High Accuracy Systems

AA06A and AD06A Sensors
670C Signal Conditioner

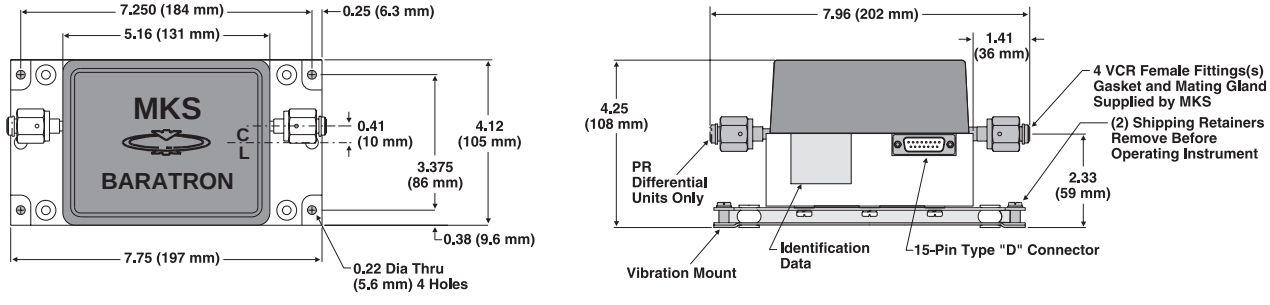
The MKS High Accuracy Baratron® Pressure Measurement Systems combine advanced capacitance diaphragm sensor technology and solid state electronics with the features demanded by today's process and metrology engineers to make precision pressure measurement easy – whether on the production line or in the research or metrology laboratory. If your principal concern is accurate pressure measurement, or you need to measure pressure over a very wide range, the MKS High Accuracy Systems are ideal solutions. Long considered standards of pressure measurement in both industry and research, MKS high accuracy Baratron systems are completely modular with a full selection of pressure ranges, levels of accuracy, options, and accessories that ensure there's a system exactly right for your application.

AA06A and AD06A Sensors

All MKS high-accuracy sensors are single-ended dual-electrode/AC bridge devices that are extremely stable and designed to minimize the effect of temperature changes. Full Scale ranges are available from 25,000 Torr down to 0.1 Torr. Each range measures down to 1 part in 10^6 Full Scale with selected percent Reading accuracy limited by this resolution and with accuracies ranging from 0.25% to 0.05% of Reading. Models are available in absolute and differential configurations. They are constructed of Inconel® and stainless steel, allowing use with many wet, dirty, or corrosive gases.

Product Features

- Excellent thermal stability due to extremely low temperature coefficients
- Highest accuracy pressure measurement instruments available
- Designed for use with 670C Signal Conditioner
- Ideal for calibration Transfer Standards
- Six decades of measurement often eliminates several transducers with limited resolution



Dimensional Drawing

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

670 Signal Display

The 670C Display Unit has a front panel that allows for full control of all the instrument's features. All functions can be monitored and controlled via the RS-232 interface. Range switching may be done manually or automatically with the 670C, selecting the lowest possible on-scale range. A key-lock switch on the front panel determines Local or Remote control. The 670C may be used with any sensor Full Scale and will display pressure in any one of 12 engineering units. Sensor response time may be set for 1, 40, or 400 msec, and a data averaging feature allows the user to average signals from 0.1 to 10 seconds, to optimize the pressure readings for transients or noisy pressures.

Product Features

- Microprocessor-based electronics unit provides power, signal conditioning, and display for operating all High Accuracy Baratron pressure sensors
- Analog and digital input/output signals facilitate interfacing to computers and process control systems
- Two built-in alarm relays provide process pressure trip points

Accessories

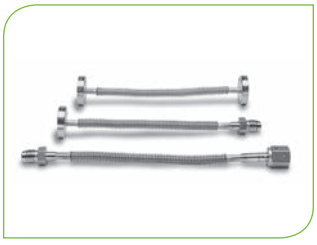
Rack Mounts

The RM-6 Rack Mount Kit is used to adapt any half-rack instrument (3 1/2" x 9 1/2") to full-rack size (3 1/2" x 19").

Isolation Valves

To decrease the frequency of zero adjustment, it is recommended that a simple manual or air-actuated bellows-type isolation valve, such as MKS Part No. 108818 (NC11 Cleaned), be installed between a low range absolute sensor head and the processing system.

Bellows Adapters



Frequently it is desirable, because of mechanical configuration or system vibration, to attach the Baratron sensor to the processing system using flexible bellows couplings. All flexible tubing is 321 stainless steel, 1/4" diameter, and available in 6" and 12" active bellows lengths. The use of flexible bellows minimizes thermal expansion effects on sensor zero induced by hard plumbing to the system.

274B Three-channel Sensor Multiplexer

The 274B provides operation of one, two, or three high accuracy sensors with a single 670 Electronics Unit. The 274B provides heater power for temperature-controlled sensors (AA06A, AD06A). All sensors are kept warmed up and ready for reading by the 670. The 670 can sequentially read any one of the sensors, as selected by a switch on the 670's front panel, or by a remote ground closure.

Specifications

AA06A Absolute

Pressure Ranges (mmHg Full Scale)	Resolution (of Full Scale)	Accuracy % of Reading (± temp. coeff.)	Useable Measurement Range (Full Scale to)	Temp. Coefficients		Volume (cc)		Maximum Overpressure	Maximum Line Pressure	Operating Temperature Range (°C)	Materials Exposed to Gases		Fittings	Compliance
				Zero (Full Scale°C)	Span (Reading°C)	Px	Pr				Px	Pr		
0.1	1 x 10^{-6}	S: 0.12%	2 x 10^{-5}	30 ppm	100 ppm	2.5	N/A	40 psia	N/A	15° - 40°C temperature regulated at 45°C	Inconel, Stainless Steel	N/A	Swagelok® 4 VCR®	CE
		O: 0.08%	1 x 10^{-5}	30 ppm	100 ppm									
1 10 100 1000	1 x 10^{-6}	S: 0.12%	2 x 10^{-5}	15 ppm	20 ppm	2.5	N/A	45 psia	N/A					
		O: 0.08%	1 x 10^{-5}	4 ppm	20 ppm									
		O: 0.05%	1 x 10^{-5}	4 ppm	20 ppm									
5000 10000 15000 20000 25000	1 x 10^{-6}	S: 0.12% O: 0.08%	2 x 10^{-5} 1 x 10^{-5}	15 ppm	20 ppm	14	N/A	125% F.S.	N/A					
				4 ppm	20 ppm									

AD06A Differential

0.1	1 x 10^{-6}	S: 0.12%	2 x 10^{-5}	30 ppm	100 ppm	3.5	25	40 psid[2]	150 psig	15° - 40°C temperature regulated at 45°C	Inconel, Stainless Steel	Inconel, Stainless Steel, Alumina, Palladium Glass	Swagelok 4 VCR	CE
		O: 0.08%	1 x 10^{-5}	30 ppm	100 ppm									
1 10 100 1000	1 x 10^{-6}	S: 0.12%	2 x 10^{-5}	15 ppm	20 ppm	3.5	25	45 psid[2]	150 psig					
		O: 0.15%[1]	1 x 10^{-5}	4 ppm	20 ppm									
		S: 0.25%	1 x 10^{-5}	4 ppm	20 ppm									
		O: 0.08%	**1 x 10^{-5}**	**4 ppm**	**20 ppm**									
		O: 0.05%	**1 x 10^{-5}**	**4 ppm**	**20 ppm**									

S = Standard accuracy for particular range/calibration. O = Optional accuracy for particular range/calibration.

Notes:

[1] 0.15% of Reading and 0.25% of Reading accuracies on AD06A sensors are for bidirectional calibrations.

[2] For differential sensors: overpressure limits specified in above table are only for Px > Pr. For reverse overpressure (Pr > Px) on differential sensors, overpressure limit is 125% of Full Scale.

670C Signal Display

Compatible Sensors & Ranges	AA06A and AD06A from 0.1 to 25,000 mmHg (Torr) Full Scale
Display	2-line LCD, readings updated twice/second
Resolution	3½, 4½, or 5½ digits, user-selectable (Note: Useable system resolution depends upon sensor choice and application.)
Engineering Units	Torr, mTorr, mmHg, mbar, Pa, kPa, inHg, inH_20, cmH_20, psi, % of Full Scale, ppm of Full Scale (All user-selectable)
Ranges	x1, x0.1, x0.01 of sensor Full Scale, manual or auto-ranging
Response Time	1, 40, or 400 msec, user-selectable
Data Averaging	0.1 to 10 sec, user-selectable
Analog Outputs	
Analog	0 to ±10 VDC on each range into >10K Ω load
Impedance	<1 Ohm
Connectors	I/O: 37-pin female Type “D”, Remote signal: 9-pin male Type “D”
Digital Outputs	
RS-232 Connector	9-pin male Type “D”
Process Trip Point Relays	Two, 24 VAC/DC @ 1 Amp resistive (contact ratings) Two LEDs on front panel indicate status of each relay
Operating Temperature Range	15° to 40° C
Power Required	90-132 or 180-264 VAC, 50-60 Hz, 75 VA (max.) IEC-AC power line connector
Size	88 mm H x 240 mm W x 234 mm D (3.5” H x 9.5” W x 9.25” D)
Compliance	CE

Ordering Information

Ordering Code Example: AA06A11TRC/AD06A11TRC	Code	Configuration
AA06A Absolute Pressure Sensor	AA06A	AA06A
AD06A Differential Pressure Sensor	AD06A	AD06A
Pressure Range (mmHg)		
0.1 mmHg	.1T	11T
1 mmHg	01T	
10 mmHg	11T	
100 mmHg	12T	
1000 mmHg	13T	
5000 mmHg (AA06A only)	53T	
10000 mmHg (AA06A only)	14T	
15000 mmHg (AA06A only)	RBT	
20000 mmHg (AA06A only)	24T	
25000 mmHg (AA06A only)	RCT	
Fittings		
Swagelok 4 VCR female	R	R
Accuracy		
Unidirectional Calibration		C
±0.12% of Reading	C	
±0.08% of Reading	B	
±0.05% of Reading (1-1000 mmHg ranges only)	A	
Bidirectional Calibration		
±0.25% of Reading (1-1000 mmHg ranges AD06A only)	E	
±0.15% of Reading (1-1000 mmHg ranges AD06A only)	D	

Ordering Code Example: 670CD21	Code	Configuration
670C Electronics/Display Unit with RS232 interface	670CD21	670CD21

Ordering Code Example: 274B	Code	Configuration
274B Three-channel Sensor Multiplexer	274B	274B

Cable Information	
670C or 274B Sensor to AA06A or AD06A Sensors also works for older 390, 398, 590, 690, and 698)	RCB270S-2-10 (10ft shielded) RCB270S-2-20 (20ft shielded)

For cables longer than 20ft, consult factory.

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AA06A/AD06A_06/19