



**Acuity Incorporated**  
Fremont, California  
USA 94539

# Acuity Series AC4065/AC4066 Amplified Low Pressure Sensor Module with Analog and Digital Outputs

The AC4065 series amplified pressure sensor is a new, extremely low-pressure amplified product featuring the Acuity AC3050 and AC3030 low pressure die. The sensor is calibrated either as a gauge device with the zero at 0.5 Volts and a full-scale span of 4.0 Volts or as a differential device with zero at 2.5 Volts and a span of +/- 2 Volts. The gauge part is the AC4065 while the differential part is the AC4066.

Both types have two-wire I2C digital interfaces enabling bus addressing of multiple sensors and providing not only a pressure read-out but a temperature read-out as well.

Because of the stability of the Acuity pressure sensing die, the AC4065 can use the full capability of the incorporated ASIC die while achieving at 2.5 mBar better than a 2.5% total accuracy in calibration over pressure from 0 to 70 C.

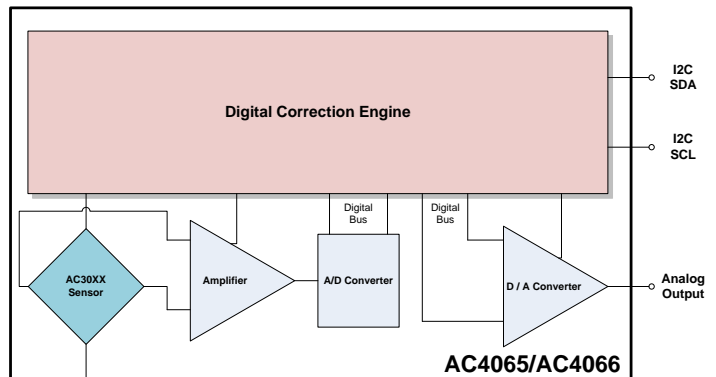
The sensor corrects the sensor signal with a multi-point calibration algorithm using a dedicated signal processor ASIC over temperature and pressure. It provides the



**Standard Configuration of the AC4065/6-XXX**

calibrated and compensated analog output which enables the part to be used in stand-alone applications.

The small foot-print of the package allows easy positioning on printed circuit boards for imbedded OEM applications such as HVAC control and low-level air flow.



**Equivalent Block Diagram of AC4065/AC4066**

**Dimension**

Top view dimensions: 15.20 (width), 15.20 (height), 14.73 (height to center), 2.54 (pin pitch), 8 (pin offset), 5 (pin offset), 5.1 (height to top), 8.1 (height to bottom), 9.4 (width to center), 4 (width to center), 3.0 (width to center).

Side view dimensions: 3.2 (port diameter), 12.5 (port height), 8.8 (port offset), 0.5 (port offset), 4.2 (port offset), LID 14 x 9.5 (lid dimensions).

**NOTE:**

1. Port B is used for positive differential
2. Port A is not used for gage
3. All dimensions are mm

PIN	DESCRIPTION
1	NC
2	GND
3	NC
4	SDA
5	SCL
6	NC
7	VDD
8	ANALOG OUT



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Specification - V1.2a AC4065 and AC4066	Acuity Amplified Low Pressure Sensor - 2.5 mBar					Note	Acuity Amplified Low Pressure Sensor - 5.0 mBar					Note	Acuity Amplified Low Pressure Sensor - 10 mBar					Note	
	Min	Nominal	Max	Unit			Min	Nominal	Max	Unit			Min	Nominal	Max	Unit			
Electrical Drive	4.5	5.000	5.5	Volts		1	4.5	5.000	5.5	Volts		1	4.5	5.000	5.5	Volts		1	
Supply Voltage																			
Supply Voltage Absolute Maximum			6.5	Volts					6.5	Volts					6.5	Volts			
Supply Current		2.5		mA				2.5		mA				2.5		mA			
Output Drive Current	-1		1	mA			-1		1	mA			-1		1	mA			
Step Response Delay		1.5		mS				1.5		mS				1.5		mS			
Internal Conversion Resolution			15	bits (1 in 32768)					15	bits (1 in 32768)					15	bits (1 in 32768)			
Output Resolution			11	bits (1 in 2048)		2			11	bits (1 in 2048)		2			11	bits (1 in 2048)			2
Electrical	Min	Target	Max				Min	Target	Max				Min	Target	Max				
<b>ZERO</b>																			
Zero at 25 C - AC4065	0.42	0.50	0.58	Volts		1	0.44	0.50	0.56	Volts		1	0.46	0.50	0.54	Volts			1
Zero at 25 C - AC4066	2.46	2.50	2.54	Volts			2.47	2.50	2.53	Volts			2.48	2.50	2.52	Volts			
Zero Error at 25 C (% FS)	-2.00	0.00	2.00	%FS			-1.50	0.00	1.50	%FS			-1.00	0.00	1.00	%FS			
Zero Error: 0 to 70 C (% FS)	-2.00	0.00	2.00	%FS			-1.50	0.00	1.50	%FS			-1.50	0.00	1.50	%FS			
<b>SPAN</b>																			
Span at 25 C - AC4065	3.92	4.00	4.08	Volts		1	3.94	4.00	4.06	Volts		1	3.96	4.00	4.04	Volts			1
Span at 25 C - AC4066	1.96	2.00	2.04	Volts			1.97	2.00	2.03	Volts			1.98	2.00	2.02	Volts			
Span Error at 25 C (% FS)	-2.00	0.00	2.00	%FS			-1.50	0.00	1.50	%FS			-1.00	0.00	1.00	%FS			
Span Error: 0 to 70 C (% FS)	-2.00	0.00	2.00	%FS			-2.00	0.00	2.00	%FS			-1.50	0.00	1.50	%FS			
Linearity	-0.50	0.00	0.50	%FS			-0.30	0.00	0.30	%FS			-0.30	0.00	0.30	%FS			
<b>STABILITY</b>		Typical						Typical						Typical					
Warm-up (1 hour after turn-on)		0.5		%FS				0.375		%FS				0.25		%FS			
Position Sensitivity		0.125		%FS				0.075		%FS				0.035		%FS			
Long-Term Drift (1 year)		0.75		%FS				0.625		%FS				0.375		%FS			
<b>Mechanical Pressure</b>	Min	Target	Max				Min	Target	Max				Min	Target	Max				
<b>Full Scale Pressure Ranges</b>		2.5		mBar				5		mBar				10		mBar			
Overpressure - Burst	>120X			FS Pressure			>60X			FS Pressure			>30X			FS Pressure			
Overpressure - Proof	>80X			FS Pressure			>40X			FS Pressure			>20X			FS Pressure			

Updated: 2015-03-16

- 1 Analog Output Ratiometric to Supply
- 2 Module also provides 15 bit resolution I2C digital outputs

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**Ordering Information:**

## AC406X-PPP-T

Where: **X = 5 for Gage or  
6 for Differential**

**PPP = Pressure Range**

Range	Full-Scale Pressure
2P5	2.5 mBar
010	10 mBar

**Ship from Stock** – Pressure ranges of 2.5 mBar and 10 mBar are routinely stocked in limited prototyping quantities. Higher pressure ranges are available on special-orders with a typical 4 to 6 week lead-time. Consult Acuity Sales ([Sales@acuitymicro.com](mailto:Sales@acuitymicro.com)) for current lead times.

**Custom Ranges and Pressure Ports:** Acuity will customize products to meet customer needs both in port configuration and pressure ranges on large orders. Consult Acuity Sales ([Sales@acuitymicro.com](mailto:Sales@acuitymicro.com)) for details.

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