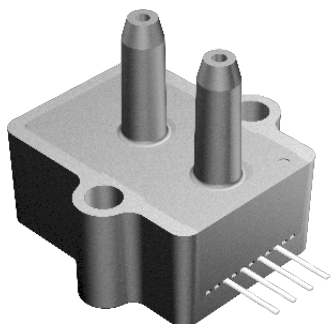


# ADCA SERIES AMPLIFIED LOW PRESSURE SENSORS



## Features

- 0.25 to 60 In H<sub>2</sub>O Pressure Ranges
- Ratiometric 4V Amplified Output
- Temperature Compensated Ranges Available in Standard, Industrial and Military ranges.
- Calibrated Zero and Span

## Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

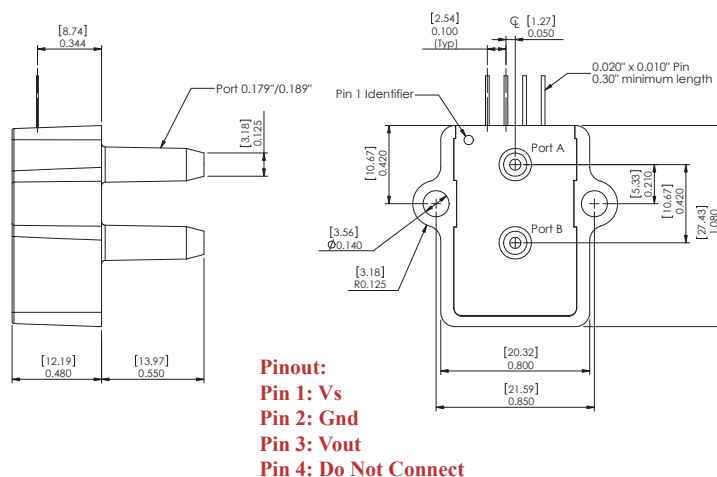
## General Description

The ADCA series of Amplified low pressure sensors are based upon a proprietary technology to reduce all output offset or common mode errors. This model provides a ratiometric 4-volt 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.

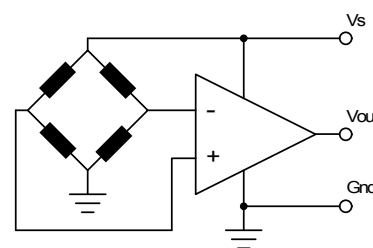
These calibrated and temperature compensated sensors give an accurate and stable output over a wide temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like.

The 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

<b>Supply Voltage VS</b>	+4.5 to +5.5 Vdc
<b>Common-mode pressure</b>	-10 to +10 psig
<b>Lead Temperature, max (soldering 2-4 sec.)</b>	270°C

## Standard Pressure Ranges

## Environmental Specifications

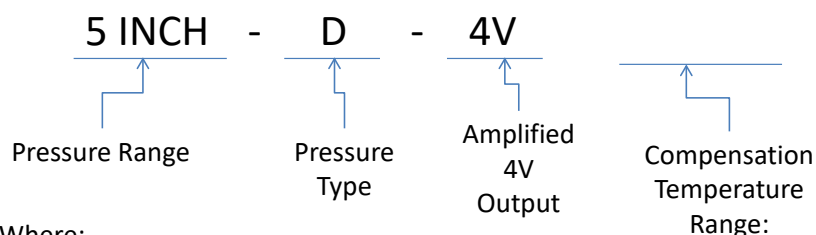
<b>Temperature Ranges</b>	
<b>Compensated</b>	Standard: 5° C to 50° C Industrial: -25° C to 85° C Military: -40° C to 125° C
<b>Operating &amp; Storage</b>	-40 to 125° C
<b>Humidity Limits</b>	0 to 95% RH (non condensing)

Device	Operating Range <sup>A, B</sup>		Pressure Type	Nominal Span	Proof Pressure		Burst Pressure		Specification Notes
	inH2O	Pa			inH2O	kPa	inH2O	kPa	
0.25 INCH-D-4V	±0.25	65	Differential	4V	40	10	80	20	1
0.25 INCH-G-4V	0 to 0.25	65	Gage	4V	40	10	80	20	1
0.5 INCH-D-4V	±0.5	125	Differential	4V	40	10	80	20	1
0.5 INCH-G-4V	0 to 0.5	125	Gage	4V	40	10	80	20	1
1 MBAR-D-4V	±1 mbar	100	Differential	4V	100	25	200	50	1
1 INCH-D-4V	±1	250	Differential	4V	100	25	200	50	—
1 INCH-G-4V	0 to 1	250	Gage	4V	100	25	200	50	—
2.5 INCH-D-4V	±2.5	625	Differential	4V	200	50	300	75	1
2.5 INCH-G-4V	0 to 2.5	625	Gage	4V	200	50	300	75	1
5 INCH-D-4V	±5	1,250	Differential	4V	200	50	300	75	—
5 INCH-G-4V	0 to 5	1,250	Gage	4V	200	50	300	75	—
10 INCH-D-4V	±10	2,500	Differential	4V	200	50	300	75	—
10 INCH-G-4V	0 to 10	2,500	Gage	4V	200	50	300	75	—
20 INCH-D-4V	±20	5,000	Differential	4V	300	75	500	125	—
20 INCH-G-4V	0 to 20	5,000	Gage	4V	300	75	500	125	—
30 INCH-D-4V	±30	7,500	Differential	4V	500	125	800	200	—
30 INCH-G-4V	0 to 30	7,500	Gage	4V	500	125	800	200	—
40 INCH-G-4V	0 to 40	10,000	Gage	4V	500	125	800	200	1
60 INCH-G-4V	0 to 60	15,000	Gage	4V	500	125	800	200	1

Note A: Operating range in Pa is expressed as an approximate value.

Note B: Products are calibrated to operating range expressed in inH2O (except 1 MBAR-D-4V, which is calibrated to range in mbar).

## Ordering Information:



Where:

Compensation Temperature Range: \_\_\_\_\_ (empty – indicates Standard)

Compensation Temperature Range: “—PRIME” indicates Industrial

Compensation Temperature Range: “—MIL” indicates Military

Example: 5 INCH-D-4V-PRIME

## Performance Characteristics for ADCA Series Amplified Low Pressure Sensors

All parameters are measured at 5.0 volt excitation and room temperature unless otherwise specified. Pressure measurements are with positive pressure applied to PORT B

Parameter		Minimum	Nominal	Maximum	Units	Specification Notes
<b>Output Span</b>						
	All Differential Products	±1.90	±2.0	±2.10	V	5
	All Gage Products	3.9	4.0	4.1	V	5
<b>Span Temperature Shift</b>						
	0.25 INCH-D-4V	-	-	±3	%FSS	2
	0.25 INCH-G-4V	-	-	±3	%FSS	2
	0.50 INCH-D-4V	-	-	±3	%FSS	2
	0.50 INCH-G-4V	-	-	±3	%FSS	2
	1 MBAR-D-4V	-	-	±3	%FSS	2
	1 INCH-D-4V	-	-	±2	%FSS	2
	1 INCH-G-4V	-	-	±2	%FSS	2
	2.5 INCH-D-4V	-	-	±2	%FSS	2
	2.5 INCH-G-4V	-	-	±2	%FSS	2
	All Others	-	-	±1	%FSS	2
<b>Offset Voltage @ zero differential pressure</b>						
	All Differential Products	2.15	2.25	2.35	V	-
	All Gage Products	0.15	0.25	0.35	V	-
<b>Offset Temperature Shift</b>						
	0.25 INCH-D-4V	-	-	±60	mV	2
	0.25 INCH-G-4V	-	-	±60	mV	2
	0.50 INCH-D-4V	-	-	±60	mV	2
	0.50 INCH-G-4V	-	-	±60	mV	2
	1 MBAR-D-4V	-	-	±60	mV	2
	1 INCH-D-4V	-	-	±60	mV	2
	1 INCH-G-4V	-	-	±60	mV	2
	2.5 INCH-D-4V	-	-	±60	mV	2
	2.5 INCH-G-4V	-	-	±60	mV	2
	5 INCH-D-4V	-	-	±40	mV	2
	5 INCH-G-4V	-	-	±40	mV	2
	All Others	-	-	±20	mV	2
<b>Offset Warm-up Shift</b>						
	0.25 INCH-D-4V	-	±20	-	mV	3
	0.25 INCH-G-4V	-	±20	-	mV	3
	0.50 INCH-D-4V	-	±20	-	mV	3
	0.50 INCH-G-4V	-	±20	-	mV	3
	1 MBAR-D-4V	-	±20	-	mV	3
	1 INCH-D-4V	-	±10	-	mV	3
	1 INCH-G-4V	-	±10	-	mV	3
	All Others	-	±5	-	mV	3
<b>Offset Position Sensitivity (±1g)</b>						
	0.25 INCH-D-4V	-	±20	-	mV	6
	0.25 INCH-G-4V	-	±20	-	mV	6
	0.50 INCH-D-4V	-	±20	-	mV	6
	0.50 INCH-G-4V	-	±20	-	mV	6
	1 MBAR-D-4V	-	±20	-	mV	6
	1 INCH-G-4V	-	±15	-	mV	6
	All Others	-	±5	-	mV	6

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## Performance Characteristics for ADCA Series Amplified Low Pressure Sensors (Cont'd)

All parameters are measured at 5.0 volt excitation and room temperature unless otherwise specified. Pressure measurements are with positive pressure applied to PORT B

Parameter	Minimum	Nominal	Maximum	Units	Specification Notes
<b>Offset Long Term Drift (one year)</b>					
0.25 INCH-D-4V	-	±20	-	mV	-
0.25 INCH-G-4V	-	±20	-	mV	-
0.50 INCH-D-4V	-	±20	-	mV	-
0.50 INCH-G-4V	-	±20	-	mV	-
1 MBAR-D-4V	-	±20	-	mV	-
1 INCH-D-4V	-	±10	-	mV	-
1 INCH-G-4V	-	±10	-	mV	-
All Others	-	±5	-	mV	-
<b>Linearity, Hysteresis error (all products)</b>	-	0.05	0.25	%FSS	4

**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:** Part number is available in Standard Compensation Temperature Range only.

**Note 2:** Shift is relative to 25°C between standard, industrial, or military compensated temperature range endpoints.

**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 span is the algebraic difference between full scale output voltage and the offset voltage.

**Note 6:** Parameter is characterized and not 100% tested.

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