

## 1230 UltraStable™

### SPECIFICATIONS

- PC Board Mountable Pressure Sensor
- 0-100 mV Output
- Current Excitation
- Gage, Differential, and Absolute
- Temperature Compensated

### FEATURES

- Dual-in-Line Package
- -20°C to +85°C Compensated
- Temperature Range
- ±0.1% Non Linearity
- 1.0% Interchangeable Span (provided by gain set resistor)
- Solid State Reliability

### APPLICATIONS

- Medical Instruments
- Altitude Measurement
- Process Control
- Factory Automation
- Handheld Calibrators
- Environmental Control

The 1230 is a high-performance temperature compensated, piezoresistive silicon pressure sensor packaged in a dual-in-line configuration. It uses Measurement Specialties' proprietary UltraStable™ die to provide excellent performance and long-term stability over wide temperatures.

Integral temperature compensation is provided over a range of -20°C to +85°C using laser-trimmed resistors. An additional laser-trimmed resistor is included to normalize pressure sensitivity variations by programming the gain of an external differential amplifier. This provides sensitivity interchangeability of ±1%. Absolute, differential and gage pressure ranges from 0-15 to 0-100 psi are available. Multiple lead and tube configurations are available for different applications.

Please refer to the 1210 and 1220 for information on products with operating pressures less than 0-15 psi. For voltage excitation, please refer to the Model 1240.

## STANDARD RANGES

| Range    | psia | psid | psig |
|----------|------|------|------|
| 0 to 2   |      | •    | •    |
| 0 to 5   |      | •    | •    |
| 0 to 15  | •    | •    | •    |
| 0 to 30  | •    | •    | •    |
| 0 to 50  | •    | •    | •    |
| 0 to 100 | •    | •    | •    |

## PERFORMANCE SPECIFICATIONS

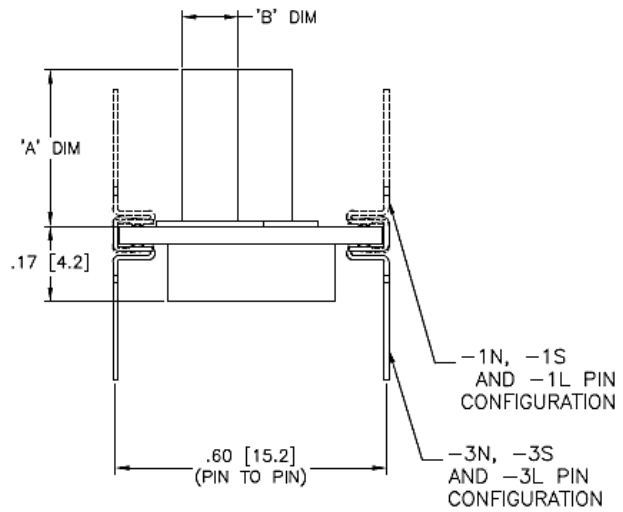
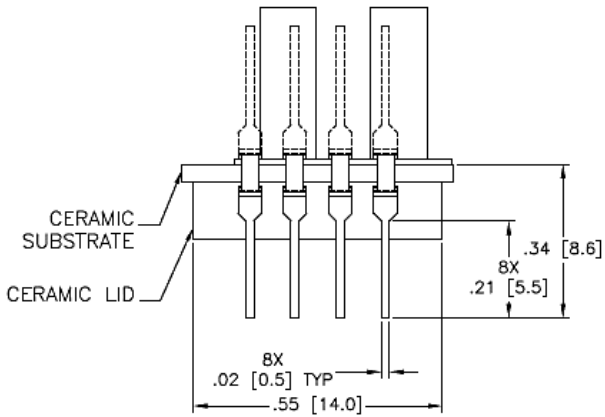
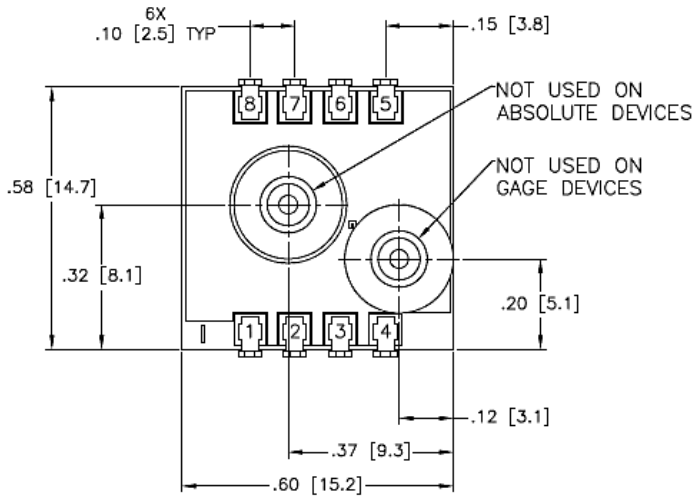
Unless otherwise specified: Supply Current: 1.5 mA, Ambient Temperature: 25°C

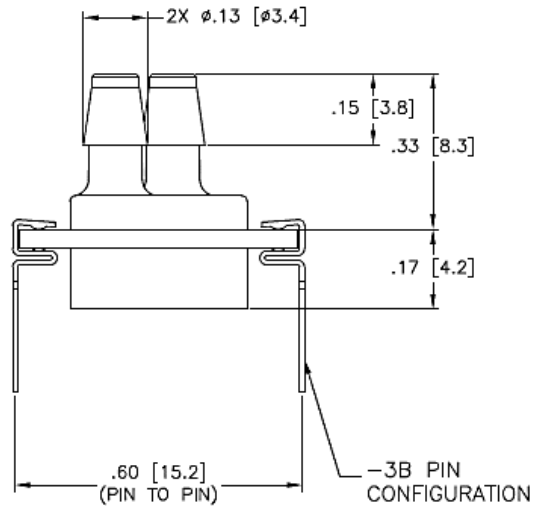
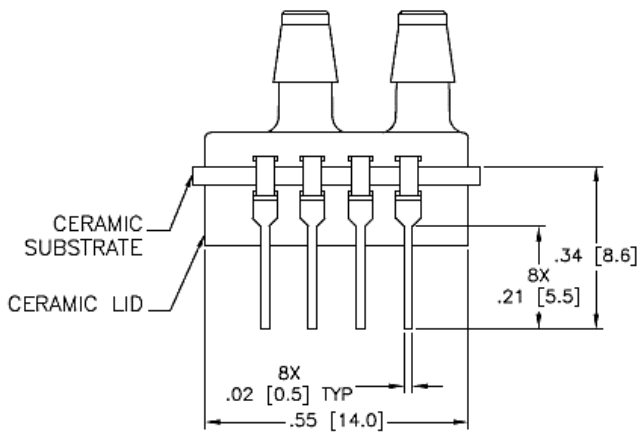
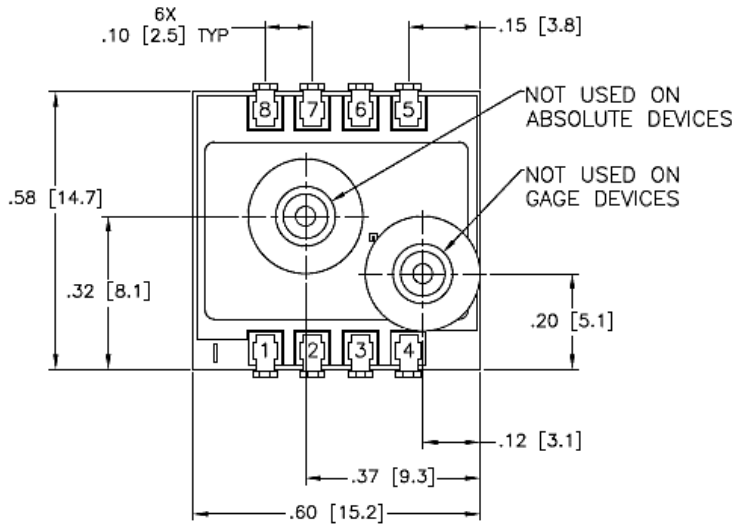
| PARAMETERS                           | MIN  | TYP   | MAX  | UNITS  | NOTES |
|--------------------------------------|--|-------|------|--------|-------|
| Span                                 | 75   | 100   | 150  | mV     | 1     |
| Zero Pressure Output                 | -2   |       | 2    | mV     |       |
| Pressure Non Linearity               | -0.1   | ±0.05 | 0.1  | %Span  | 2     |
| Pressure Hysteresis                  | -0.1   | ±0.01 | 0.1  | %Span  |       |
| Input Resistance                     | 2200   | 4000  | 5800 | Ω      |       |
| Output Resistance                    |  | 4200  |      | Ω      |       |
| Temperature Error – Span             | -0.5   | ±0.3  | 0.5  | %Span  | 3     |
| Temperature Error – Zero             | -0.5   | ±0.1  | 0.5  | %Span  | 3     |
| Temperature Coefficient – Resistance |  | 0.15  |      | %/°C   | 3     |
| Thermal Hysteresis – Zero            |  | ±0.05 |      | %Span  | 3     |
| Short Term Stability (Offset & Span) |  | ±0.05 |      | %Span  | 4     |
| Long Term Stability (Offset & Span)  |  | ±0.1  |      | %Span  | 5     |
| Supply Current                       | 0.5  | 1.5   | 2.0  | mA     |       |
| Response Time (10% to 90%)           |  | 1.0   |      | ms     | 6     |
| Output Noise (10Hz to 1kHz)          |  | 1.0   |      | μV p-p |       |
| Pressure Overload                    |  |       | 3X   | Rated  | 7     |
| Compensated Temperature              | -20  |       | +85  | °C     | 8     |
| Operating Temperature                | -40  |       | +125 | °C     |       |
| Storage Temperature                  | -50  |       | +150 | °C     |       |
| Weight                               |  |       | 3    | grams  |       |
| Solder Temperature                   | 250°C Max 5 Sec.   |       |      |        |       |
| Media                                | Non-Corrosive Dry Gases Compatible with Silicon, Pyrex, RTV, Gold, Ceramic, Nickel, and Aluminum |       |      |        |       |

### Notes

1. Ratiometric to supply current. Span for 2PSI is 30 to 60mV.
2. Best fit straight line. Non Linearity for 2 PSI is ±0.2% and 5 PSI is ± 0.5%.
3. Maximum temperature error between -20°C and +85°C with respect to 25°C.
4. Short term stability over 7 days with constant current and temperature.
5. Long term stability over a one year period with constant current and temperature.
6. For a zero-to-full scale pressure step change.
7. 2X maximum for 100 psi device.
8. For pressures ranges below 15 psi, compensated temperature range is 0°C to 50°C and thermal error of offset is ±1%.

## DIMENSIONS





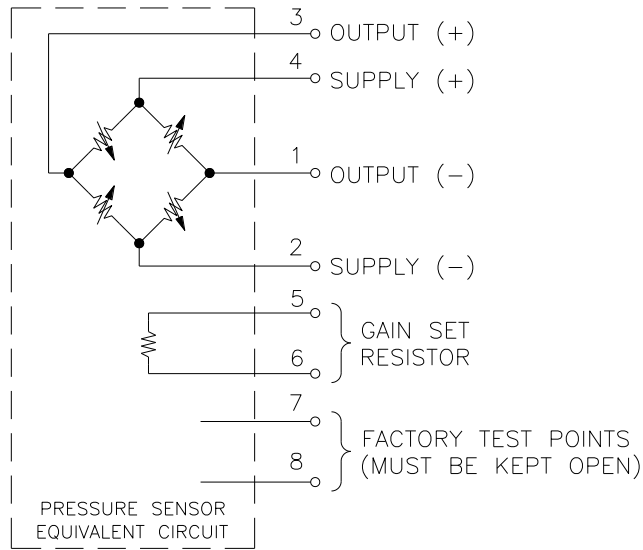
**Sensor Pinout**

| Pin No. | Function |
|---------|----------|
| 1       | -OUT     |
| 2       | -EX      |
| 3       | +OUT     |
| 4       | +EX      |
| 5,6     | GAIN     |
| 7,8     | TEST     |

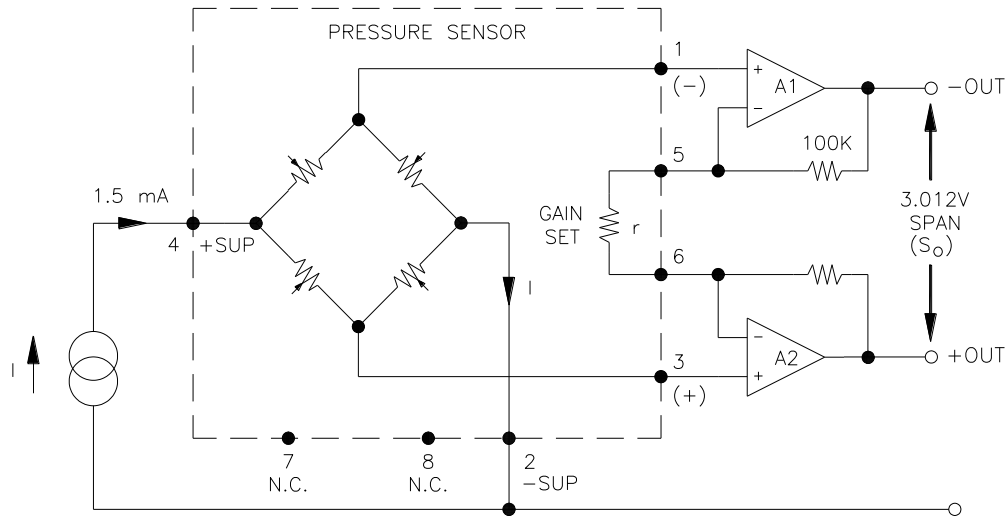
**Vent Tube Dimensions**

| Model   | 'A' Dim                   | 'B' Dim                     |
|---------|---------------------------|-----------------------------|
| 1N / 3N | N/A                       | N/A                         |
| 1L / 3L | .490±.005<br>[12.45±0.13] | ∅.127±.005<br>[∅3.23±.13]   |
| 1S / 3S | .325±.005<br>[8.26±0.13]  | ∅.125±.005<br>[∅.3.18±0.13] |

## CONNECTIONS



## APPLICATION SCHEMATIC



APPLICATION SCHEMATIC

## ORDERING INFORMATION

1230 - 030 A - 3 N

| Pressure Range [psi] |     |
|----------------------|-----|
|                      | 002 |
|                      | 005 |
|                      | 015 |
|                      | 030 |
|                      | 050 |
|                      | 100 |

| Pressure Type |              |
|---------------|--------------|
| <b>G</b>      | Gage         |
| <b>A</b>      | Absolute     |
| <b>D</b>      | Differential |

| Vent Type |            |
|-----------|------------|
| <b>L</b>  | Long Tube  |
| <b>S</b>  | Short Tube |
| <b>N</b>  | No Tube    |
| <b>B</b>  | Barb       |

| Lead Configuration |                            |
|--------------------|----------------------------|
| <b>1</b>           | Same Side as Vent Tube     |
| <b>3</b>           | Opposite Side as Vent Tube |

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