

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.

Product Features

- Sensor temperatures of 45°, 80°, or 100°C
- Full Scale measurement ranges from 0.1 Torr (13.3 Pa) to 1000 Torr (133.3 kPa)
- 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
- Fully welded sensor is built entirely from Inconel® and Incoloy® nickel alloys for best-available corrosion resistance; uses no intermediate brazing or joining materials
- Pushbutton zero permits adjustment of zero position up to 20% of product's Full Scale range



Key Benefits

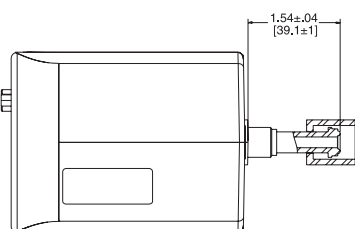
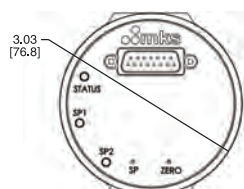
- All-digital architecture and improved thermal management provides better long-term stability, improved accuracy, and increased reliability
- Standard or MKS patented etch baffle for use in processes with condensable byproducts
- 100% backwards compatible with previous 127, 128, 624, 625, 627, 628, E27, and E28 analog Baratron® capacitance manometers

Specifications

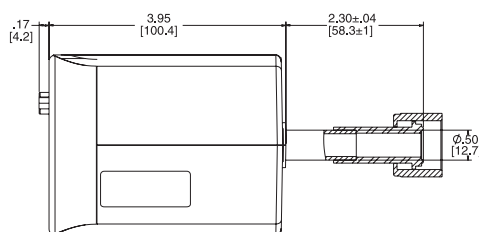
Full Scale Measurement Ranges	0.1, 0.25, 1, 2, 10, 20, 100, 200, 500, and 1000 Torr (and metric equivalents)
Sensor Temperatures	45°, 80°, or 100°C
Accuracy (includes non-linearity, hysteresis, and non-repeatability) 45°C Models 80° and 100°C Models	• 0.10% Reading for 1 - 1000 Torr, 0.12% Reading for < 1 Torr • 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 80° and 100°C Models	• 0.002% Full Scale/°C for 1 - 1000 Torr, 0.005% Full Scale/°C for < 1 Torr • 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 ≥ 1 Torr; < 40 ms for < 1 Torr
Ambient Operating Temperature 45°C Models 80° and 100°C Models	• 15° to 40°C • 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 80° and 100°C Models	• ± 15 VDC ($\pm 5\%$) @ 0.40 amps (max) or +24 VDC $\pm 10\%$ @ 11 watts (max) • ± 15 VDC ($\pm 5\%$) @ 0.60 amps (max) or +24 VDC $\pm 10\%$ @ 22 watts (max)
Output Signal Analog	0 - 10 VDC into > 10 k Ω 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 Optional	• ½" (12.7 mm) O.D. tube • VCR®, VCO®, CF, and NW-KF
Compliance	CE

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

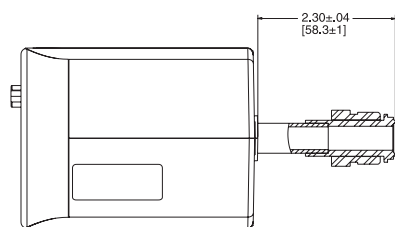
Dimensional Drawings



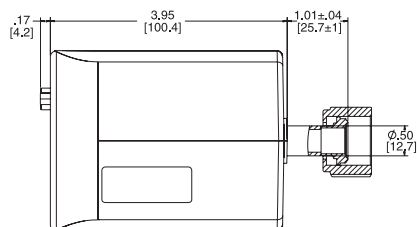
Fitting Code CD
4 VCR Female



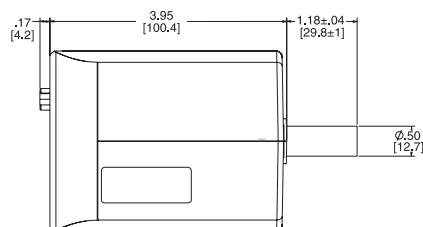
Fitting Code CE
8 VCR Female



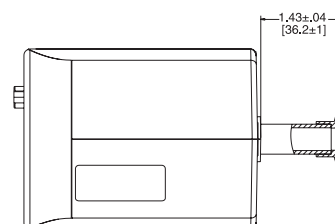
Fitting Code CF
8 VCR Male



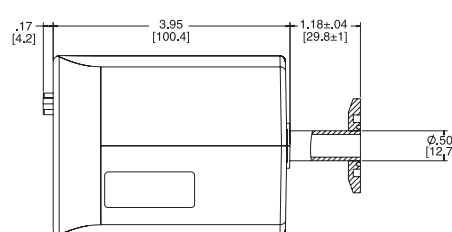
Fitting Code CR
8 VCR Female, Short Tube



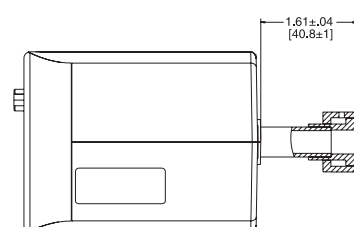
Fitting Code BA
Straight Tube .50 O.D.



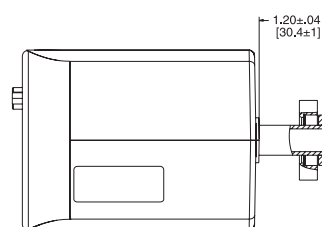
Fitting Code GA
NW-16 KF



Fitting Code GC
NW-25 KF



Fitting Code DA
8 VCO Female



Fitting Code HA
Mini-Conflat, Rotatable

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

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