

ADCA Series - Basic Compact Pressure Sensor Series

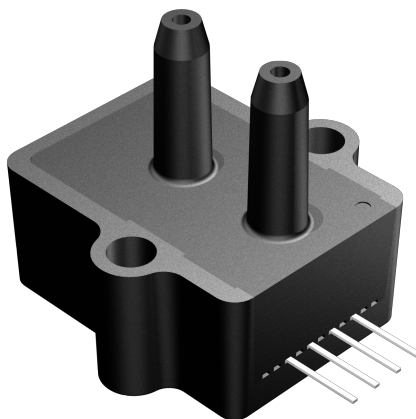


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Introduction

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.

<https://www.allsensors.com/products/adca-series>



All Sensors Corporation's Quality Management System has been certified by TUV SUD in accordance with the ISO 9001:2015 Standard.

ADCA SERIES AMPLIFIED LOW PRESSURE SENSORS

Features	Applications
<ul style="list-style-type: none"> • Pressure Ranges from 0.25 to 60 inH2O • Ratiometric 4V Amplified Output • Temperature Compensated Ranges Available in Standard, Industrial, and Military Ranges • Calibrated Zero and Span 	<ul style="list-style-type: none"> • Medical Instrumentation • Environmental Controls • HVAC

Standard Pressure Ranges

Device	Operating Range ^{A, B}		Pressure Type	Nominal Span	Proof Pressure		Burst Pressure		Notes
	inH2O	kPa			inH2O	kPa	inH2O	kPa	
0.25 INCH-D-4V	±0.25	±0.1	Differential	4V	40	10	80	20	C
1 MBAR-D-4V	±1 mbar	±0.1	Differential	4V	100	25	200	50	C
0.5 INCH-D-4V	±0.5	±0.1	Differential	4V	40	10	80	20	C
1 INCH-D-4V	±1	±0.25	Differential	4V	100	25	200	50	-
2.5 INCH-D-4V	±2.5	±0.6	Differential	4V	200	50	300	75	C
5 INCH-D-4V	±5	±1.25	Differential	4V	200	50	300	75	-
10 INCH-D-4V	±10	±2.5	Differential	4V	200	50	300	75	-
20 INCH-D-4V	±20	±5	Differential	4V	300	75	500	125	-
30 INCH-D-4V	±30	±7.5	Differential	4V	500	125	800	200	-
0.25 INCH-G-4V	0 to 0.25	0 to 0.1	Gage	4V	40	10	80	20	C
0.5 INCH-G-4V	0 to 0.5	0 to 0.1	Gage	4V	40	10	80	20	C
1 INCH-G-4V	0 to 1	0 to 0.25	Gage	4V	100	25	200	50	-
2.5 INCH-G-4V	0 to 2.5	0 to 0.6	Gage	4V	200	50	300	75	C
5 INCH-G-4V	0 to 5	0 to 1.25	Gage	4V	200	50	300	75	-
10 INCH-G-4V	0 to 10	0 to 2.5	Gage	4V	200	50	300	75	-
20 INCH-G-4V	0 to 20	0 to 5	Gage	4V	300	75	500	125	-
30 INCH-G-4V	0 to 30	0 to 7.5	Gage	4V	500	125	800	200	-
40 INCH-G-4V	0 to 40	0 to 10	Gage	4V	500	125	800	200	C
60 INCH-G-4V	0 to 60	0 to 15	Gage	4V	500	125	800	200	C

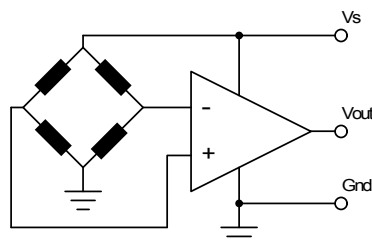
Note A: Operating range in Pa is expressed as an approximate value.

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

Note C: Part number is only available in Standard Temperature Compensation range.

Pressure Sensor Maximum Ratings	Environmental Specifications
Supply Voltage (Vs) +4.5 to +5.5 Vdc Common Mode Pressure -10 to +10 psig Lead Temperature (soldering 2-4 sec.) 270°C Maximum Device Temperature 245°C	Temperature Ranges Compensated - Standard 5°C to 50°C Compensated - Industrial -25°C to 85°C Compensated - Military -40°C to 125°C Operating & Storage -40°C to 125°C Humidity Limits (non condensing) 0 to 95% RH

Equivalent Circuit



Performance Characteristics for ADCA Series

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		Min	Typ	Max	Units	Notes
Output Span						
	All Differential Products	±1.90	±2.0	±2.10	V	4
	All Gage Products	3.9	4.0	4.1	V	4
Span Temperature Shift						
	0.25 inH ₂ O, 1mbar, 0.5 inH ₂ O	-	-	±3	%FSS	1
	1 inH ₂ O, 2.5 inH ₂ O	-	-	±2	%FSS	1
	All Others	-	-	±1	%FSS	1
Offset Voltage @ zero differential pressure						
	All Differential Products	2.15	2.25	2.35	V	-
	All Gage Products	0.15	0.25	0.35	V	-
Offset Temperature Shift						
	0.25 inH ₂ O, 1mbar, 0.5 inH ₂ O, 1 inH ₂ O, 2.5 inH ₂ O	-	-	±60	mV	1
	5 inH ₂ O	-	-	±40	mV	1
	All Others	-	-	±20	mV	1
Offset Warm-up Shift						
	0.25 inH ₂ O, 1 mbar, 0.5 inH ₂ O	-	±20	-	mV	2
	1 inH ₂ O	-	±10	-	mV	2
	All Others	-	±5	-	mV	2
Offset Position Sensitivity (±1g)						
	0.25 inH ₂ O, 1 mbar, 0.5 inH ₂ O	-	±20	-	mV	5
	1 INCH-G-4V	-	±15	-	mV	5
	All Others	-	±5	-	mV	5
Offset Long Term Drift (one year)						
	0.25 inH ₂ O, 0.5 inH ₂ O	-	±20	-	mV	-
	1 inH ₂ O	-	±10	-	mV	-
	All Others	-	±5	-	mV	-
Linearity, Hysteresis error (all products)						
		-	0.05	0.25	%FSS	3

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: SHIFT IS RELATIVE TO 25°C BETWEEN STANDARD, INDUSTRIAL, OR MILITARY COMPENSATED TEMPERATURE RANGE ENDPOINTS.

NOTE 2: SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE.

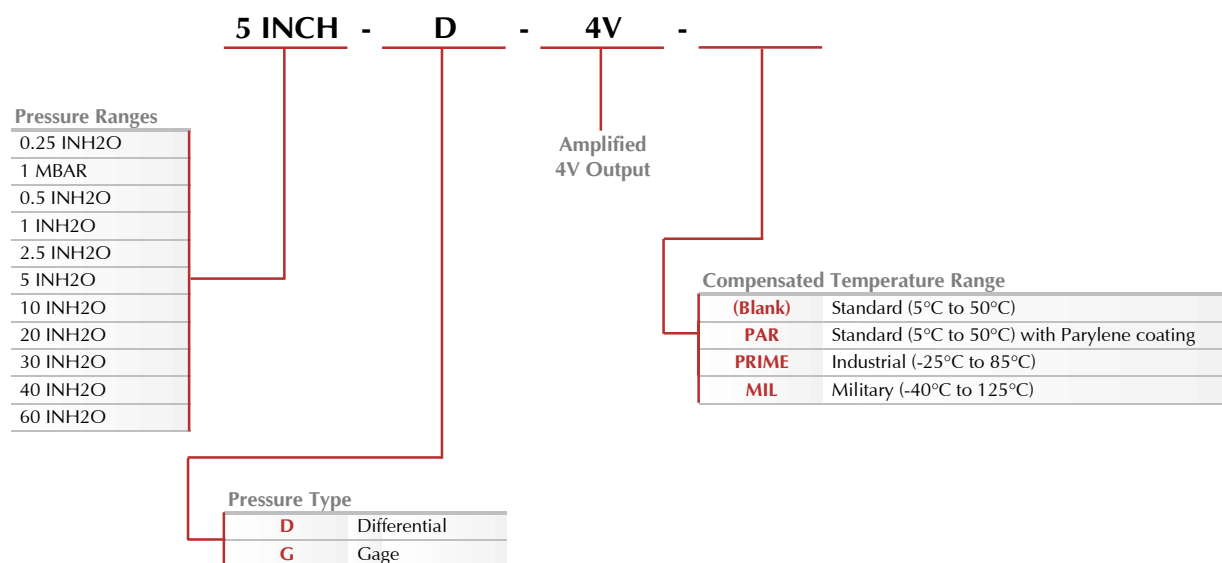
NOTE 3: MEASURED AT ONE-HALF FULL SCALE RATED PRESSURE USING BEST STRAIGHT LINE CURVE FIT.

NOTE 4: THE SPAN IS THE ALGEBRAIC DIFFERENCE BETWEEN FULL SCALE OUTPUT VOLTAGE AND THE OFFSET VOLTAGE.

NOTE 5: PARAMETER IS CHARACTERIZED AND NOT 100% TESTED.



How to Order



Note:

Parylene is only available on Standard Temperature Compensation Range products of 10 inH₂O and above.

Example Part Numbers:

5 INCH-D-4V: 5 inH₂O Differential Part with Standard Temperature Compensation (5°C to 50°C)

5 INCH-D-4V-PAR: 5 inH₂O Differential Part with Standard Temperature Compensation (5°C to 50°C) and a Protective Parylene Coating

5 INCH-D-4V-PRIME: 5 inH₂O Differential Part with Industrial Temperature Compensation (-25°C to 85°C)

Parylene Coating:

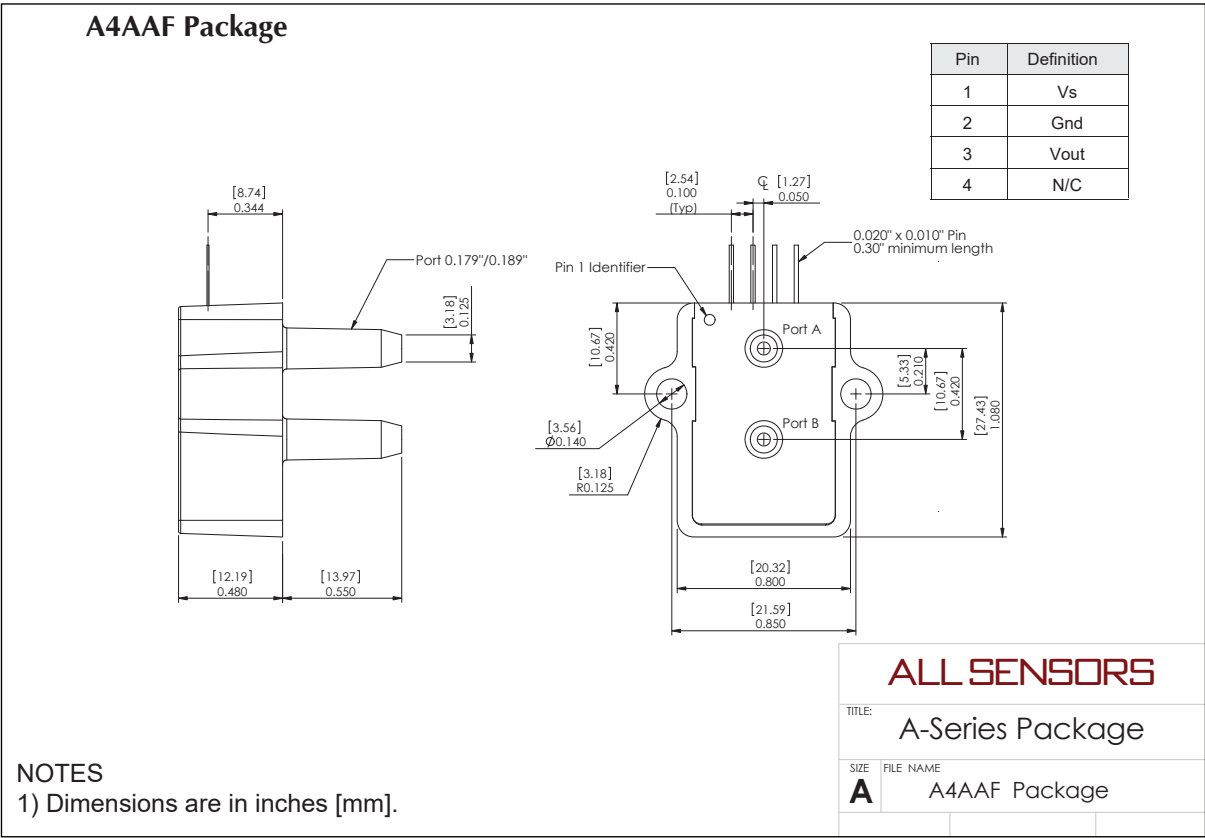
Parylene coating provides a moisture barrier and protection from some harsh media.

Unlike other pressure sensor suppliers offering a Parylene coating, All Sensors performs this process in-house and uses an advanced production system to achieve the highest accuracy and reliability. This avoids transferring products out of and back to the pressure sensor manufacturing facility, provides complete quality control and improves the delivery time to customers. Specially designed masking techniques allow All Sensors to apply a cost-effective, high-volume Parylene coating in-house.

Consult factory for applicability of Parylene for the target application and sensor type.

This option is only available for pressure ranges of ± 10 inH₂O and above.

Package Drawings



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