Pressure & Vacuum Measurement Solutions

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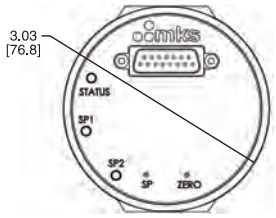
AA02A

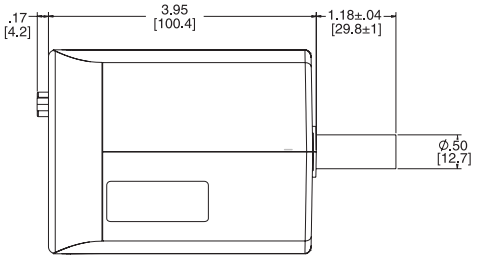
HEATED ABSOLUTE BARATRON® CAPACITANCE MANOMETER

The AA02A is an advanced general purpose absolute heated capacitance manometer developed specifically for use in vacuum and pressure measurement applications where high accuracy and excellent repeatability are crucial to process success. These capacitance manometers are internally heated to 45°, 80°, or 100°C for use in a wide variety of processes including semiconductor deposition, optical coating, and medical sterilization. They use state-of-the-art digital architecture throughout to produce the highest possible long-term performance and reliability. They can be equipped with either the standard sensor or the MKS patented etch baffle technology that greatly reduces process contamination, and they can be configured for both new and existing processing systems. These manometers operate on ±15 VDC or +24 VDC input voltage, and have 0 - 10 VDC analog output signals. Two (2) independent configurable solid state trip relays for pressure are available as an option to permit control of external components. Full Scale measurement ranges from 0.1 Torr (13.3 Pa) to 1000 Torr (133.3 kPa) are available.

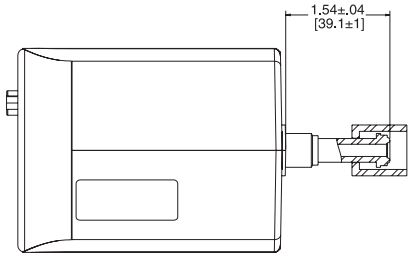
Features & Benefits

- All-digital architecture and improved thermal management provides better long-term stability, improved accuracy, and increased reliability
- Sensor temperatures of 45°, 80°, or 100°C
- Fully welded sensor is built entirely from Inconel® and Incoloy® nickel alloys for best-available corrosion resistance; uses no intermediate brazing or joining materials
- Full Scale measurement ranges from 0.1 Torr (13.3 Pa) to 1000 Torr (133.3 kPa)
- Pushbutton zero permits adjustment of zero position up to 20% of product's Full Scale range
- Ordering options are available for either ±15 VDC or +24 VDC input voltage, and provides 0 - 10 VDC analog output that is linear with pressure
- Standard or MKS patented etch baffle for use in processes with condensable byproducts
- 100% backwards compatible with previous 127, 128, 624, 625, 627, 628, E27, and E28 analog Baratron® capacitance manometers

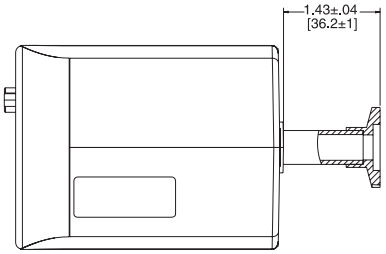




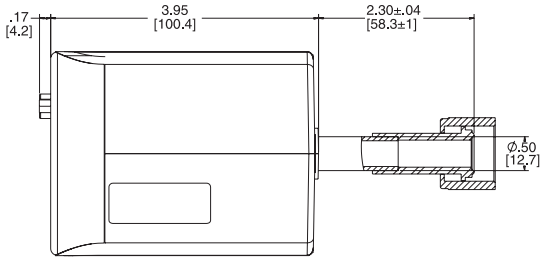
Fitting Code BA
Straight Tube .50 O.D.



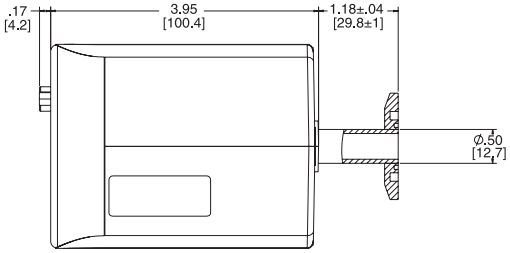
Fitting Code CD
4 VCR Female



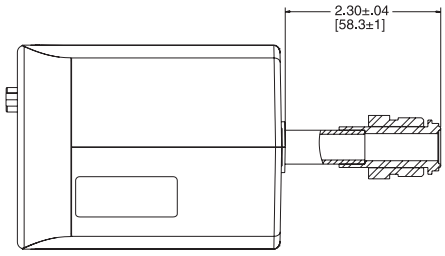
Fitting Code GA
NW-16 KF



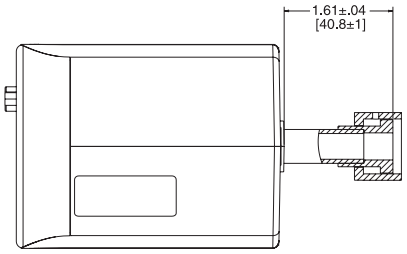
Fitting Code CE
8 VCR Female



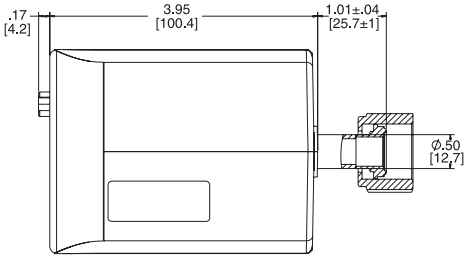
Fitting Code GC
NW-25 KF



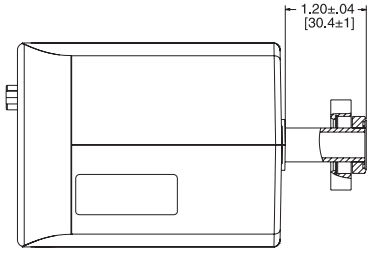
Fitting Code CF
8 VCR Male



Fitting Code DA
8 VCO Female



Fitting Code CR
8 VCR Female, Short Tube



Fitting Code HA
Mini-Conflat, Rotatable

Dimensional Drawing —

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

Specifications

Full Scale Measurement Ranges	0.1, 0.25, 1, 2, 10, 20, 100, 200, 500, and 1000 Torr (and metric equivalents)
Sensor Temperatures	45°, 80°, or 100°C
Accuracy (includes non-linearity, hysteresis, and non-repeatability)	
45°C Models	0.10% Reading for 1 - 1000 Torr, 0.12% Reading for < 1 Torr
80° and 100°C Models	0.20% Reading for 1 - 1000 Torr, 0.40% Reading for < 1 Torr
Resolution	0.002% Full Scale[1]
Zero Temperature Coefficients	
45°C Models	0.002% Full Scale/°C for 1 - 1000 Torr, 0.005% Full Scale/°C for < 1 Torr
80° and 100°C Models	0.002% Full Scale/°C for 1 - 1000 Torr, 0.01% Full Scale/°C for < 1 Torr
Span Temperature Coefficient	0.02% Reading/°C
Time Constant (τ)	< 20 ms for $\geq$ 1 Torr; < 40 ms for < 1 Torr
Ambient Operating Temperature	
45°C Models	15° to 40°C
80° and 100°C Models	15° to 50°C
Internal Sensor Volume	6.3 cm^3 (nominal – varies depending on fitting)
Warmup Time	2 hours for 1 – 1000 Torr models, 3 hours for < 1 Torr versions
Overpressure Limit	45 psia
Sensor Type	Standard or MKS patented etch baffle
Materials Exposed to Process Gases	Inconel and Incoloy nickel alloys. Some optional fittings are made from 300 series stainless steel.
Input Power Required	
45°C Models	±15 VDC (±5%) @ 0.40 amps (max) or +24 VDC ±10% @ 11 watts (max)
80° and 100°C Models	±15 VDC (±5%) @ 0.60 amps (max) or +24 VDC ±10% @ 22 watts (max)
Output Signal	
Analog	0 - 10 VDC into > 10 kΩ load
Trip Relay Option	Two (2) internally mounted process pressure trip relays, solid state, independently adjustable by customer at atmospheric pressure from 0.5% to 100% of Full Scale range. Relay capacity of 0.20 amps@ 30 VDC. Complies with UL1577 requirements.
Electrical Connector	15-pin D-subminiature. All pin assignments are identical to legacy Baratron analog capacitance manometers (and many competitive products) for direct retrofit into existing systems.
Fittings	
Standard	½" (12.7 mm) O.D. tube
Optional	VCR®, VCO®, CF, and NW-KF
Compliance	CE

[1]Obtainable under ideal conditions. Actual resolution in service may be different due to equipment design factors outside of MKS's control.

Ordering Information

Ordering Code Example: AA02A.1TCES44B000V00	Code	Configuration
Basic Model	**AA02A**	AA02A
Range		
0.1	.1	.1
0.25	RE	
1	01	
2	02	
10	11	
20	21	
100	12	
200	22	
500	52	
1000	13	
Units of Measurement		
Torr absolute	T	T
mbar absolute	M	
kPa absolute	K	
Fittings		
½" OD tube	BA	CE
4 female VCR (ranges > 2 Torr only) (must be used with V sensor only)	CD	
8 female VCR	CE	
8 male VCR	CF	
KF16	GA	
KF25	GC	
8 VCO female	DA	
1.33" OD CF	HA	
2.75" OD CF	HC	
Sensor Type and Inlet Tube Length		
Standard Sensor, standard inlet tube length	S	S
Standard Sensor, reduced inlet tube length	T	
Input Voltage		
+24 VDC	3	4
±15 VDC	4	
+24 VDC (required with trip point option)	5	
±15 VDC (required with trip point option)	6	
Sensor Temperature		
100°C	1	4
80°C	8	
45°C	4	
Electrical Connector		
15 pin D-subminiature, thread locks	B	B
15 pin D-subminiature, slide locks	P	
Trip Points		
None	00	00
Trip A above 50%, Trip B above 50% of Full Scale Range	AA	
Trip A above 50%, Trip B below 50% of Full Scale Range	AB	
Trip A below 50%, Trip B below 50% of Full Scale Range	BB	
Trip A below 50%, Trip B above 50% of Full Scale Range	BA	
Reserved		
Reserved	0	0
Calibration Orientation (ranges < 1 Torr only)		
Standard (all ranges ≥ 1 Torr)	0	V
Vertical (ranges < 1 Torr only)	V	
Horizontal (ranges < 1 Torr only)	H	
Accuracy		
Standard Accuracy	0	0
Reserved		
Reserved	0	0

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AA02A Heated Manometer - 12/18

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