MSP100

Pressure Transducer

RoHS

SPECIFICATIONS

- **Analog and 14-Bit Digital Output Available**
- **Small Size**
- **Low Cost**
- **316L Stainless Steel or 17-4PH**

The MSP100 pressure transducer provides stainless steel media compatibility in a low cost, small profile solution. This sensor has no silicone gel or polymeric media isolation methods to fail in contact with water or other harsh chemicals. Pressure connections are provided via an o-ring seal. The device is available in both analog and 14-bit digital output with a port material of either 316L SS or 17-4PH. Additional custom port options available to meet your application needs. The small size vs. performance and media compatibility are provided through solid-state technology.

FEATURES

- Single Piece Construction; No Welds, No Oil
- 100% Stainless Steel Isolation for Harsh Chemical Measurement
- Low Cost
- 14-Bit Digital Output or Analog

APPLICATIONS

- Beverage Dispensing Systems
- Water Pressure or Flow Monitor
- Medical Equipment
- Industrial Equipment/Hydraulics
- Tank Level Measurement
- Manifold Pressure

STANDARD RANGES

Range	psig
0 to 100	•
0 to 150	•
0 to 250	•
0 to 500	•

PERFORMANCE SPECIFICATIONS (ANALOG, OUTPUT SIGNAL "2")

Ambient Temperature: 25°C (unless otherwise specified)

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	4.75	5.00	5.25	Vdc	
Zero Offset	-2		2	mV	Ratiometric
Span	98	100	102	mV	Ratiometric
Current Consumption			2	mA	
Proof Pressure	1.5X			Rated	
Burst Pressure	3X			Rated	
Endurance	1E+6			0~FS Cycles	
Accuracy	-0.5	±0.2	0.5	%Span	RSS of BFSL: Linearity, Hysteresis, Repeatability
Long Term Stability		0.25		%Span	
Minimum Resistance between Transducer and Body	50			MΩ	@250Vdc
Thermal Zero Shift	-2.0		2.0	%Span	Reference to 25°C over Compensated Temperature
Thermal Span Shift	-2.0		2.0	%Span	Reference to 25°C over Compensated Temperature
Compensation Temperature	0		45	°C	
Operating Temperature	0		55	°C	
Response Time (10% to 90%)		0.1		mS	
Vibration	±20g MIL-STD-810C, Procedure 514.2, Figure 514.2-2, Curve L				
Shock	50g, 11 msec half sine shock per mil standard 202F. Method 213B, Condition A				

For custom configurations, consult factory.

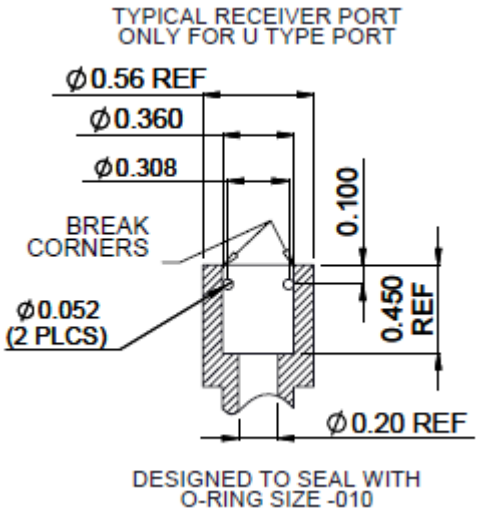
PERFORMANCE SPECIFICATIONS (DIGITAL, OUTPUT SIGNAL "J" OR "S")

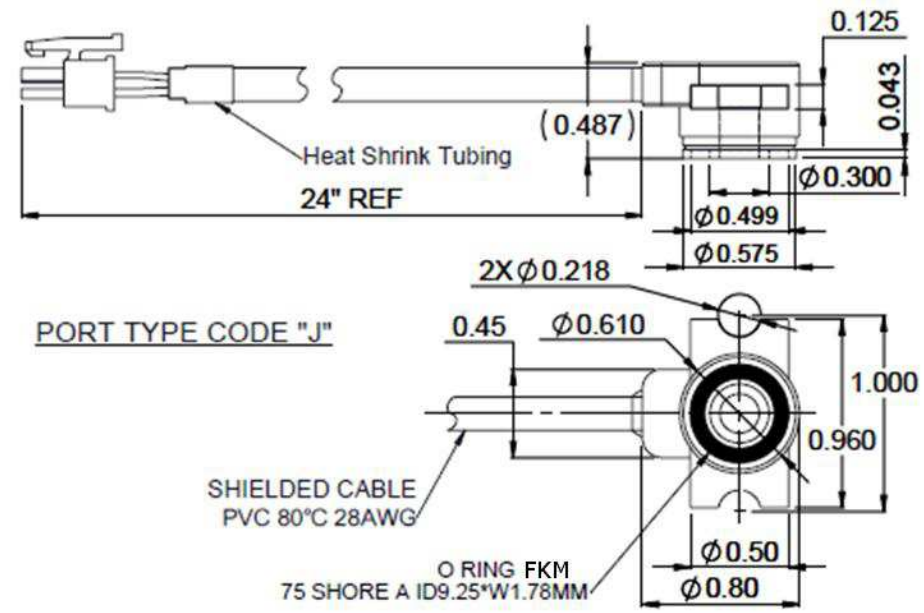
Ambient Temperature: 25°C (unless otherwise specified)

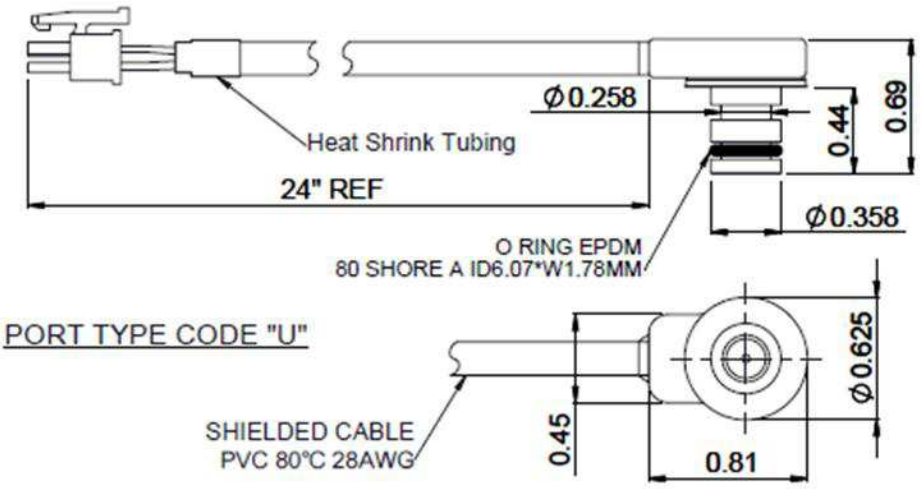
PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	2.7		5.0	Vdc	
Output at Zero Pressure	720	1000	1280	Count	
Output at FS Pressure	14,720	15,000	15,280	Count	
Current Consumption			3	mA	
Proof Pressure	1.5X			Rated	
Burst Pressure	3X			Rated	
Endurance	1E+6			0~FS Cycles	
Accuracy	-0.5		0.5	%Span	RSS of BFSL: Linearity, Hysteresis, Repeatability
A/D Resolution		14		Bit	
Operating Temperature	0		55	°C	@250Vdc
Operating Temperature Output	512		1075	Count	
Temperature Accuracy	-3		3	°C	Pressure Port Temperature
Thermal Zero Shift	-2.0		2.0	%F.S.	Reference to 25°C over Compensated Temperature
Thermal Span Shift	-2.0		2.0	%F.S.	Reference to 25°C over Compensated Temperature
Compensated Temperature	0		45	°C	
Response Time (10% to 90%)			3	mS @ 4MHz	Without Sleep Mode
Response Time (10% to 90%)			8.4	mS @ 4MHz	With Sleep Mode
Vibration	±20g MIL-STD-810C, Procedure 514.2, Figure 514.2-2, Curve L				
Shock	50g, 11 msec half sine shock per mil standard 202F. Method 213B, Condition A				

For custom configurations, consult factory.

DIMENSIONS


TYPICAL RECEIVER PORT
ONLY FOR U TYPE PORT
Ø0.56 REF
Ø0.360
Ø0.308
BREAK
CORNERS
0.100
0.450
REF
Ø0.052
(2 PLCS)
Ø0.20 REF
DESIGNED TO SEAL WITH
O-RING SIZE -010


0.125
0.043
(0.487)
Heat Shrink Tubing
24" REF
Ø0.300
Ø0.499
Ø0.575
2XØ0.218
PORT TYPE CODE "J"
0.45
Ø0.610
1.000
0.960
SHIELDED CABLE
PVC 80°C 28AWG
O RING FKM
75 SHORE A ID9.25*W1.78MM
Ø0.50
Ø0.80


Ø0.258
0.44
0.69
Heat Shrink Tubing
24" REF
Ø0.358
O RING EPDM
80 SHORE A ID6.07*W1.78MM
PORT TYPE CODE "U"
Ø0.625
SHIELDED CABLE
PVC 80°C 28AWG
0.45
0.81

WIRING

Analog mV Output Wiring

Connection	PIN 1	PIN 2	PIN 3	PIN 4
Molex 4pin Connector PCB Mount	+SUPPLY	+OUTPUT	-OUTPUT	-SUPPLY

4 PINS MOLEX CONNECTOR
HOUSING:MOLEX 430-25-040
PIN:MOLEX 430-30-004

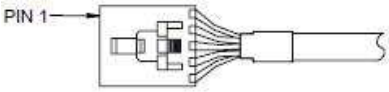
Digital I²C Output Wiring

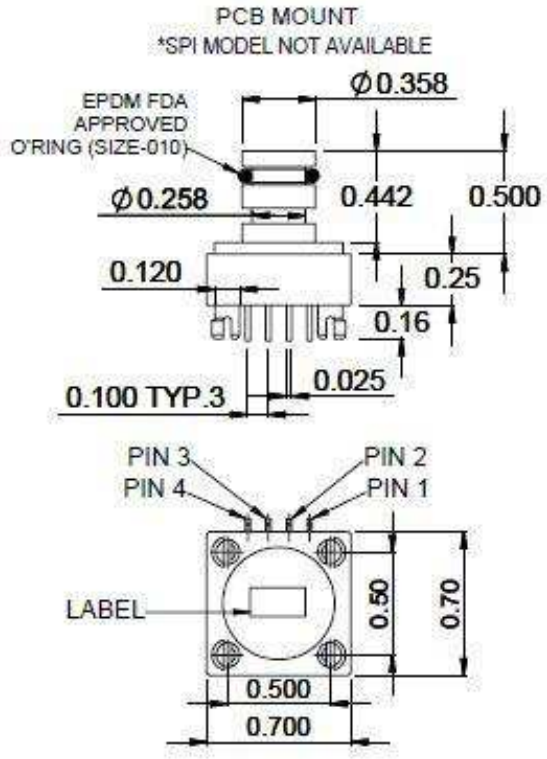
Connection	PIN 1	PIN 2	PIN 3	PIN 4
Molex 4pin Connector PCB Mount	VDD	GND	SDA	SCL

Digital SPI Output Wiring

Connection	PIN 1	PIN 2	PIN 3	PIN 4	PIN5
Molex 5pin Connector PCB Mount	VDD	GND	SDA	SCLK	SS

5 PINS MOLEX CONNECTOR
HOUSING:MOLEX 50-57-9405
PIN:MOLEX 16-02-0082

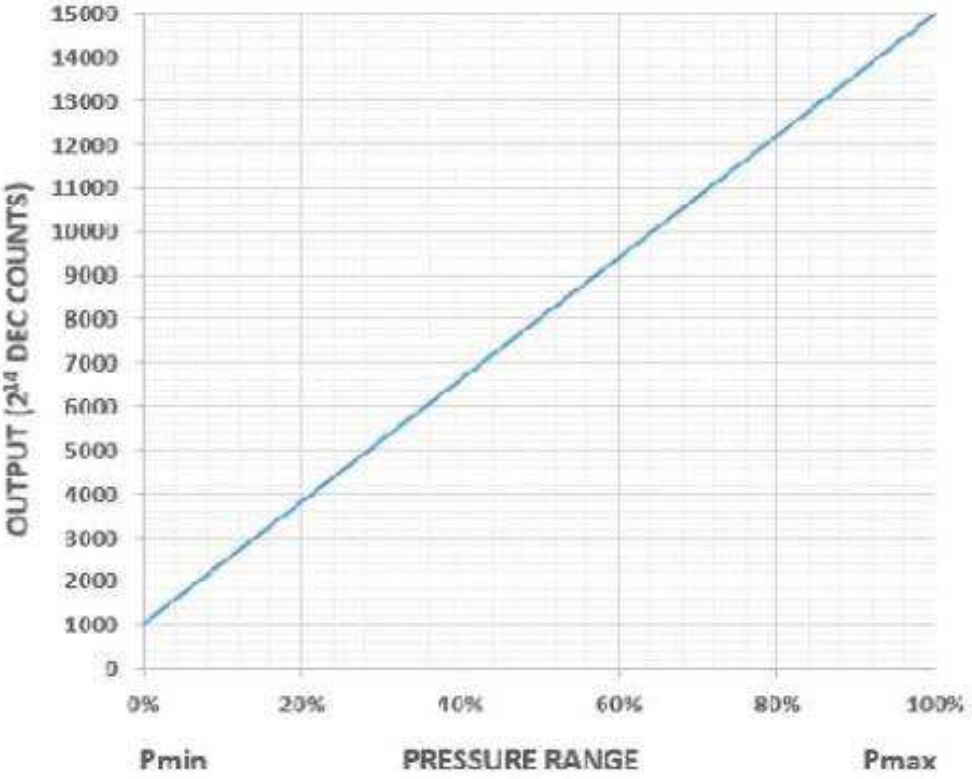




SENSOR OUTPUT

SENSOR OUTPUT AT SIGNIFICANT PERCENTAGES

% OUTPUT	DIGITAL COUNTS (DECIMAL)	DIGITAL COUNTS (HEX)
0%	1000	0 × 3E8
5%	1700	0 × 6A4
10%	2400	0 × 960
50%	8000	0 × 1F40
90%	13600	0 × 3520
95%	14300	0 × 37DC
100%	15000	0 × 3A98

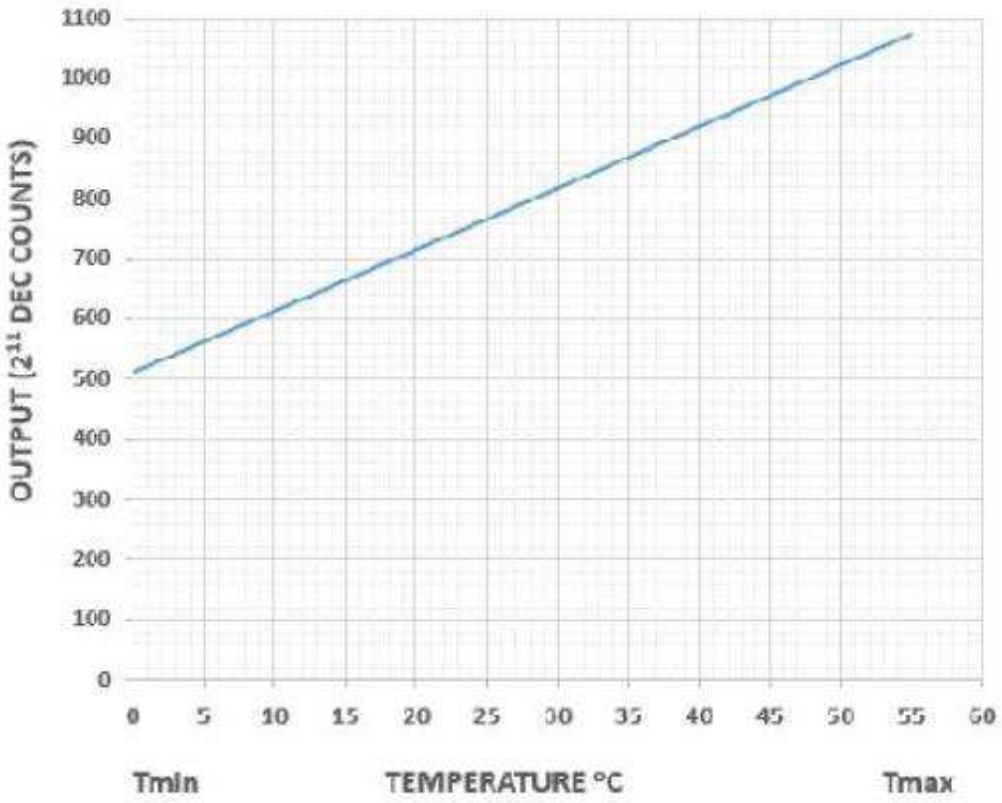


$$\text{OUTPUT (DECIMAL COUNTS)} = \frac{15000\text{-}1000}{\text{Pmax - Pmin}} \times (\text{Papplied - Pmin}) + 1000$$

TEMPERATURE OUTPUT

TEMPERATURE OUTPUT

OUTPUT °C	DIGITAL COUNTS (DECIMAL)	DIGITAL COUNTS (HEX)
0	512	0 × 200
10	614	1 × 266
25	767	2 × 2FF
40	921	3 × 399
55	1075	4 × 433



$$\text{OUTPUT (DECIMAL COUNTS)} = \frac{(\text{OUTPUT°C} + 50°\text{C}) \times 2048}{150°\text{C} - (-50°\text{C})}$$

OUTPUT SIGNAL

Code	Output Signal	Supply Voltage (V)
2	0 – 100mV	5 ± 0.25
J	I^2C	2.7 – 5.0
S	SPI	2.7 – 5.0

ORDERING INFORMATION

MS1	J	1	-	0	00	0	0	J	-	100P	G
Model	**Output Signal**	**Connection Type**	**-**	**Port Material**	**00**	**Sleep Mode (Digital Only)**	**Address for I^2C (Digital Only)**	**Port Type**	**-**	**Pressure Range**	**Pressure Type**
MS1	**2** = 0 - 100mV **J** = I^2C **S** = SPI	**1** = Cable 2 ft with Molex Connector **A** = PCB Mount (If SPI, PCB Mount not available)	-	**0** = 316L SS **1** = 17-4PH	**00**	**0** = Without Sleep Mode **1** = With Sleep Mode (If Analog, use “0”)	**0** = 0x28H **1** = 0x36H **2** = 0x46H **3** = 0x48H **4** = 0x51H (If Analog or SPI, use “0”)	**J** = O-Ring Face Seal **U** = O-Ring Radial Seal	-	**100P** **150P** **250P** **500P**	**G** = Gauge

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