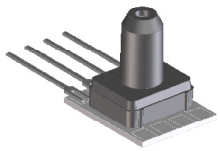
Miniature Pressure Sensors

H-Grade
Pressure Sensors



Features

- 0 to 4" H2O to 0 to 100 PSI Pressure Ranges
- 0.5 % linearity...high accuracy version
- Temperature Compensated
- Calibrated Zero and Span

Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

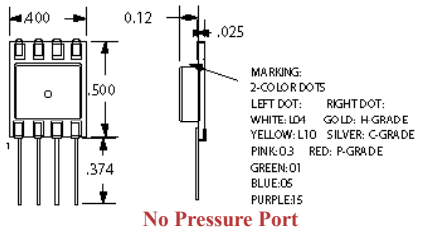
General Description

The Miniature series pressure sensors are based upon a proprietary technology to reduce the size of the sensor and yet maintain a high level of performance. This model provides a calibrated millivolt output with superior output offset characteristics. Output offset errors due to change in temperature, stability to warm-up, stability to long time period, and position sensitivity are all significantly reduced when compared to conventional compensation methods. In addition the sensor utilizes a silicon, micromachined, stress concentration enhanced structure to provide a very linear output to measured pressure.

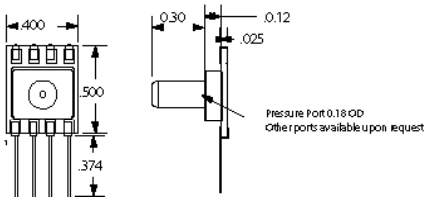
These calibrated and temperature compensated sensors give an accurate and stable output over a wide temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like. The H-GRADE is a high accuracy version of the millivolt output pressure sensors.

The output of the device is ratiometric to the supply voltage and operation from any D.C. supply voltage.

Physical Dimensions

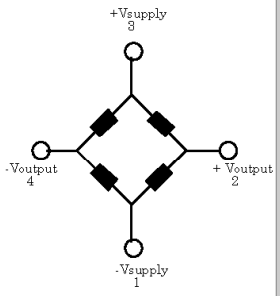


No Pressure Port

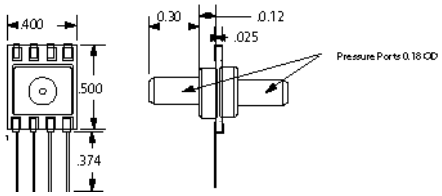


Single Pressure Port

Equivalent Circuit



Marking:
right dot: gold: H-Grade
left dot:
L04: white
L10: yellow
0.3: pink
1.0: green
05: blue
15: purple
30: orange
100: brown



Dual Pressure Port

Input Resittance	5.0 k ohm
Output Resistance	3.0 k ohm

Approvals

MKT DATE	MFG DATE	ENG DATE	QA DATE
☐ As Is ☐ With Change	☐ As Is ☐ With Change	☐ As Is ☐ With Change	☐ As Is ☐ With Change

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Pressure Sensor Characteristics Maximum Ratings

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

Environmental Specifications

Temperature Ranges	
Compensated	0 to (50)70° C
Operating	-25 to 85° C
Storage	-40 to 125° C
Humidity Limits	0 to 95% RH (non condensing)

Standard Pressure Ranges

No Prssure Port		Single Pressure Port	Dual Pressure Port	
Part Number	**Operating Pressure**	**Part Number**	**Part Number**	**Proof Pressure**
4 INCH-G-HGRADE-MINI	0 - 4 "H2O	4 INCH-GF-HGRADE-MINI	4 INCH-D-HGRADE-MINI	3 PSI
0.3 PSI-G-HGRADE-MINI	0 - 0.3 PSI	0.3 PSI-GF-HGRADE-MINI	0.3 PSI-D-HGRADE-MINI	3 PSI
10 INCH-G-HGRADE-MINI	0 - 10 "H2O	10 INCH-GF-HGRADE-MINI	10 INCH-D-HGRADE-MINI	5 PSI
1 PSI-G-HGRADE-MINI	0 - 1 PSI	1 PSI-GF-HGRADE-MINI	1 PSI-D-HGRADE-MINI	10 PSI
5 PSI-G-HGRADE-MINI	0 - 5 PSI	5 PSI-GF-HGRADE-MINI	5 PSI-D-HGRADE-MINI	20 PSI
15 PSI-A-HGRADE-MINI	0 - 15 PSIA	15 PSI-AF-HGRADE-MINI		60 PSI
15 PSI-G-HGRADE-MINI	0-15 PSI	15 PSI-GF-HGRADE-MINI	15 PSI-D-HGRADE-MINI	60 PSI
30 PSI-A-HGRADE-MINI	0 -30 PSIA	30 PSI-AF-HGRADE-MINI		60 PSI
30 PSI-G-HGRADE-MINI	0-30 PSI	30 PSI-GF-HGRADE-MINI	30 PSI-D-HGRADE-MINI	60 PSI
100 PSI-G-HGRADE-MINI	0-100 PSI	100 PSI-GF-HGRADE-MINI		150 PSI

Performance Characteristics for 4 INCH-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	4.0	--	"H2O
Output Span, note 5	24	25	26	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-50°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-50°C), note 2	--	--	±1	%fs

Performance Characteristics for 10 INCH-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	10.0	--	"H2O
Output Span, note 5	19	20	21	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 0.3 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	0.3	--	PSI
Output Span, note 5	19	20	21	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 1 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	1.0	--	PSI
Output Span, note 5	17.82	18.00	18.18	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 5 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	5.0	--	PSI
Output Span, note 5	59.4	60.0	60.6	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 15 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	15.0	--	PSI
Output Span, note 5	89.1	90.0	90.9	mV
Offset Voltage @ zero gage pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

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Performance Characteristics for 15 PSI-A-HGRADE-MINI

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 differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 30 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	30.0	--	PSI
Output Span, note 5	89.1	90.0	90.9	mV
Offset Voltage @ zero gage pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 30 PSI-A-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	--	30.0	--	PSIA
Output Span, note 5	89.1	90.0	90.9	mV
Offset Voltage @ zero differential pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

Performance Characteristics for 100 PSI-G-HGRADE-MINI

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	100.0	--	PSI
Output Span, note 5	99.0	100.0	101.0	mV
Offset Voltage @ zero gage pressure	--	--	±0.5	mV
Offset Temperature Shift (0°C-70°C), note 2	--	--	±0.5	mV
Linearity, hysteresis error, note 4	--	0.25	0.5	%fs
Span Shift (0°C-70°C), note 2	--	--	±1	%fs

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.

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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