

Amplified Middle Pressure Sensors

±0.3 psi to 100 psi Pressure Sensors



Features

- 0 to ±0.3 to 0 to 150 psi Pressure Ranges
- Ratiometric 4V Output
- Temperature Compensated
- Calibrated Zero and Span

Applications

- Medical Instrumentation
- Environmental Instrumentation
- HVAC Instrumentation

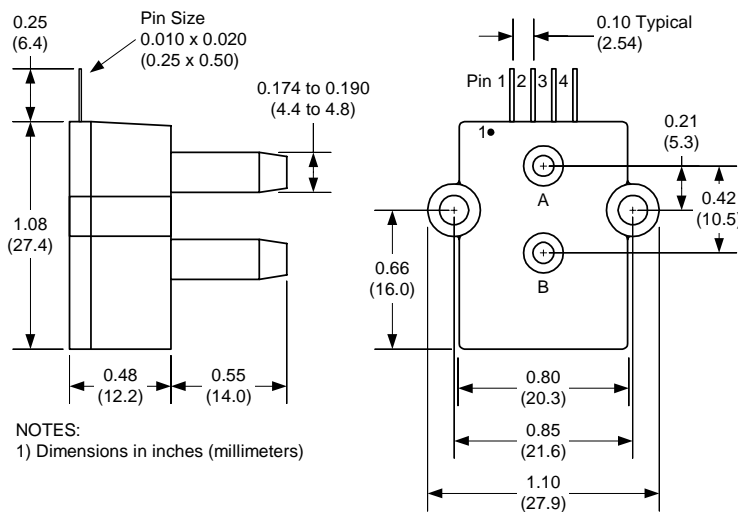
General Description

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

Approvals

MKT	DATE	MFG	DATE	ENG	DATE	QA	DATE
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All Sensors

DS-0028 Rev B

all sensors

e www.allsensors.com

f 408 225 2079

p 408 225 4314

a 16035 Vineyard Blvd. Morgan Hill, CA 95037



Pressure Sensor Ratings

Supply Voltage, V _s	+4.5 to +5.5 Vdc
Common-mode pressure	-10 to +10 psig
Lead Temperature, max (soldering 2-4 sec.)	250°C

Environmental Specifications

Temperature Ranges	
Compensated	5 to 50° 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-D-4V	±0.3 PSI	4 V	5 PSI	10 PSI
0.3 PSI-G-4V	0 - 0.3 PSI	4 V	5 PSI	10 PSI
1 PSI-D-4V	±1 PSI	4 V	5 PSI	10 PSI
1 PSI-G-4V	0 - 1 PSI	4 V	5 PSI	10 PSI
5 PSI-D-4V	± 5 PSI	4 V	15 PSI	30 PSI
5 PSI-G-4V	0 - 5 PSI	4 V	15 PSI	30 PSI
15 PSI-A-4V	0 - 15 PSIA	4 V	45 PSI	60 PSI
15 PSI-D-4V	±15 PSI	4 V	45 PSI	60 PSI
15 PSI-G-4V	0 - 15 PSI	4 V	45 PSI	60 PSI
30 PSI-A-4V	0 - 30 PSIA	4 V	60 PSI	60 PSI
30 PSI-D-4V	±30 PSI	4 V	60 PSI	60 PSI
30 PSI-G-4V	0 - 30 PSI	4 V	60 PSI	100 PSI
100 PSI-A-4V	0 - 100 PSI	4V	150 PSI	150 PSI
100 PSI-D-4V	±100 PSI	4 V	150 PSI	150 PSI
100 PSI-G-4V	0 - 100 PSI	4V	150 PSI	150 PSI
150 PSI-G-4V	0 - 150 PSI	4V	200 PSI	200 PSI
BARO-A-4V	600 - 1100 mbar	4V	45 PSI	60 PSI

Performance Characteristics for 0.3 PSI-D-4V

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

Amplified Output Medium Pressure Sensor

Performance Characteristics for 0.3 PSI-G-4V

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	0	--	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

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

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	0	--	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

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

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	0	--	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 (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 & 15 PSI-G-4V

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute or gage pressure	0	--	15	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-D-4V

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 30 PSI-A-4V & 30 PSI-G-4V

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute or gage pressure	0	--	30	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

Amplified Output Medium Pressure Sensor

Performance Characteristics for 30 PSI-D-4V

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 100 PSI-A-4V & 100 PSI-G-4V

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	100	--	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 100 PSI-D-4V

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	±100	--	PSI
Output Span, note 5	±1.90	±2.0	±2.10	volt
Offset Voltage @ zero 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 150 PSI-G-4V

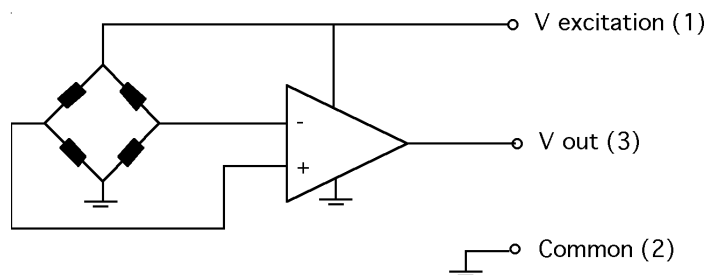
Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	150	--	PSI
Output Span, note 5	3.90	4.0	4.10	volt
Offset Voltage @ zero pressure	0.15	0.25	0.35	volt
Offset Temperature Shift (5°C to 50°C), note 2	--	--	±20	mvolt
Linearity, hysteresis error, note 4	--	--	±0.5	%fs
Span Shift (5°C to 50°C), note 2	--	--	±1	%span



Performance Characteristics for BARO-A-4V

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

Equivalent Circuit



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. ABSOLUTE DEVICES REQUIRE PRESSURE TO BE APPLIED TO PORT A.

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.