



# Acuity Series AC4020 Compensated Low Pressure Current Excitation Sensor Module

**Acuity Incorporated**  
Fremont, California  
USA 94539

The AC4020 series compensated pressure sensor is a new, extremely low-pressure product featuring the Acuity AC3050 and AC3030 low pressure die. The AC4020 is designed to operate with a Constant Current excitation. The device is calibrated at a 1.5 mA excitation.

The sensor is calibrated using a laser-trimmed passive resistive network to provide both calibration and temperature compensation.

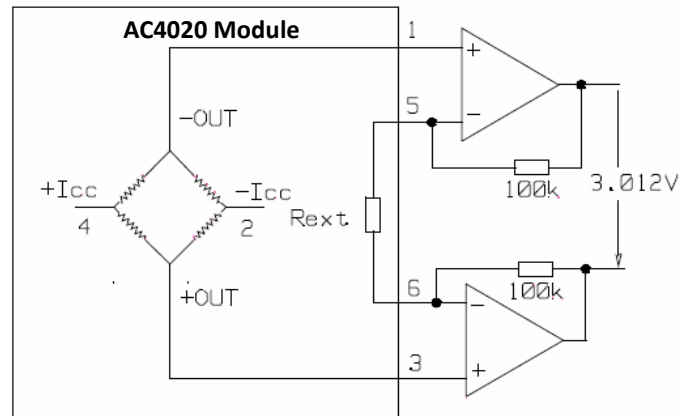
The AC4020 comes in 4 ranges – 10 mBar, 20 mBar, 50 mBar, and 100 mBar.

The AC4020 provides 25 to 75 mV output at rated pressure at 1.5 mA drive. The parts are calibrated over the 0 to 60 C temperature range. Because the compensation network is totally passive, the device can operate at higher or lower current drives with the output scaling proportionally to the current drive.

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



**Standard Configuration of the AC4020-XXX**



**Equivalent Circuit of AC4020**

### Dimension

**NOTE:**

1. Port B is used for positive differential
2. Port A is not used for gage
3. All dimensions are mm
4. Tube Length: L=12.45 mm; S=8.45 mm  
S is the standard.



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## AC4020 – Specifications – 10 to 100 mBar

All measurements made at 1.500 mA drive unless otherwise specified

Specification	AC4020-010			AC4020-020,050,100			Units
	Min	Typical	Max	Min	Typical	Max	
<b>LIMITS</b>							
Excitation Current	0	1.5	3	0	1.5	3	mA
Full Scale Pressure Ranges	10			20, 50, 100			mBar
Overpressure - Proof	>10X			>10X			FS Pressure
Overpressure - Burst	>15X			>15X			FS Pressure
<b>Temperature</b>							
Calibrated	0	25	60	0	25	60	°C
Operating	-20	25	125	-20	25	125	°C
Storage	-45	25	150	-45	25	150	°C
<b>ELECTRICAL - Measured at 1.500 mA</b>							
<b>Resistance</b>							
Bridge resistance Input Imp	2.6	3	3.7	2.6	3	3.7	kohms
Bridge resistance Output Imp	3.3	3.5	4.2	3.3	3.5	4.2	kohms
<b>Offset</b>							
Offset - No Pressure	-2	0	2	-2	0	2	mV
TC Offset	-2	0.2	2	-1	0.2	1	% FS
Zero Thermal Hysteresis	-0.35	0.1	0.35	-0.25	0.1	0.25	% FS
<b>Sensitivity</b>							
Span	25	40	60	25	45	75	mV
TC Span	-1	0.2	1	-0.75	0.2	0.75	% FS
Pressure Hysteresis	-0.2	0.05	0.2	-0.2	0.05	0.2	% FS
Pressure Nonlinearity	-1	0.1	1	-0.5	0.1	0.5	% (BFSL) "A port"
Gainset Resistor Span Calibration	-2	0.2	2	-2	0.2	2	% FS (NOTE 1)

Notes:

- 1) Sensors are calibrated in PSI. Gainset Resistor is based on calibration for the 10 mBar at 0.15 PSI, for the 20 mBar at 0.3 PSI, for the 50 mbar at 0.8 PSI, and for the 100 mBar at 1.5 PSI.
- 2) Span is ratiometric to Current Excitation
- 3) Pressure Non-linearity is computed as Best-Fit-Straight-Line with pressure applied to "A Port"
- 4) Parts are interchangeable with a gain-set matching provided by an on-board gain-set resistor when used in a standard amplifier circuit shown on page 1.

<b>Ordering Information:</b> <b>AC4020-PPP-T</b> Where: <b>PPP = Pressure Range</b> <b>T = Tube Length</b> (S=8.45 mm; L=12.45 mm) <b>S=Standard Default Length</b>	<table border="1"> <thead> <tr> <th>Range</th> <th>Full-Scale Pressure</th> <th>Calibration Pressure</th> </tr> </thead> <tbody> <tr> <td>010</td> <td>10 mBar</td> <td>0.15 PSI</td> </tr> <tr> <td>020</td> <td>20 mBar</td> <td>0.30 PSI</td> </tr> <tr> <td>050</td> <td>50 mBar</td> <td>0.80 PSI</td> </tr> <tr> <td>100</td> <td>100 mBar</td> <td>1.50 PSI</td> </tr> </tbody> </table>	Range	Full-Scale Pressure	Calibration Pressure	010	10 mBar	0.15 PSI	020	20 mBar	0.30 PSI	050	50 mBar	0.80 PSI	100	100 mBar	1.50 PSI
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