



ALL SENSORS®
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AABP Pressure Sensor Series

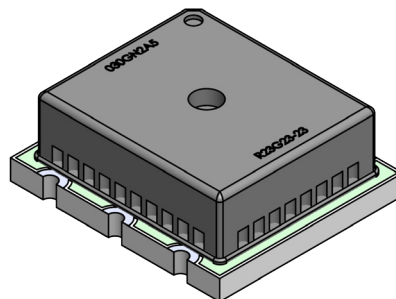
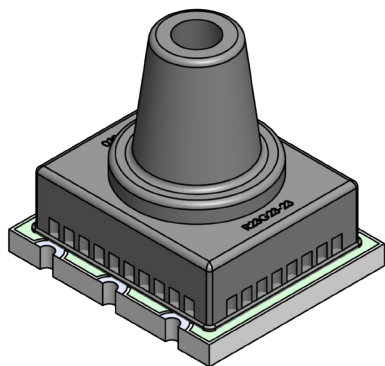


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Introduction

The AABP series are piezoresistive silicon pressure sensors offering a digital or ratiometric analog output over the specified pressure and temperature range.

They are fully calibrated and temperature compensated using on board Application Specific Integrated Circuit (ASIC) in a compact package.

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



For All Sensors Corporation's most recent quality certification documents, please visit www.allsensors.com

AABP Series Pressure Sensors

Features

- Compact footprint 8mm x 7mm
- Total Error Band $\pm 1.5\%$ FSS
- Wide Pressure Range: 5PSI to 150PSIG
- Output: Digital I2C or SPI or Ratiometric Analog
- Single Power Supply of 3.3V or 5V
- Calibrated Over Temperature Range: 0°C to 50°C [32°F to 122°F]

Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

Pressure Ranges

Device	Pressure Range	Proof Pressure ¹	Burst Pressure ²
005PG	0 to 5 PSIG	15 PSIG	25 PSIG
015PG	0 to 15 PSIG	45 PSIG	75 PSIG
030PG	0 to 30 PSIG	90 PSIG	150 PSIG
060PG	0 to 60 PSIG	120 PSIG	200 PSIG
100PG	0 to 100 PSIG	200 PSIG	250 PSIG
150PG	0 to 150 PSIG	200 PSIG	250 PSIG

Note 1: Proof Pressure: The maximum pressure which may safely be applied to the sensor for it to remain in specification once pressure is returned to the operating pressure range.

Note 2: Burst pressure: The maximum pressure that may be applied to the sensor without causing escape of pressure media. The sensor should not be expected to function after exposure to any pressure beyond the burst pressure.

Pressure Sensor Maximum Ratings		Environmental Specifications	
Supply Voltage (Vs)	6 Vdc	Temperature Ranges	
Voltage on any pin	-0.3 to Vs+ 0.3 Vdc	Operating	-40°C to 85°C [-40°F to 185°F]
		Compensated	0°C to 50°C [32°F to 122°F]
		Storage	-40°C to 85°C [-40°F to 185°F]
Digital Interface Frequency		Humidity Limits (non condensing)	0 to 95% RH
I2C	100 to 400 kHz	Media	non-corrosive gases
SPI	50 to 800 kHz	Wetted Materials	
Reflow Temperature & Time	15s max at 250°C	Alumina ceramic, high temp polyamide, epoxy, silicone, glass, gold, aluminum	

Performance Characteristics

Parameter	Analog			Digital			Units	Notes
	Min	Typ	Max	Min	Typ	Max		
Supply Voltage (Vs)								
3.3 Vdc	3.00	3.30	3.60	3.00	3.30	3.60	VDC	1, 2, 3
5 Vdc	4.75	5.00	5.25	4.75	5.00	5.25	VDC	1, 2, 3
Supply Current								
3.3 Vdc	-	2.1	2.8	-	3.1	3.9	mA	-
5 Vdc	-	2.7	3.8	-	3.7	4.6	mA	-
Sleep Mode Option	-	-	-	-	1	10	uA	-
Compensated Temperature Range	0 [-32]	-	50 [122]	0 [-32]	-	50 [122]	°C [°F]	4
Temperature Output Option	-	-	-	-	±2.0	-	°C	5
Startup Time (Powerup to Data Ready)	-	-	5	-	-	3	ms	-
Response Time	-	1.00	-	-	0.46	-	ms	-
Clipping Limit								
Upper	-	-	97.50	-	-	-	%Vs	-
Lower	2.5	-	-	-	-	-	%Vs	-
I2C/SPI Voltage Level								
Low	-	-	-	-	-	20	%Vs	-
High	-	-	-	80	-	-	%Vs	-
Pull Up on SDA/MISO, SCL/SCLK, SS	-	-	-	1	-	-	kΩ	-
Total Error Band (TEB)	-	-	±1.5	-	-	±1.5	%FSS	6, 7
Accuracy (BFSL)	-	-	±0.25	-	-	±0.25	%FSS	8
Long Term Stability (1000 hrs, 25°C [77°F])	-	-	±0.25	-	-	±0.25	%FSS	-
Output Resolution								
	0.03	-	-	-	-	-	%FSS	-
	-	-	-	12	-	-	bits	-

Specification Notes

NOTE 1: SENSORS ARE EITHER 3.3 VDC OR 5.0 VDC BASED ON THE DEVICE LISTING SELECTED.

NOTE 2: RATIOMETRICITY OF THE SENSOR (OUTPUT IS PROPORTIONAL TO SUPPLY VOLTAGE) IS ACHIEVED WITHIN THE SPECIFIED OPERATING VOLTAGE.

NOTE 3: THE SENSOR IS NOT REVERSE POLARITY PROTECTED. INCORRECT CONNECTION OF SUPPLY VOLTAGE OR GROUND MAY CAUSE ELECTRICAL FAILURE.

NOTE 4: COMPENSATED TEMPERATURE RANGE IS THE TEMPERATURE RANGE OVER WHICH THE SENSOR WILL PRODUCE AN OUTPUT PROPORTIONAL TO THE PRESSURE WITHIN THE SPECIFIED PERFORMANCE LIMITS.

NOTE 5: TEMPERATURE OUTPUT OPTION: TYPICAL TEMPERATURE OUTPUT ERROR OVER THE COMPENSATED TEMPERATURE RANGE OF 0°C TO 50°C. OPERATING IN SLEEP MODE MAY AFFECT TEMPERATURE OUTPUT ERROR DEPENDING ON DUTY CYCLE.

NOTE 6: TOTAL ERROR BAND: THE MAXIMUM DEVIATION FROM AN IDEAL TRANSFER FUNCTION OVER THE ENTIRE COMPENSATED PRESSURE AND TEMPERATURE RANGE. INCLUDES ALL ERRORS FROM OFFSET, SPAN, NON-LINEARITY, PRESSURE HYSTERESIS, REPEATABILITY, THERMAL EFFECT ON OFFSET, SPAN AND HYSTERESIS.

NOTE 7: FULL SCALE SPAN (FSS): THE ALGEBRAIC DIFFERENCE BETWEEN THE OUTPUT MEASURED AT THE MAXIMUM AND MINIMUM LIMITS OF THE SPECIFIED PRESSURE RANGE.

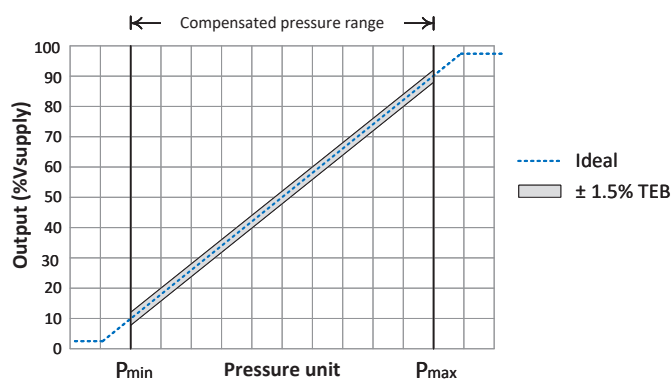
NOTE 8: ACCURACY: THE MAXIMUM DEVIATION IN OUTPUT FROM A BEST FIT STRAIGHT LINE (BFSL) FITTED TO THE OUTPUT MEASURED OVER THE PRESSURE RANGE AT 25°C [77°F] INCLUDING ALL ERRORS FROM PRESSURE NON-LINEARITY, PRESSURE HYSTERESIS, AND NON-REPEATABILITY.

Sensor Output at Significant Percentages (Digital Version Only)

% OUTPUT	DIGITAL COUNTS	
	DECIMAL	HEX
0	0	0x0000
10	1638	0x0666
50	8192	0x2000
90	14746	0x399A
100	16383	0x3FFF

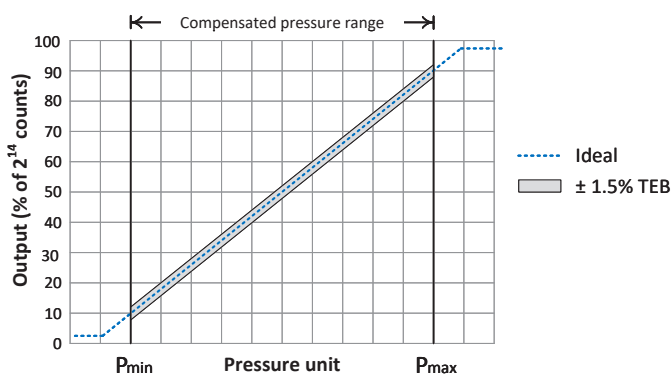
Transfer Functions

ANALOG
VERSION



$$\text{Output(V)} = \frac{0.8 \times V_s \times (\text{Pressure}_{\text{applied}} - P_{\min})}{P_{\max} - P_{\min}} + 0.1 \times V_s$$

DIGITAL
VERSION



$$\text{Output(counts)} = \left[\frac{0.8 \times (\text{Pressure}_{\text{applied}} - P_{\min})}{P_{\max} - P_{\min}} + 0.1 \right] \times 2^{14}$$

How to Order Table

AABP - XXXG - HLNN - C - N2A3

Product Series

Pressure Range

005G	0 to 5 psig
015G	0 to 15 psig
030G	0 to 30 psig
060G	0 to 60 psig
100G	0 to 100 psig
150G	0 to 150 psig

Package Selection

HNNN
No port



HLNN
Single axial
Barbless port



Compensated Temperature Range

C 0° C to 50° C

Supply Voltage

3	3.3 VDC
5	5.0 VDC

Transfer Function

A	10% to 90% of Vsupply (analog), 2 ¹⁴ counts (digital), no temperature output, no sleep mode
D	10% to 90% of 2 ¹⁴ counts (digital only), temperature output enabled, sleep mode enabled
S	10% to 90% of 2 ¹⁴ counts (digital only), no temperature output, sleep mode enabled
T	10% to 90% of 2 ¹⁴ counts (digital only), temperature output enabled, no sleep mode

Output Type

A	Analog	3	I ² C, Address 0x38
S	SPI	4	I ² C, Address 0x48
0	I ² C, Address 0x08	5	I ² C, Address 0x58
1	I ² C, Address 0x18	6	I ² C, Address 0x68
2	I ² C, Address 0x28	7	I ² C, Address 0x78

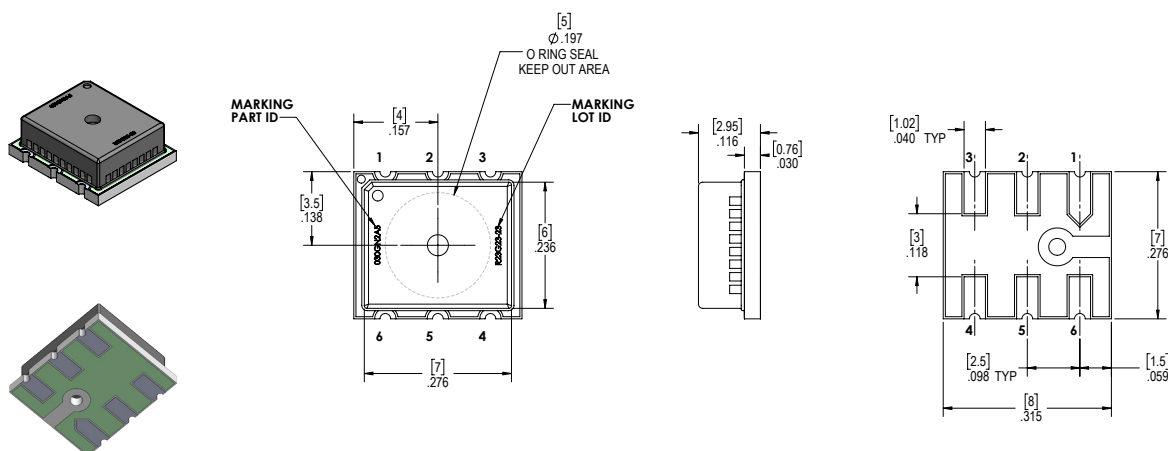
Product Option

C	No Parylene, Diagnostic On
E	Parylene, Diagnostic On
N	No Parylene, Diagnostic Off
P	Parylene, Diagnostic Off

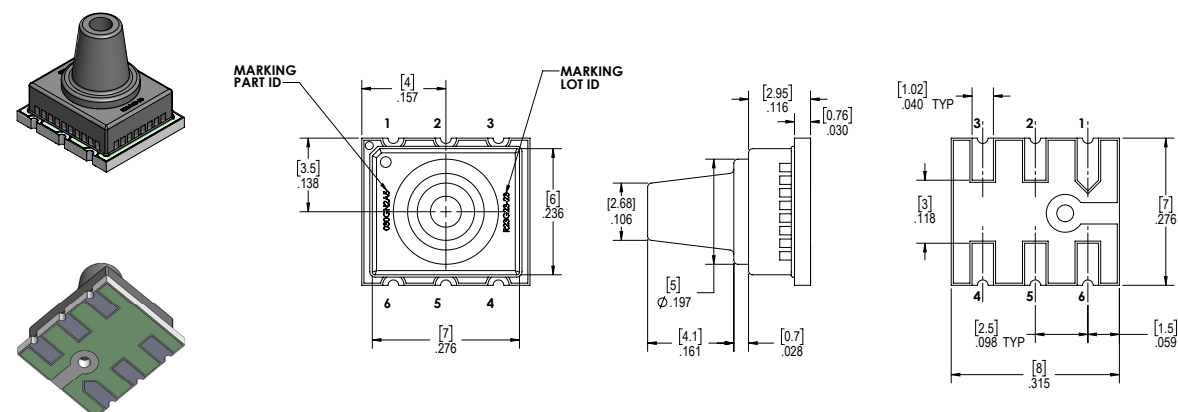
Note: Custom pressure ranges are available. Please contact the factory for more information.

Package Drawings

NN: No Port



LN: Single Axial Barbless Port

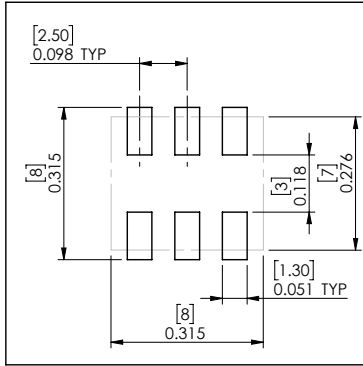


Dimensions in inches [mm]

Pinouts

OUTPUT TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6
Analog	GND	NC	Vout	NC	NC	Vs
I2C	GND	Vs	INT	NC	SDA	SCL
SPI	GND	Vs	SS	NC	MISO	SCLK

PAD Layout



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