

# MSP 610

## High Accuracy Stainless Steel Pressure Transducer

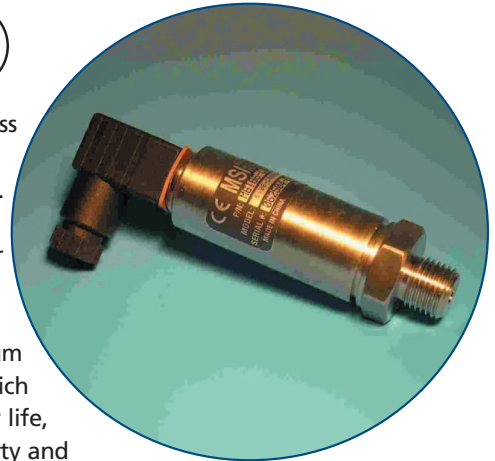


The **MSP-610** series pressure transducers from the Microfused™ line of MSI Sensors, a division of Measurement Specialties Inc., sets a price-performance standard for low cost, high volume, commercial and industrial applications.

The MSP is suitable for measurements of media compatible with 17-4PH or 316L stainless steel. The measuring diaphragm, cavity and pressure port are machined from a solid piece of 17-4PH (standard) stainless steel. This allows for a leak-proof, no cavities all metal sealed pressure system allowing for more than 10 million pressure cycles without failure. The MSP-610 is an EMI/RFI enhanced unit that meets the latest CE requirements including surge protection. This CE standard allows the transducer to be used outdoors and with long cables.

MSI Sensors' proprietary Microfused™ technology, derived from demanding aerospace applications, employs micro machined silicon piezo resistive strain gages fused with high

temperature glass to a stainless steel diaphragm. Thanks to the high gage factor of the piezo resistive gages a thicker diaphragm can be used, which ensures a longer life, improved linearity and durability as well as high long term stability.



The **MSP-610** offers a wide selection of standard pressure ranges and electrical outputs.

The modular design is adaptable to an infinite number of port variations. Standard outputs include .5V to 4.5V ratiometric, 1V to 5V regulated and 4 to 20mA current loop.

### FEATURES

- ◆ 0.25% Accuracy
- ◆ 1.0% TEB (Total Error Band)
- ◆ -40 to 125° C Operating Temperature
- ◆ One piece stainless steel construction
- ◆ Wide variety of pressure ranges and electrical outputs
- ◆ Broad assortment of standard connectors and ports
- ◆ Microfused™ sensing technology
- ◆ Custom versions available
- ◆ Ranges starting from 50 psi FS
- ◆ High field Interchangeability
- ◆ Meet latest CE standards, including surge

### APPLICATIONS

- ◆ Refrigeration and HVAC controls
- ◆ Process control
- ◆ Marine systems
- ◆ Industrial machinery
- ◆ Pumps & compressors
- ◆ Train brakes
- ◆ Agriculture equipment
- ◆ Offroad/mobile Equipment

### CE compliant per the following specifications:

IEC 55022 (Class A and B)	IEC 61000-4-4 (1kV)
IEC 61000-4-2 {8kV/8kV (Air/Contact)}	IEC 61000-4-5 (1kV)
IEC 61000-4-3 (30 V/m)	IEC 61000-4-6

### environmental performance

Specification	Min.	Max.	Notes
Total error band	-20 to +85° C, (-5 to 185° F)	1%FS	1, 3, 4, 5
Operating temperature range	-40°C (-40° F)	125° C (257° F)	2,3
Storage temperature range	-45°C (-49° F)	125° C (257° F)	2
Notes:			
1) With reference to 25° C, (77° F)	4) Total error band (TEB) includes accuracy, all temperatures errors, offset and span tolerances		
2) Standard 105° C max. for cable version	5) 1.5% for ranges <75psi (5Bar)		
3) Improved performance available, consult factory	6) Other materials available, consult factory		

### mechanical specifications

Specification	Value	Notes
Proof pressure	2x rated pressure	
Burst pressure	4x rated pressure or 20k psi, whichever is less	
Vibration	20g rms @2kHz (MIL standard 810 C Procedure 514.2 curve L)	
Shock	50g 11ms per MIL 202, method 215 B curve A	
Pressure cycles	10 million cycles zero to full scale	
Media compatibility	All materials compatible with 17-4PH stainless steel. (316L optional).	1, 2
Environmental protection	IP 67 (Cable version)	
Notes:		
1) Other materials available, consult factory	2) Non-standard version may have minimum quantity requirements	



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## ordering information for model MSP-610

Model	Pressure Output	Connection	Options	Pressure Port	Pressure Range Units	Pressure Reference
M61	3 = .5 to 4.5V ratiometric 4 = 1 to 5V 8 = 4-20 mA  X=Special output Other outputs available, consult factory	1 = 2 ft Cable 4 = Packard Metripak 150 6 = Hirschman Mini DIN 43650 Ind C	C0000  C = CE compliant (standard) T = Test report R = Built in restrictor W = 316L wetted material  Fill options alphabetically from left  1nnnn = custom drawing number	2 = 1/4 BSP 4 = 7/16-20 UNF Male, O-ring 5 = 1/4-18 NPT S = M12 x 1.5	050P = 50 psi    3.5B = 3.5Bar 100P = 100 psi    007B = 7 Bar 010B = 10 Bar  300P = 300 psi    020B = 20 Bar 500P = 500 psi    035B = 35 Bar 01KP = 1000 psi    070B = 70 Bar 100B = 100 Bar  03KP = 3000 psi    200B = 200 Bar 05KP = 5000 psi    350B = 350 Bar 7K5P = 7500 psi    525B = 525 Bar 10KP = 10 Kpsi    700B = 700 Bar	G = gage
	X = Special Output	X = Special Connection		X = Special Port		

Consult Factory for special options or non-standard part numbers

**Example** M6131-C00002-070BG 5 V power with 0.5 to 4.5 Vout (ratiometric), and 2 feet of cable. No options. The unit has 1/4 BSP pressure port and is rated 70 Bar gage  
M6186-12345X-010BG 4-20 mA, 2-wire, current loop, DIN 43650 Ind C connector. It also has a special pressure port, to specification number 12345 - consult factory. Its measuring range is 0 to 10 Bar

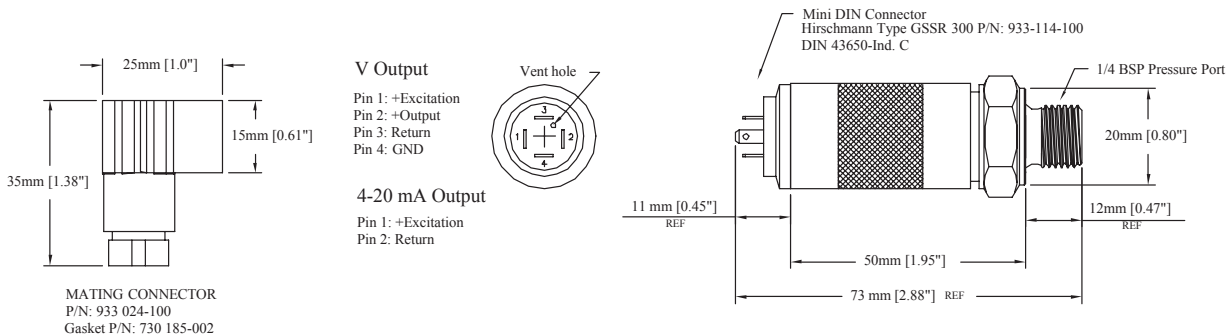
## static performance specifications

Units	Amplified Ratiometric 0.5 - 4.5 V out			Amplified 0-5 V, 1-5 V, 0-10 V out			Amplified 4 to 20 mA , two wire			Notes
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Supply voltage V	4.75	5	5.25	8		30	10		30	5
Supply current mA	2.5	3	5 mA	2.5	3	5 mA	20			
Min load impedance	100 kohm			100 kohm						
Max load impedance							RL=50* (Vsupply-10)			
Accuracy %FS	-0.25		+0.25	-0.25		+0.25	-0.25		+0.25	1, 2
Long Term Stability %FS/year			0.25			0.25			0.25	2
Total Error Band %FS			1.0			1.0			1.0	3
Response time ms	1.0			1.0			1.0			4
Isolation to case Mohm	22			22			22			6

**Notes:**

- 1) Combined BFSL, hysteresis and repeatability (Per ISA S37.2) .25% for 1Kpsi and above
- 2) Over temperature range -20 to +85° C
- 3) 1.0% (100 - 10,000 psi) 1.5% (<75 psi)
- 4) From 10 to 90%
- 5) Reverse polarity protected.
- 6) Limited to 120 Vdc by internal transient voltage suppressor.

## mechanical dimensions



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7/14/04 Rev.C