

# Amplified Middle Pressure Sensors

0.3 psi to 15 psi Pressure Sensors

## Military Temperature Grade



### Features

- 0 to 0.3 psi to 0 to 15 psi Pressure Ranges
- Ratiometric 4V Output
- Temperature Compensated **(-40C to 125C)**
- Calibrated Zero and Span

### Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

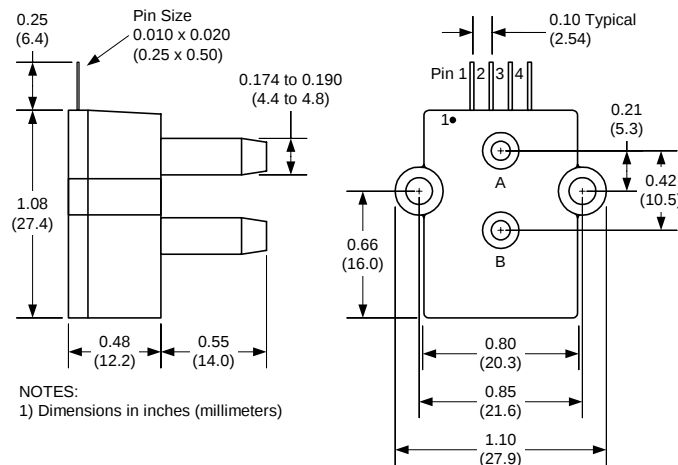
### General Description

The Amplified line of middle pressure sensors is based upon a proprietary package technology to reduce errors. This model provides a ratiometric 4-volt output with superior output characteristics. The sensor housing has been designed specifically to reduce package induced parasitic stress and strain. 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. Each sensor is internally compensated using an ASIC compensation technique. 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 over a supply voltage range of 4.5 to 5.5 volts.

### Physical Dimensions



pin 1: Vsupply  
pin 2: Common  
pin 3: Voutput  
pin 4: do not connect



## Pressure Sensor Ratings

|                                               |                  |
|-----------------------------------------------|------------------|
| Supply Voltage VS                             | +4.5 to +5.5 Vdc |
| Common-mode pressure                          | -10 to +10 psig  |
| Lead Temperature, max<br>(soldering 2-4 sec.) | 250°C            |

## Environmental Specifications

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

## Standard Pressure Ranges

| Part Number      | Operating Pressure | Nominal Span | Proof Pressure | Burst Pressure |
|------------------|--------------------|--------------|----------------|----------------|
| 0.3 PSI-D-4V-MIL | ±0.3 PSI           | 4 V          | 5 PSI          | 10 PSI         |
| 0.3 PSI-G-4V-MIL | 0 - 0.3 PSI        | 4 V          | 5 PSI          | 10 PSI         |
| 1 PSI-D-4V-MIL   | ±1 PSI             | 4 V          | 5 PSI          | 10 PSI         |
| 1 PSI-G-4V-MIL   | 0 - 1 PSI          | 4 V          | 5 PSI          | 10 PSI         |
| 5 PSI-D-4V-MIL   | ± 5 PSI            | 4 V          | 15 PSI         | 30 PSI         |
| 5 PSI-G-4V-MIL   | 0 - 5 PSI          | 4 V          | 15 PSI         | 30 PSI         |
| 15 PSI-A-4V-MIL  | 0 - 15 PSIA        | 4 V          | 45 PSI         | 60 PSI         |
| 15 PSI-D-4V-MIL  | ±15 PSI            | 4 V          | 45 PSI         | 60 PSI         |
| 15 PSI-G-4V-MIL  | 0 - 15 PSIG        | 4 V          | 45 PSI         | 60 PSI         |

## Performance Characteristics for 0.3 PSI-D-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, differential pressure            |         | ±0.3    |         | PSI   |
| Output Span, note 5                               | ±1.90   | ±20     | ±2.10   | volt  |
| Offset Voltage @ zero differential pressure       | 2.15    | 2.25    | 2.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±40     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±2      | %span |

## Performance Characteristics for 0.3 PSI-G-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, gage pressure                    |         | 0.3     |         | PSI   |
| Output Span, note 5                               | 3.90    | 40      | 4.10    | volt  |
| Offset Voltage @ zero pressure                    | 0.15    | 0.25    | 0.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±40     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±2      | %span |

## Performance Characteristics for 1 PSI-D-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, differential pressure            |         | ±1.0    |         | PSI   |
| Output Span, note 5                               | ±1.90   | ±2.0    | ±2.10   | volt  |
| Offset Voltage @ zero differential pressure       | 2.15    | 2.25    | 2.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±40     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

## Performance Characteristics for: 1 PSI-G-4V-MIL

| Parameter, NOTE 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, gage pressure                    |         | 1.0     |         | PSI   |
| Output Span, NOTE 5                               | 3.90    | 4.0     | 4.10    | volt  |
| Offset Voltage @ zero pressure                    | 0.15    | 0.25    | 0.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±40     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

## Performance Characteristics for: 5 PSI-D-4V-MIL

| Parameter, NOTE 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, differential pressure            |         | ±5.0    |         | PSI   |
| Output Span, NOTE 5                               | ±1.90   | ±2.0    | ±2.10   | volt  |
| Offset Voltage @ zero differential pressure       | 2.15    | 2.25    | 2.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±20     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

## Performance Characteristics for: 5 PSI-G-4V-MIL

| Parameter, NOTE 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, gage pressure                    |         | 5.0     |         | PSI   |
| Output Span, NOTE 5                               | 3.90    | 4.0     | 4.10    | volt  |
| Offset Voltage @ zero pressure                    | 0.15    | 0.25    | 0.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±20     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |



Performance Characteristics for 15 PSI-A-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, absolute pressure                |         | 15.0    |         | PSI   |
| Output Span, note 5                               | 3.90    | 4.0     | 4.10    | volt  |
| Offset Voltage @ zero pressure                    | 0.15    | 0.25    | 0.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±20     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

Performance Characteristics for 15 PSI-D-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, differential pressure            |         | ±15.0   |         | PSI   |
| Output Span, note 5                               | ±1.90   | ±2.0    | ±2.10   | volt  |
| Offset Voltage @ zero differential pressure       | 2.15    | 2.25    | 2.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±20     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

Performance Characteristics for 15 PSI-G-4V-MIL

| Parameter, note 1                                 | Minimum | Nominal | Maximum | Units |
|---------------------------------------------------|---------|---------|---------|-------|
| Operating Range, gage pressure                    |         | 15.0    |         | PSI   |
| Output Span, note 5                               | 3.90    | 4.0     | 4.10    | volt  |
| Offset Voltage @ zero pressure                    | 0.15    | 0.25    | 0.35    | volt  |
| Offset Temperature Shift (-40°C to 125°C), note 2 |         |         | ±20     | mvolt |
| Linearity, hysteresis error, note 4               |         |         | ±0.5    | %fs   |
| Span Shift (-40°C to 125°C), note 2               |         |         | ±1      | %span |

Pressure Response: for any pressure applied the response time to get to 90% of pressure applied is typically less than 500 useconds.

Specification Notes

- NOTE 1: ALL PARAMETERS ARE MEASURED AT 5.0 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. NOMINALLY THE OUTPUT VOLTAGE RANGE IS 0.25 TO 4.25 VOLTS FOR MINUS TO PLUS FULL SCALE PRESSURE.

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Equivalent Circuit

