Acuity Series AC4022 Compensated Low Pressure Voltage Excitation Sensor Module

Acuity Incorporated
Fremont, California
USA 94539

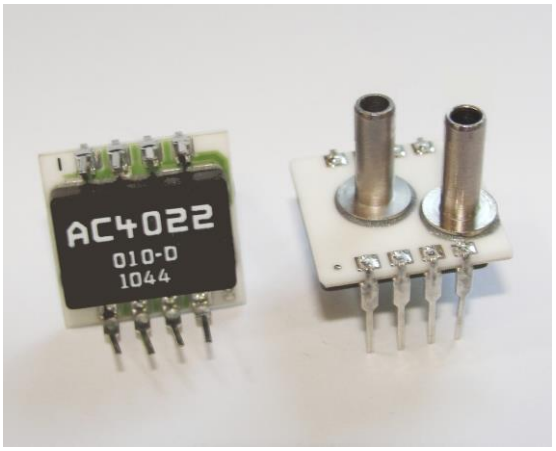
The AC4022 series compensated pressure sensor is a new, extremely low-pressure product featuring the Acuity AC3050 and AC3030 low pressure die. ***The AC4022 is designed to operate with a Constant Voltage excitation***. The device is calibrated at a 10 Volt excitation. For applications requiring a constant current excitation, use the AC4020.

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

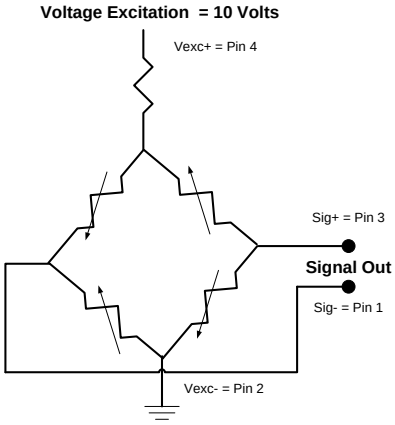
The AC4022 comes in 4 ranges – 10 mBar, 20 mBar, 50 mBar, and 100 mBar.

The AC4022 provides 25 mV output at rated pressure at 10 Volt 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.

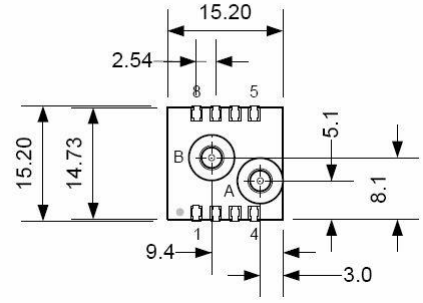


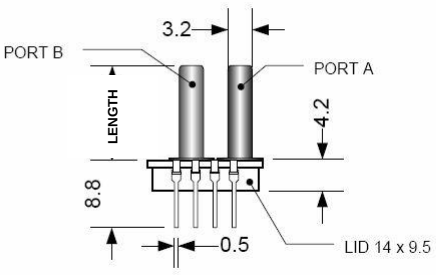
Standard Configuration of the AC4022-XXX



Equivalent Circuit of AC4022

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.

Acuity Incorporated
Fremont, California
USA 94539

AC4022 – Specifications – 10 to 100 mBar

All measurements made at 10.00 Volt drive unless otherwise specified

Specification	AC4022-010			AC4022-020,050,100			Units
LIMITS	Min	Typical	Max	Min	Typical	Max	
Excitation Voltage	0	10	20	0	10	20	**Volts**
Full Scale Pressure Ranges		**10**			**20 , 50, 100**		**mBar (Note 1)**
Overpressure - Proof	>10X			>10X			FS Pressure
Overpressure - Burst	>15X			>15X			FS Pressure
Temperature							
Calibrated	0	25	60	0	25	60	^{0}C
Operating	-20	25	125	-20	25	125	^{0}C
Storage	-45	25	150	-45	25	150	^{0}C
ELECTRICAL - Measured at 10.00 Volts							
Resistance							
Bridge resistance Input Imp	4.5	12	25	4.5	12	25	kohms
Bridge resistance Output Imp	2	3.3	4.2	2	3.3	4.2	kohms
Offset							
Offset - No Pressure	-2	0	2	-2	0	2	mV
TC Offset	-2	0.2	2	-1	0.2	1	% FS
Zero Thermal Hysteresis	-0.65	0.1	0.65	-0.45	0.1	0.45	% FS
Sensitivity							
Span	23.75	25	26.25	24.5	25	25.5	mV (Note 1)
TC Span	-2	0.2	2	-0.75	0.2	0.75	% FS
Pressure Hysteresis	-0.2	0.05	0.2	-0.2	0.05	0.2	% FS
Pressure Nonlinearity	-2.5	0.1	2.5	-0.5	0.1	0.5	% (BFSL) “A port”
Gainset Calibration	-5	0.2	5	-2	0.2	2	% FS (Note 1)

Notes:

1) Sensors are calibrated in PSI. Gainset 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 Voltage Excitation
3) Pressure Non-linearity is computed as Best-Fit-Straight-Line with pressure applied to “A Port”

Ordering Information:

AC4022-PPP-T

Where:

PPP = Pressure Range
T = Tube Length
(S=8.45 mm; L=12.45 mm)
S=Standard Default Length

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