

### Features

- 0 to 1" 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

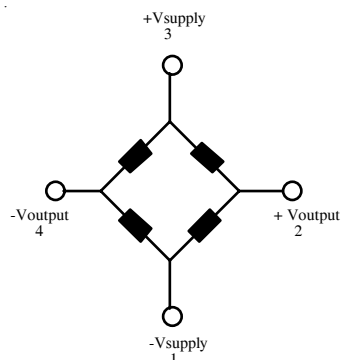
The Millivolt Output pressure sensors is based upon a proprietary technology to reduce all output offset or common mode errors. This model provides a calibrated millivolt output with superior output offset characteristics. Output offset errors due to change in temperature, stability to warm-up, stability 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 Resistance  | 4.5 kohm |
| Output Resistance | 1.5 kohm |



## Pressure Sensor Characteristics Maximum Ratings

|                                          |         |
|------------------------------------------|---------|
| Supply Voltage, $V_s$                    | 16 Vdc  |
| Common-mode pressure                     | 10 psig |
| Lead Temperature<br>(soldering 2-4 sec.) | 250°C   |

## Standard Pressure Ranges

## Environmental Specifications

|                    |                                 |
|--------------------|---------------------------------|
| Temperature Ranges |                                 |
| Compensated        | 0 to 50(70)° C                  |
| Operating          | -25 to 85° C                    |
| Storage            | -40 to 125° C                   |
| Humidity Limits    | 0 to 95% RH<br>(non condensing) |

## Single in Line Packages-SIP

| One Port          |                          | Two Ports Same Side |             | Two Ports Opposite Side |             |
|-------------------|--------------------------|---------------------|-------------|-------------------------|-------------|
| Part Number       | Operating Pressure       | Part Number         | Part Number | Part Number             | Part Number |
|                   | 0 - 1 "H <sub>2</sub> O  |                     |             | 1 INCH-D2-MV-MINI       |             |
| 2 INCH-G-MV-MINI  | 0 - 2 "H <sub>2</sub> O  | 2 INCH-D1-MV-MINI   |             | 2 INCH-D2-MV-MINI       |             |
| 5 INCH-G-MV-MINI  | 0 - 5 "H <sub>2</sub> O  | 5 INCH-D1-MV-MINI   |             | 5 INCH-D2-MV-MINI       |             |
| 10 INCH-G-MV-MINI | 0 - 10 "H <sub>2</sub> O | 10 INCH-D1-MV-MINI  |             | 10 INCH-D2-MV-MINI      |             |
| 20 INCH-G-MV-MINI | 0 - 20 "H <sub>2</sub> O | 20 INCH-D1-MV-MINI  |             | 20 INCH-D2-MV-MINI      |             |
| 30 INCH-G-MV-MINI | 0 - 30 "H <sub>2</sub> O | 30 INCH-D1-MV-MINI  |             | 30 INCH-D2-MV-MINI      |             |

## Dual in Line Packages

| One Port             |                          | Two Ports Same Side   |             | Two Ports Opposite Side |             |
|----------------------|--------------------------|-----------------------|-------------|-------------------------|-------------|
| Part Number          | Operating Pressure       | Part Number           | Part Number | Part Number             | Part Number |
| 2 INCH-GDIP-MV-MINI  | 0 - 2 "H <sub>2</sub> O  | 2 INCH-D1DIP-MV-MINI  |             | 2 INCH-D2DIP-MV-MINI    |             |
| 5 INCH-GDIP-MV-MINI  | 0 - 5 "H <sub>2</sub> O  | 5 INCH-D1DIP-MV-MINI  |             | 5 INCH-D2DIP-MV-MINI    |             |
| 10 INCH-GDIP-MV-MINI | 0 - 10 "H <sub>2</sub> O | 10 INCH-D1DIP-MV-MINI |             | 10 INCH-D2DIP-MV-MINI   |             |
| 20 INCH-GDIP-MV-MINI | 0 - 20 "H <sub>2</sub> O | 20 INCH-D1DIP-MV-MINI |             | 20 INCH-D2DIP-MV-MINI   |             |
| 30 INCH-GDIP-MV-MINI | 0 - 30 "H <sub>2</sub> O | 30 INCH-D1DIP-MV-MINI |             | 30 INCH-D2DIP-MV-MINI   |             |

## Performance Characteristics for 1 INCH-D2-MV-MINI

| Parameter, note 1                                    | Minimum | Nominal | Maximum | Units             |
|------------------------------------------------------|---------|---------|---------|-------------------|
| Operating Range, differential pressure               |         | 1.0     |         | "H <sub>2</sub> O |
| Output Span, @ 1 "H <sub>2</sub> O, note 5           | 80      | 10      | 120     | mV                |
| Offset Voltage @ zero differential pressure          |         |         | ±500    | mV                |
| Offset Temperature Shift (0°C-50°C), note 2          |         |         | ±250    | µV                |
| Offset Warm-up Shift, note 3                         |         |         | ±100    | µV                |
| Offset Position Sensitivity (1g)                     |         |         | ±50     | µV                |
| Offset Long Term Drift (one year)                    |         |         | ±200    | µV                |
| Linearity, hysteresis error, note 4                  |         | 0.05    | 0.25    | %fs               |
| Span Shift (0°C-50°C), @ 1 "H <sub>2</sub> O, note 2 |         |         | ±300    | µV                |

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

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

## Performance Characteristics for 5 INCH-Dx-MV-MINI

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

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

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



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

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

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

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

### 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°C.

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

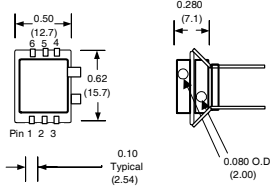
NOTE 4: MEASURED AT ONE-HALF FULL SCALE RATED PRESSURE USING BEST STRAIGHT LINE CURVE FIT.

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

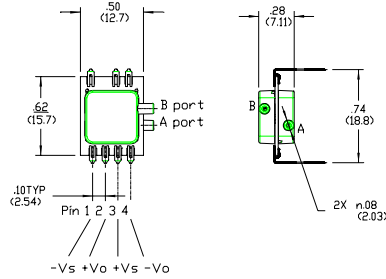
## Physical Dimensions

### Dual in Line (SDXL)\*\*

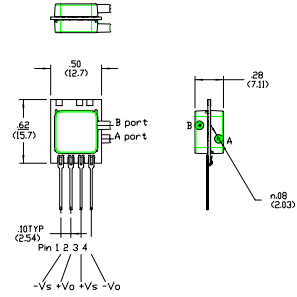
pin 1: +Vout  
pin 2: gnd  
pin 3: -Vout  
pin 5: Vsupply



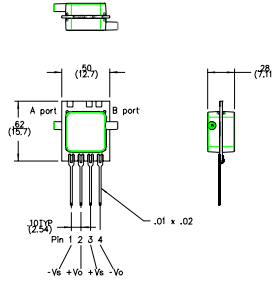
### Dual in Line (DIP)



### Two Pressure Port Same Side



### Two Pressure Port Two Sides



### \*\*SDXL ORDERING INFORMATION

| One Port             |                          | Two Ports Same Side   |                       | Two Ports Opposite Side |             |
|----------------------|--------------------------|-----------------------|-----------------------|-------------------------|-------------|
| Part Number          | Operating Pressure       | Part Number           | Part Number           | Part Number             | Part Number |
| 2 INCH-GDIP-MV-SDXL  | 0 - 2 "H <sub>2</sub> O  | 2 INCH-D1DIP-MV-SDXL  | 2 INCH-D2DIP-MV-SDXL  |                         |             |
| 5 INCH-GDIP-MV-SDXL  | 0 - 5 "H <sub>2</sub> O  | 5 INCH-D1DIP-MV-SDXL  | 5 INCH-D2DIP-MV-SDXL  |                         |             |
| 10 INCH-GDIP-MV-SDXL | 0 - 10 "H <sub>2</sub> O | 10 INCH-D1DIP-MV-SDXL | 10 INCH-D2DIP-MV-SDXL |                         |             |
| 20 INCH-GDIP-MV-SDXL | 0 - 20 "H <sub>2</sub> O | 20 INCH-D1DIP-MV-SDXL | 20 INCH-D2DIP-MV-SDXL |                         |             |
| 30 INCH-GDIP-MV-SDXL | 0 - 30 "H <sub>2</sub> O | 30 INCH-D1DIP-MV-SDXL | 30 INCH-D2DIP-MV-SDXL |                         |             |

