

# Miniature Amplified Pressure Sensors

±0.3 psi to 100 psi Pressure Sensors



## Features

- 0 to ±0.3 to 0 to 30 psi Pressure Ranges
- Ratiometric 4V Output
- Temperature Compensated
- Calibrated Zero and Span

## Applications

- Medical Instrumentation
- Environmental Instrumentation
- HVAC Instrumentation

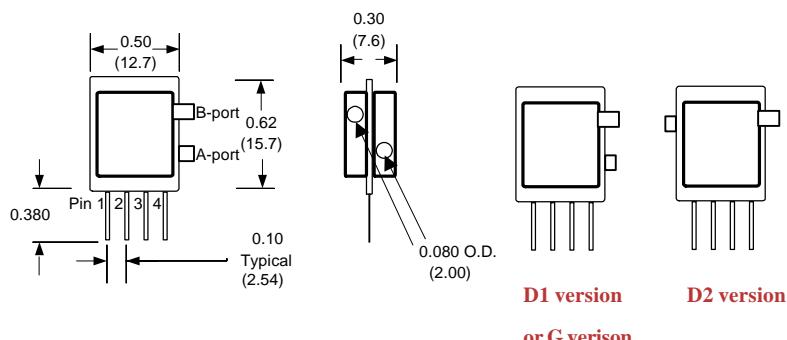
## General Description

The Miniature Amplified line of pressure sensors is based upon technology developed over years of development in the pressure sensor industry. 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.

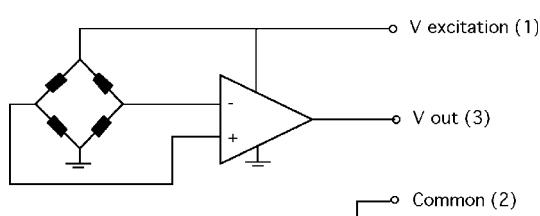
These calibrated and temperature compensated sensors give an accurate and stable output over a wide temperature range. Each sensor is internally compensated using an ASIC compensation technique. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the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



## Equivalent Circuit



Pressure Sensor Ratings		Environmental Specifications	
Supply Voltage, Vs	+4.5 to +5.5 Vdc	Temperature Ranges	
Common-mode pressure	-10 to +10 psig	Compensated	5 to 50° C
Lead Temperature, max (soldering 2-4 sec.)	250°C	Operating	-25 to 85° C
		Storage	-40 to 125° C
		Humidity Limits	0 to 95% RH (non condensing)

## Standard Pressure Ranges

Part Number	Operating Pressure	Nominal Span	Proof Pressure	Burst Pressure
0.3 PSI-Dx-4V-MINI	±0.3 PSI	4 V	5 PSI	10 PSI
0.3 PSI-G-4V-MINI	0 - 0.3 PSI	4 V	5 PSI	10 PSI
1 PSI-Dx-4V-MINI	±1 PSI	4 V	5 PSI	10 PSI
1 PSI-G-4V-MINI	0 - 1 PSI	4 V	5 PSI	10 PSI
5 PSI-Dx-4V-MINI	± 5 PSI	4 V	15 PSI	30 PSI
5 PSI-G-4V-MINI	0 - 5 PSI	4 V	15 PSI	30 PSI
15 PSI-A-4V-MINI	0 - 15 PSIA	4 V	45 PSI	60 PSI
15 PSI-Dx-4V-MINI	±15 PSI	4 V	45 PSI	60 PSI
15 PSI-G-4V-MINI	0 - 15 PSI	4 V	45 PSI	60 PSI
30 PSI-A-4V-MINI	0 - 30 PSIA	4 V	60 PSI	60 PSI
30 PSI-Dx-4V-MINI	±30 PSI	4 V	60 PSI	60 PSI
30 PSI-G-4V-MINI	0 - 30 PSI	4 V	60 PSI	100 PSI
BARO-A-4V-MINI	600 - 1100 mbar	4 V	45 PSI	60 PSI

## Performance Characteristics for 0.3 PSI-Dx-4V-MINI

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	225	2.35	volt
Offset Temperature Shift (5°C-50°C), note 2			±40	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C-50°C), note 2			±2	%span

### 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.

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

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure		0.3		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 (5°C-50°C), note 2			±40	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C-50°C), note 2			±2	%span

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

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 (5°C to 50°C), note 2			±40	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

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

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 (5°C to 50°C), note 2			±40	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

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

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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span



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

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure		50		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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for 15 PSI-A-4V-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	0		15	psia
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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for 15 PSI-Dx-4V-MINI

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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for BARO-A-4V-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	600		1100	mBar
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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°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 100 useconds.

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## Performance Characteristics for 15 PSI-G-4V-MINI

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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for 30 PSI-Dx-4V-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure		±30.0		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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for 30 PSI-G-4V-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure		30.0		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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

## Performance Characteristics for 30 PSI-A-4V-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure		30.0		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 (5°C to 50°C), note 2			±20	mvolt
Linearity, hysteresis error, note 4			±0.5	%fs
Span Shift (5°C to 50°C), note 2			±1	%span

### 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.

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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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