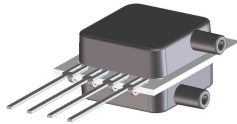


# Millivolt Output Miniature Medium Pressure Sensors

**H-Grade**  
Pressure Sensors



## Features

- 0 to 0.3 PSI to 0 to 30 PSI Pressure Ranges
- 1 % linearity version
- Temperature Compensated
- Calibrated Zero and Span

## Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

## General Description

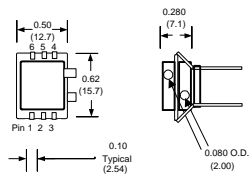
The Millivolt Output pressure sensors is based upon a proprietary packaging technology to reduce output offset or common mode errors. This model provides a calibrated millivolt output with good output offset characteristics. In addition the sensor utilizes a silicon, micromachined, stress concentration 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 C-GRADE is a lowest cost version of the millivolt output pressure sensors.

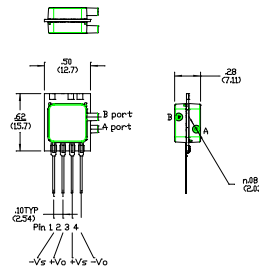
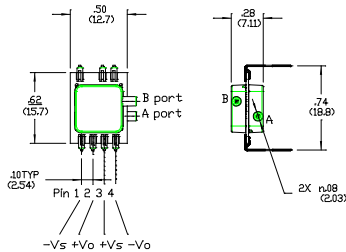
The output of the device is ratiometric to the supply voltage and operation from any D.C. supply voltage up to +16 V is acceptable.

## Physical Dimensions

### Dual in Line (SDXL)



### Dual in Line (DIP)



**Two Pressure Port Same Side  
Gage Version single port on  
top**

**Pressure Sensor Characteristics Maximum Ratings**

|  |         |
|--|---------|
| <b>Supply Voltage VS</b>                     | 16 Vdc  |
| <b>Common-mode pressure</b>                  | 50 psig |
| <b>Lead Temperature (soldering 2-4 sec.)</b> | 250°C   |

**Environmental Specifications**

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

**Standard Pressure Ranges**

| <b>Part Number-Side Port Top Only</b> | <b>Part Number-DIP</b>  | <b>Operating Pressure</b> | <b>Nominal Span</b> | <b>Proof Pressure</b> | <b>Burst Pressure</b> |
|---------------------------------------|-------------------------|---------------------------|---------------------|-----------------------|-----------------------|
| 0.3 PSI-G-HGRADE-MV-SMINI             | 0.3 PSI-D-HGRADE-MV-DIP | 0 - 0.3 PSI               | 20mV                | 5 PSI                 | 15 PSI                |
| 1 PSI-G-HGRADE-MV-SMINI               | 1 PSI-D-HGRADE-MV-DIP   | 0 - 1 PSI                 | 18mV                | 5 PSI                 | 15 PSI                |
| 5 PSI-G-HGRADE-MV-SMINI               | 5 PSI-D-HGRADE-MV-DIP   | 0 - 5 PSI                 | 60mV                | 10 PSI                | 30 PSI                |
| 15 PSI-G-HGRADE-MV-SMINI              | 15 PSI-D-HGRADE-MV-DIP  | 0 - 15 PSI                | 90mV                | 60 PSI                | 120 PSI               |
| 30 PSI-G-HGRADE-MV-SMINI              | 30 PSI-D-HGRADE-MV-DIP  | 0 - 30 PSI                | 90mV                | 90 PSI                | 150 PSI               |
| 15 PSI-A-HGRADE-MV-SMINI              | 15 PSI-A-HGRADE-MV-DIP  | 0 - 15 PSIA               | 60mV                | 60 PSIA               | 120 PSI               |

| <b>Part Number-2 Side Ports- same side</b> | <b>Part Number-SDXL</b>  | <b>Operating Pressure</b> | <b>Nominal Span</b> | <b>Proof Pressure</b> | <b>Burst Pressure</b> |
|--|--------------------------|---------------------------|---------------------|-----------------------|-----------------------|
| 0.3 PSI-D1-HGRADE-MV-SMINI                 | 0.3 PSI-D-HGRADE-MV-SDXL | 0 - 0.3 PSI               | 20mV                | 5 PSI                 | 15 PSI                |
| 1 PSI-D1-HGRADE-MV-SMINI                   | 1 PSI-D-HGRADE-MV-SDXL   | 0 - 1 PSI                 | 18mV                | 5 PSI                 | 15 PSI                |
| 5 PSI-D1-HGRADE-MV-SMINI                   | 5 PSI-D-HGRADE-MV-SDXL   | 0 - 5 PSI                 | 60mV                | 10 PSI                | 30 PSI                |
| 15 PSI-D1-HGRADE-MV-SMINI                  | 15 PSI-D-HGRADE-MV-SDXL  | 0 - 15 PSI                | 90mV                | 60 PSI                | 120 PSI               |
| 30 PSI-D1-HGRADE-MV-SMINI                  | 30 PSI-D-HGRADE-MV-SDXL  | 0 - 30 PSI                | 90mV                | 90 PSI                | 150 PSI               |
|  | 15 PSI-A-HGRADE-MV-SDXL  | 0 - 15 PSIA               | 60mV                | 60 PSIA               | 120 PSI               |

**Performance Characteristics for 0.3 PSI-D-HGRADE-MV-SMINI**

| <b>Parameter, note 1</b>                    | <b>Minimum</b> | <b>Nominal</b> | <b>Maximum</b> | <b>Units</b> |
|---|----------------|----------------|----------------|--------------|
| Operating Range, differential pressure      |                | 0.3            |                | PSI          |
| Output Span, note 5                         | 19.8           | 20.0           | 20.2           | mV           |
| Offset Voltage @ zero differential pressure |                |                | ±0.3           | mV           |
| Offset Temperature Shift (0°C-70°C), note 2 |                |                | ±0.5           | mV           |
| Linearity, hysteresis error, note 4         |                |                | ±0.5           | %fs          |
| Span Shift (0°C-70°C), note 2               |                |                | ±1             | %fs          |

### Performance Characteristics for 1 PSI-D-HGRADE-MV-SMINI

| Parameter, note 1                           | Minimum | Nominal | Maximum | Units |
|---|---------|---------|---------|-------|
| Operating Range, differential pressure      |         | 1.0     |         | PSI   |
| Output Span, note 5                         | 17.82   | 18      | 18.18   | mV    |
| Offset Voltage @ zero differential pressure |         |         | ±0.3    | mV    |
| Offset Temperature Shift (0°C-70°C), note 2 |         |         | ±0.5    | mV    |
| Linearity, hysteresis error, note 4         |         |         | ±0.5    | %fs   |
| Span Shift (0°C-70°C), note 2               |         |         | ±1      | %fs   |

### Performance Characteristics for 5 PSI-D-HGRADE-MV-SMINI

| Parameter, note 1                           | Minimum | Nominal | Maximum | Units |
|---|---------|---------|---------|-------|
| Operating Range, differential pressure      |         | 5.0     |         | PSI   |
| Output Span, note 5                         | 59.4    | 60      | 60.6    | mV    |
| Offset Voltage @ zero differential pressure |         |         | ±0.3    | mV    |
| Offset Temperature Shift (0°C-70°C), note 2 |         |         | ±0.5    | mV    |
| Linearity, hysteresis error, note 4         |         |         | ±0.5    | %fs   |
| Span Shift (0°C-70°C), note 2               |         |         | ±1      | %fs   |

### Performance Characteristics for 15 PSI-D-HGRADE-MV-SMINI

| Parameter, note 1                           | Minimum | Nominal | Maximum | Units |
|---|---------|---------|---------|-------|
| Operating Range, differential pressure      |         | 15.0    |         | PSI   |
| Output Span, note 5                         | 89.1    | 90.0    | 90.9    | mV    |
| Offset Voltage @ zero differential pressure |         |         | ±0.3    | mV    |
| Offset Temperature Shift (0°C-70°C), note 2 |         |         | ±0.5    | mV    |
| Linearity, hysteresis error, note 4         |         |         | ±0.5    | %fs   |
| Span Shift (0°C-70°C), note 2               |         |         | ±1      | %fs   |

### Performance Characteristics for 30 PSI-D-HGRADE-MV-SMINI

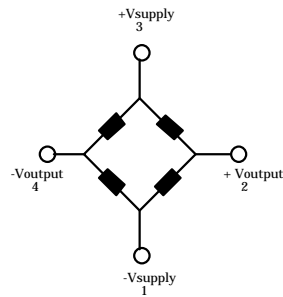
| Parameter, note 1                           | Minimum | Nominal | Maximum | Units |
|---|---------|---------|---------|-------|
| Operating Range, differential pressure      |         | 30.0    |         | PSI   |
| Output Span, note 5                         | 89.1    | 90      | 90.9    | mV    |
| Offset Voltage @ zero differential pressure |         |         | ±0.3    | mV    |
| Offset Temperature Shift (0°C-70°C), note 2 |         |         | ±0.5    | mV    |
| Linearity, hysteresis error, note 4         |         |         | ±0.5    | %fs   |
| Span Shift (0°C-70°C), note 2               |         |         | ±1      | %fs   |

### Performance Characteristics for 15 PSI-A-HGRADE-MV-SMINI

| Parameter, note 1                           | Minimum | Nominal | Maximum | Units |
|---|---------|---------|---------|-------|
| Operating Range, absolute pressure          |         | 15.0    |         | PSIA  |
| Output Span, note 5                         | 89.1    | 90.0    | 90.9    | mV    |
| Offset Voltage @ zero absolute pressure     |         |         | ±0.5    | mV    |
| Offset Temperature Shift (0°C-70°C), note 2 |         |         | ±0.5    | mV    |
| Linearity, hysteresis error, note 4         |         |         | ±0.5    | %fs   |
| Span Shift (0°C-70°C), note 2               |         |         | ±1      | %fs   |

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

### Equivalent Circuit



Input Resittance            15 k ohm  
 Output Resistance        3.0k ohm

#### 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 PORT B.
- 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.

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