

**The MSS100 Series** is a fully compensated pressure transducer that is ideal for medical, pharmaceutical, and bio-processing applications that involve harsh fluids.

**COMPANY:** Merit Sensor is a leader in piezoresistive pressure sensing and partners with clients to create high-performing solutions for a variety of applications and industries.

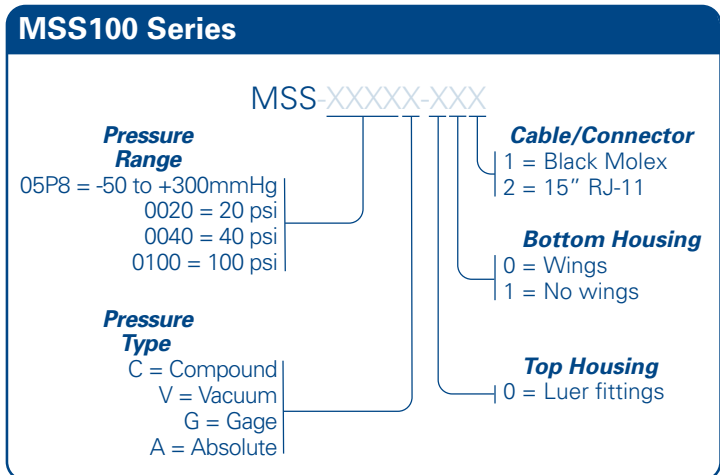
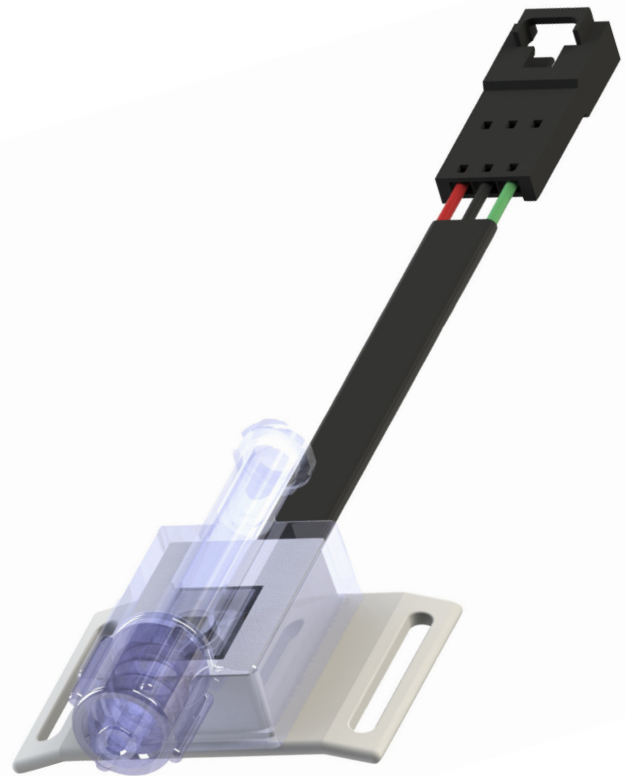
**HISTORY:** For over 25 years Merit Sensor has been a pressure-sensor supplier to the medical-device industry.

**TECHNOLOGY:** Merit Sensor utilizes a piezoresistive Wheatstone bridge in a design that anodically bonds glass to a chemically etched silicon diaphragm. All products are RoHS and REACH compliant.

**CAPABILITIES:** Merit Sensor designs, engineers, fabricates, singulates, assembles, tests, sells, and services die and packaged products from a state-of-the-art facility near Salt Lake City, Utah.

### FEATURES:

<b>Pressure Ranges</b>	5 to 100 psi / 250 to 1000 mmHg / 35 to 700 kPa (Other ranges available upon request.)
<b>Accuracy</b>	+/- 1% total error band
<b>Output</b>	Analog 0.5 to 4.5 V
<b>Pressure Type</b>	Compound, Vacuum, Gage, Absolute



Features	Min.	Typ.	Max.	Unit	Notes
<b>Electrical</b>					
Supply Voltage (Vs)	4.5	5	5.5	Volts	
Supply Current			10	mA	
Output Current			2.5	mA	
Short Circuit Current	-25		25	mA	
Reverse Polarity Protection	-33			Volts	Device will cease operation during a supply voltage fault.
Overshoot Protection			33	Volts	Device will cease operation during a supply voltage fault.
ESD	>4			kV	Human body model 1.5kOhm/100pF.
<b>Performance</b>					
Output Range (Vout)	10		90	%Vs	
Output Clipping Limit (Vout)	5		95	%Vs	
Resolution			0.02	%FS	>12 bit DAC
Accuracy (10°C to 50°C)	-1.0	0	1.0	%FS	Accuracy includes all error for hysteresis and linearity over the entire operating temperature range. It does not include lifetime drift. 10°C to 50°C.
Startup Time		3.5		msec	
Analog Update Time		2		msec	
Static Proof Pressure		2X FS		PSI	
Burst Pressure		3X FS		PSI	
Lifetime Drift	-0.5		0.5	%FS	Room temp – 1 year
<b>Environmental</b>					
Operating Temperature	0		70	°C	
Storage Temperature	-55		85	°C	
Weight		13.64		Grams	

**Transfer Function Formula**

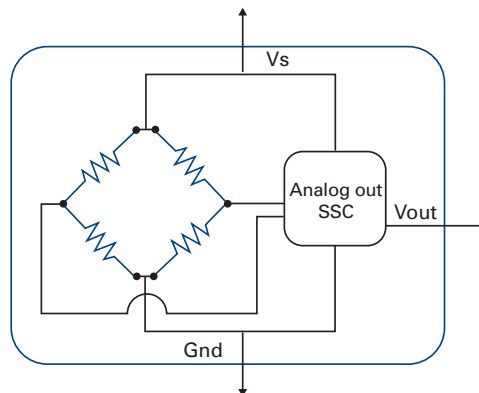
$$P_{psi} = (P_{max} - P_{min}) \cdot \left( \frac{V_{out} - V_{min}}{V_{max} - V_{min}} \right) + P_{min}$$

**Where**

- $P_{psi}$  = Measured Pressure in PSI
- $P_{Max}$  = Maximum Pressure
- $P_{Min}$  = Minimum Pressure
- $V_{min}$  = Minimum Volatage (Usually 0.5V)
- $V_{max}$  = Maximum Volatage (Usually 4.5V)
- $V_{out}$  = Output voltage

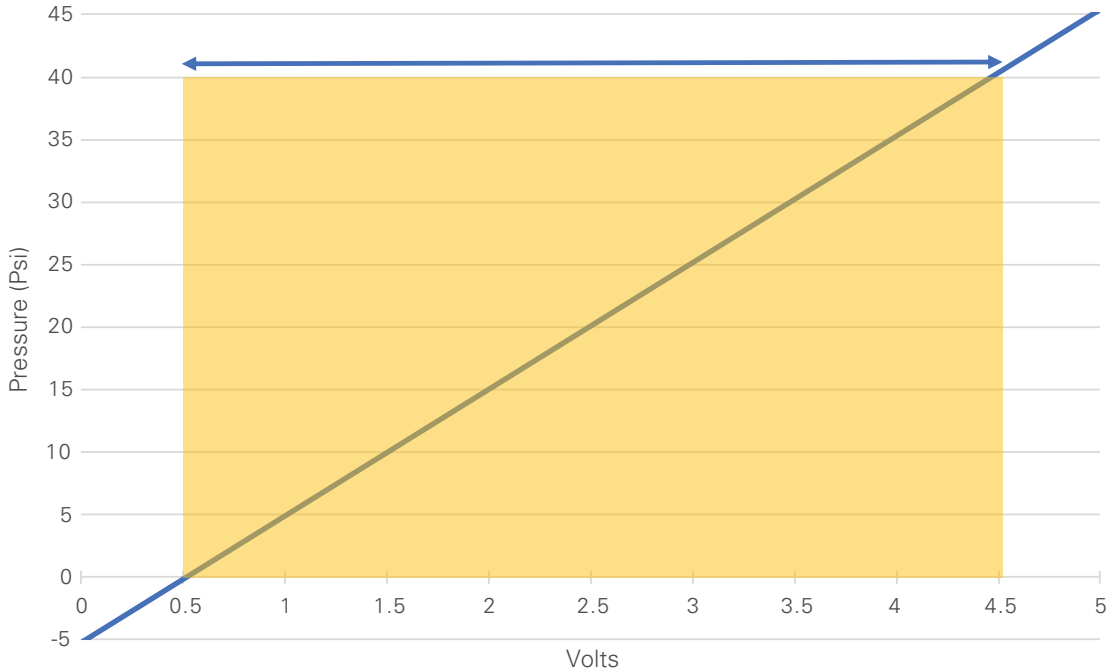
**ELECTRICAL**

Note: Power supply decoupling and output filtering included



Part: MSS-0040G-XXX

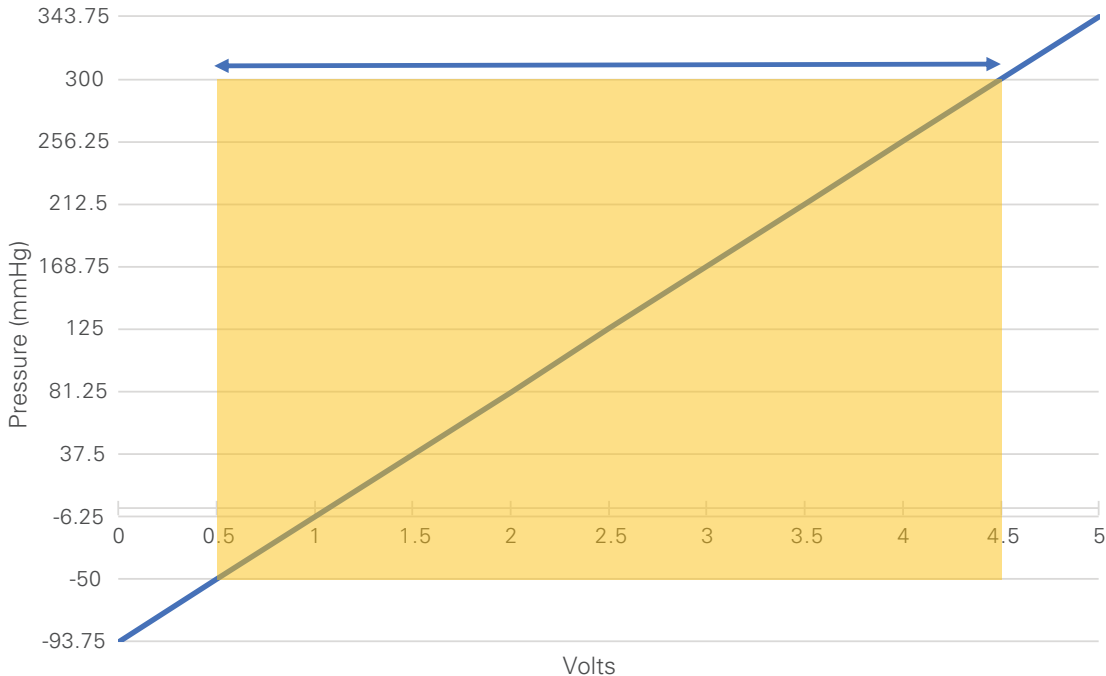
Calibrated Range (Output vs Pressure)



Gage sensor  
Output = 0.5V to 4.5V  
Pressure = 0 to +40psi

Part: MSS-05P8C-XXX

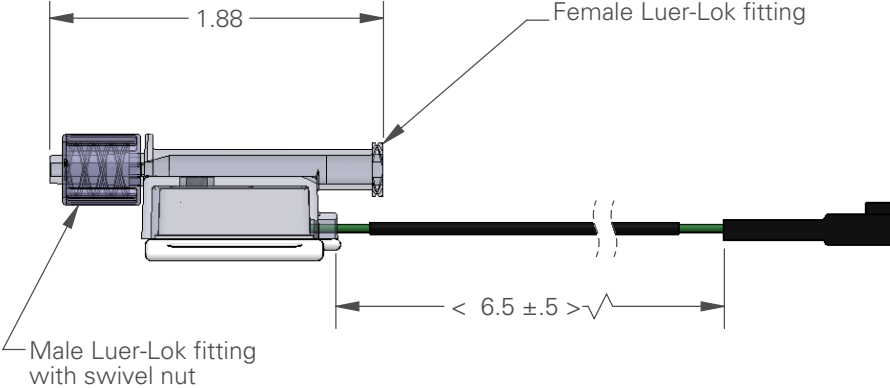
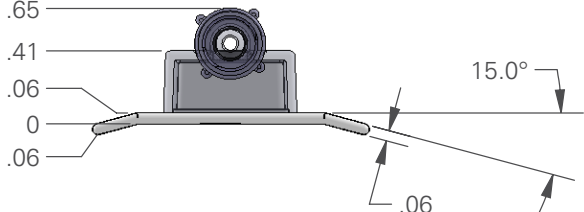
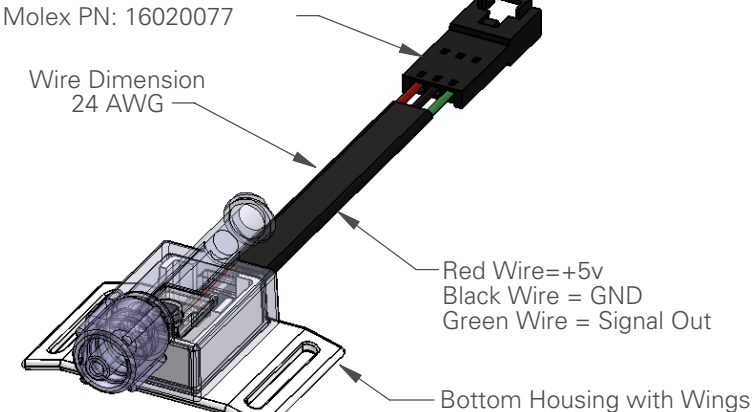
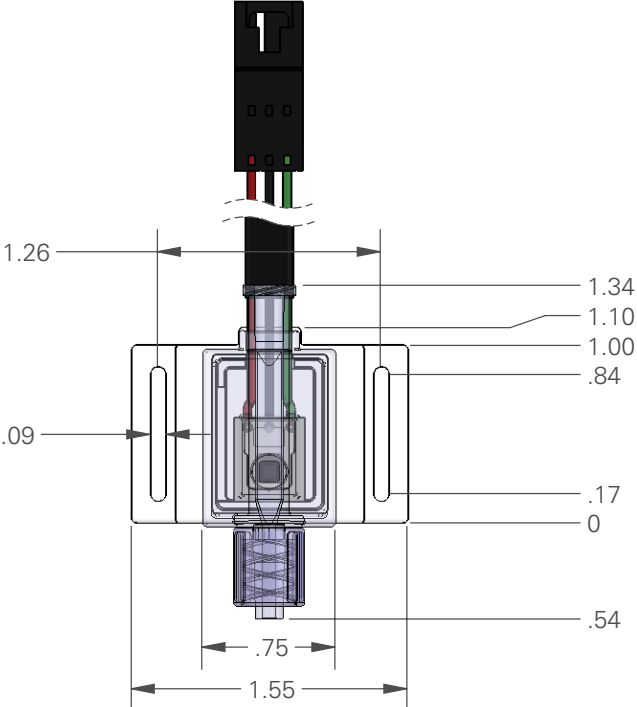
Calibrated Range (Output vs Pressure)



Compound sensor (measuring both vacuum and gage; both sides of zero)  
Output = 0.5V to 4.5V  
Pressure = -50 to +300mmHg (typical blood pressure applications)

# MSS100 Series

## DIMENSIONS (inches, post-cut)





Merit Sensor owns and operates a MEMS wafer fab, which enables the production of customized piezoresistive pressure sensors.

