# Miniature Low Pressure Sensors

Low Pressure (2" H,O to 30 " H,O) Sensors



#### **Features**

- 0 to 2" H<sub>2</sub>O to 0 to 30" H<sub>2</sub>O Pressure Ranges
- Matched pressure port volumes
- Temperature Compensated
- Calibrated Zero and Span

#### **Applications**

- Medical Instrumentation
- Environmental Controls
- HVAC

#### **General Description**

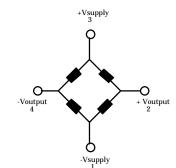
The Millivolt Output pressure sensors is based upon a proprietary technology to reduce all output offset or common mode errors. This model provides a calibrated millivolt output with superior output offset characteristics. Output offset errors due to change in temperature, stability to warm-up, stability to long time period, and position sensitivity are all significantly reduced when compared to conventional compensation methods. In addition the sensor utilizes a silicon, micromachined, stress concentration enhanced structure to provide a very linear output to measured pressure.

These calibrated and temperature compensated sensors give an accurate and stable output over a wide temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like.

The output of the device is ratiometric to the supply voltage and operation from any D.C. supply voltage up to +16~V is acceptable.

#### **Equivalent Circuit**

Input Resittance 15 k ohm
Output Resistance 1.5 k ohm



Pressure Sensor Characteristics Maximum Ratings		<b>Environmental Specifications</b>		
Supply Supply Voltage VS	16 Vdc	Temperature Ranges		
Common-mode pressure	10 psig	Compensated	0 to 50(70)° C	
Lead Temperature	250°C	Operating	-25 to 85° C	
(soldering 2-4 sec.)		Storage	-40 to 125° C	
<b>Standard Pressure Ranges</b>		Humidity Limits	0 to 95% RH	
G			(non condensing)	

## Single in Line Packages-SIP

One Port	Operating	Two Ports Same Side	Two Ports Opposite Side
Part Number	Pressure	Part Number	Part Number
2 INCH-G-MV-MINI	0 - 2 "H2O	2 INCH-D1-MV-MINI	2 INCH-D2-MV-MINI
5 INCH-G-MV-MINI	0 - 5 "H2O	5 INCH-D1-MV-MINI	5 INCH-D2-MV-MINI
0 INCH-G-MV-MINI	0 - 10 "H2O	10 INCH-D1-MV-MINI	10 INCH-D2-MV-MINI
0 INCH-G-MV-MINI	0 - 20 "H2O	20 INCH-D1-MV-MINI	20 INCH-D2-MV-MINI
0 INCH-G-MV-MINI	0 - 30 "H2O	30 INCH-D1-MV-MINI	30 INCH-D2-MV-MINI

# **Dual in Line Packages**

One Port		Two Ports Same Side	Two Ports Opposite Side	Two Ports Same Side
Part Number	Operating Pressure	Part Number	Part Number	Part Number
2 INCH-GDIP-MV-MINI	0 - 2 "H2O	2 INCH-D1DIP-MV-MINI	2 INCH-D2DIP-MV-MINI	2 INCH-SDXL-MV-MINI
5 INCH-GDIP-MV-MINI	0 - 5 "H2O	5 INCH-D1DIP-MV-MINI	5 INCH-D2DIP-MV-MINI	5 INCH-SDXL-MV-MINI
10 INCH-GDIP-MV-MINI	0 - 10 "H2O	10 INCH-D1DIP-MV-MINI	10 INCH-D2DIP-MV-MINI	10 INCH-SDXL-MV-MINI
20 INCH-GDIP-MV-MINI	0 - 20 "H2O	20 INCH-D1DIP-MV-MINI	20 INCH-D2DIP-MV-MINI	20 INCH-SDXL-MV-MINI
30 INCH-GDIP-MV-MINI	0 - 30 "H2O	30 INCH-D1DIP-MV-MINI	30 INCH-D2DIP-MV-MINI	30 INCH-SDXL-MV-MINI

### Performance Characteristics for 2 INCH-D-MV-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure		2.0		"H2O
Output Span, @ 2 "H2O, note 5	9.0	10.0	11.0	mV
Operating Range, differential pressure		4.0		"H2O
Output Span, @ 4 "H2O, note 5	18.0	20.0	22.0	mV
Offset Voltage @ zero differential pressure			±500	uV
Offset Temperature Shift (0°C-50°C), note 2			±250	uV
Offset Warm-up Shift, note 3			±100	uV
Offset Position Sensitivity (1g)			±50	uV
Offset Long Term Drift (one year)			±200	uV
Linearity, hysteresis error, note 4		0.05	0.25	%fs
Span Shift (0°C-50°C), @ 2 "H2O, note 2			±200	uV

### **Performance Characteristics for 5 INCH-D-MV-MINI**

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		5.0		"H2O	
Output Span, note 5	19.0	20.0	21.0	mV	
Offset Voltage @ zero differential pressure			±500	uV	
Offset Temperature Shift (0°C-50°C), note 2			±150	uV	
Offset Warm-up Shift, note 3			±50	uV	
Offset Position Sensitivity (1g)			±10	uV	
Offset Long Term Drift (one year)			±100	uV	
Linearity, hysteresis error, note 4		0.05	0.25	%fs	
Span Shift (0°C-50°C), note 2			±200	uV	

### Performance Characteristics for 10 INCH-D-MV-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		10.0		"H2O	
Output Span, note 5	19.0	20.0	21.0	mV	
Offset Voltage @ zero differential pressure			±500	uV	
Offset Temperature Shift (0°C-70°C), note 2			±150	uV	
Offset Warm-up Shift, note 3			±50	uV	
Offset Position Sensitivity (1g)			±5	uV	
Offset Long Term Drift (one year)			±100	uV	
Linearity, hysteresis error, note 4		0.05	0.25	%fs	
Span Shift (0°C-70°C), note 2			±200	uV	

### Performance Characteristics for 20 INCH-D-MV-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		5.0		"H2O	
Output Span, note 5	19.0	20.0	21.0	mV	
Offset Voltage @ zero differential pressure			±500	uV	
Offset Temperature Shift (0°C-70°C), note 2			±150	uV	
Offset Warm-up Shift, note 3			±50	uV	
Offset Position Sensitivity (1g)			±5	uV	
Offset Long Term Drift (one year)			±100	uV	
Linearity, hysteresis error, note 4		0.05	0.25	%fs	
Span Shift (0°C-70°C), note 2			±200	uV	

#### Performance Characteristics for 30 INCH-D-MV-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure		30.0		"H2O
Output Span, note 5	19.0	20.0	21.0	mV
Offset Voltage @ zero differential pressure			±500	uV
Offset Temperature Shift (0°C-70°C), note 2			±150	uV
Offset Warm-up Shift, note 3			±50	uV
Offset Position Sensitivity (1g)			±5	uV
Offset Long Term Drift (one year)			±100	uV
Linearity, hysteresis error, note 4		0.05	0.25	%fs
Span Shift (0°C-70°C), note 2			±200	uV

#### **Specification Notes**

NOTE 1: ALL PARAMETERS ARE MEASURED AT 12.0 VOLT EXCITATION, FOR THE NOMINAL FULL SCALE PRESSURE AND ROOM TEMPERATURE UNLESS OTHERWISE SPECIFIED. PRESSURE MEASUREMENTS ARE WITH POSITIVE PRESSURE APPLIED TO THE B-PORT CONFIGURATION.

Note 2: Shift is relative to  $25^{\circ}C.$ 

NOTE 3: SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE.

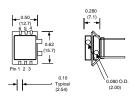
NOTE 4: MEASURED AT ONE-HALF FULL SCALE RATED PRESSURE USING BEST STRAIGHT LINE CURVE FIT.

NOTE 5: THE VOLTAGE ADDED TO THE OFFSET VOLTAGE AT FULL SCALE PRESSURE.

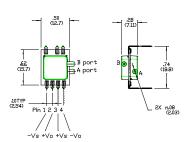
Pressure Response: for any pressure applied the response time to get to 90% of pressure applied is typically less than 100 useconds.

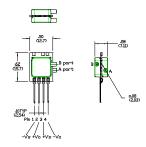
### **Physical Dimensions**

### Dual in Line (SDXL)



### Dual in Line (DIP)





Two Pressure Port Same Side