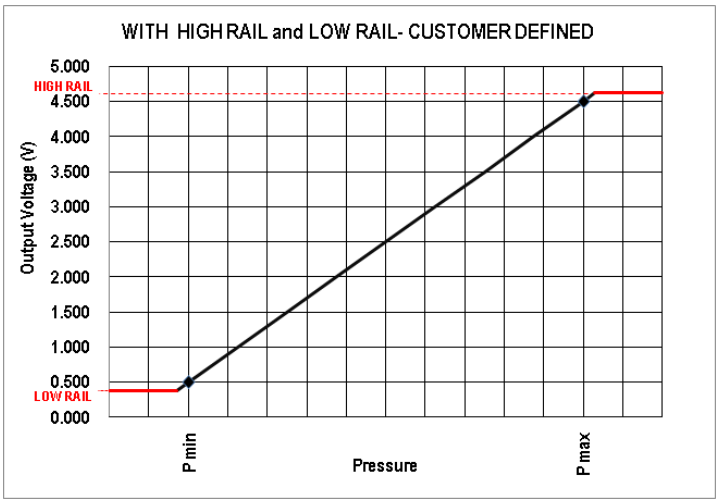
CHARTS

Pressure Transfer Function
Supply = 5V



$$\text{Output Voltage} = \left[\frac{0.8}{(P_{max}-P_{min})} \times (\text{Pressure applied} - P_{min}) + 0.1\right] \times \text{Supply Voltage}$$

OEM Custom Calibration
High/Low Rail values can be adjusted by circuit



Output Type Vs. Supply

Output Type (Code)	3
Supply Voltage	4.75 ~ 5.25V*
Supply Current	4.0 ~ 10.0mA
Output Voltage	0.5 ~ 4.5V*
Reverse Voltage	16V
Overvoltage Protection	16V

* Output Ratiometric to Supply Voltage

ORDERING INFORMATION

U71 3 1 – 100P A - P W 0000

Output	
Code	**Type**
3	0.5 – 4.5V

Cable/Connector	
Code	**Connection Type**
1	Cable, 2 feet LG
2	Cable, 4 feet LG
3	Cable, 10 feet LG
7	AMP070 connector
8	Sumitomo HV040 Connector
9	Packard Connector
M	Cable, 1 meter LG
N	Cable, 2 meter LG
P	Cable, 5 meter LG
R	Cable, 10 meter LG

Pressure Range	
psi	bar
015P*	001B*
030P	002B
050P	3.5B
100P	007B
150P	010B

*Gage Only

Port Material	
W	316L Stainless Steel

Pressure Port Type		
Code	**Port**	**Dim "A"**
2	G1/4, BS5380, Male	.43[11.0]
4	7/16-20 UNF Male SAE J1926-2, Male, w/ O-ring	.43[11.0]
5	1/4-18 NPT Male	.56[14.2]
6	1/8-27 NPT Male	.38[9.7]
E	R1/4-19, Male	.56[14.2]
F	G1/4-19, BS5380, Female	.64[16.3]
P	7/16-20 UNF Female w/ Integral Valve Depressor: 1/4 Flare Gasket SAE J513C, Copper	.64[16.3]
Q	M10x1.0, ISO 6149-2, Male	.37[9.5]
S	M12x1.5, ISO 6149-2, Male	.43[11.0]
G	M14x1.5, ISO 6149-2, Male	.43[11.0]
U	G1/4, DIN 3852-E, Male	.47[12.0]

Pressure Type	
A	Absolute
S	Sealed Gauge
G	Gage