Gambetti
Vacuum Technology and Related Solutions
Via A. Volta n. 27
20082 Binasco (Milano)
Tel. 39 02 90093082
Fax. 39 02 9052778
info@gambetti.it
www.gambetti.it
www.plasmi.eu

Pressure & Vacuum Measurement Solutions

WWW.MKSINST.COM

mks

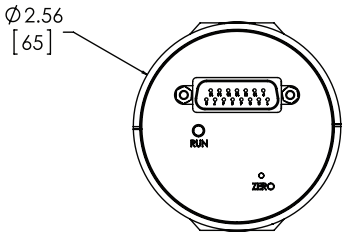
a-Baratron®

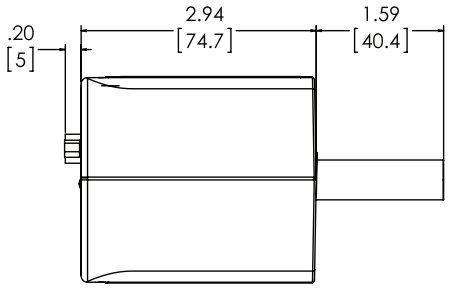
ABSOLUTE, AMBIENT TEMPERATURE CAPACITANCE MANOMETER VACUUM MEASUREMENT FROM 1 TORR TO 1000 TORR ABSOLUTE

The a-Baratron® manometer is an advanced high-performance absolute unheated capacitance manometer developed specifically for use in vacuum and pressure measurement applications where accuracy and repeatability are crucial to process success. These capacitance manometers are used in a wide variety of applications including vacuum furnaces, freeze-drying of fruits and vegetables, gas lasers, automotive component testing, bottle coatings, and vacuum distillation, to highlight a few. They use state-of-the-art digital architecture throughout to produce the highest possible long-term performance and reliability. These manometers operate on +15 VDC to +30 VDC input voltage, and have a standard 0 to 10 VDC analog output signal. Full Scale measurement ranges from 1 Torr (133 Pa) to 1000 Torr (133.3 kPa) are available.

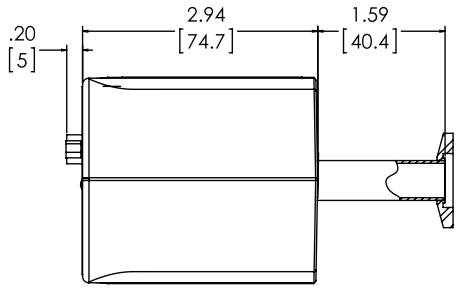
Features & Benefits

- All products are specified in percent of reading for best accuracy and improved process yield
- Direct measurement of chamber total pressure independent of gas type or composition, eliminating need for lookup tables and conversion factors
- Best-available long-term output stability ensures state-of-the-art process repeatability in nearly any application
- Inconel® and Incoloy® nickel alloy construction of basic sensor operates without damage in virtually any chemical environment, including halogens, deionized water and steam, and ozone
- High overpressure limit ensures reliability from occasional system mishaps
- Push button zeroing

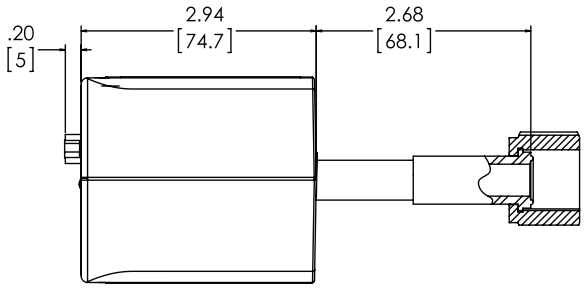




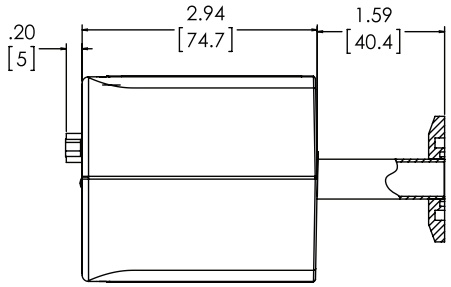
STRAIGHT TUBE .50 O.D.



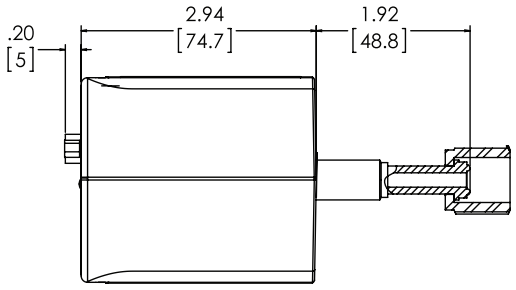
NW-KF-16



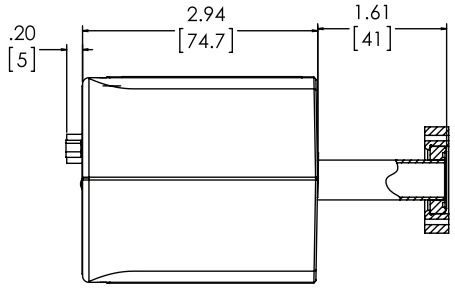
8 VCR FEMALE



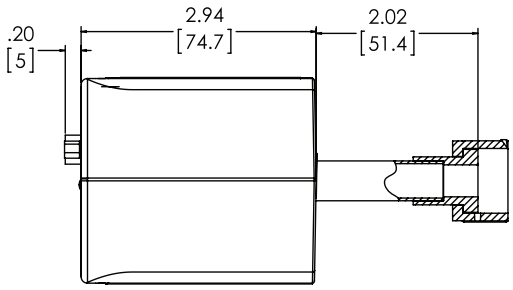
NW-KF-25



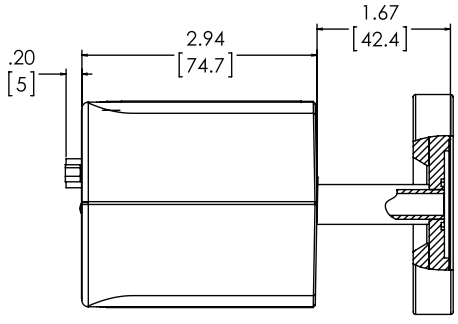
4 VCR FEMALE



MINI-CONFLAT, ROTATABLE



8 VCO FEMALE



2.75 CONFLAT

Dimensional Drawing —

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

Specifications

Full Scale Pressure Ranges	1, 2, 10, 20, 100, 500, 1000 Torr and metric equivalents
Accuracy - % of Reading*	0.25% for 1 to 1000 Torr (0.15% optional)
Temperature Coefficients	
Zero	0.005% FS/°C for 10 to 1000 Torr ranges, 0.010% FS/°C for 2 Torr range, 0.015% FS/°C for 1 Torr range
Span	0.04% of Reading/°C
Resolution	0.002% of Full Scale
Ambient Operating Temperature	0 to 50°C
Overpressure Limit	45 psia (310 kPa)
Materials Exposed to Process	Inconel and Incoloy nickel alloys
Volume	
1/2" Tube	6.29 cm^3
8 VCR	8.605 cm^3
Input Power Required	+15 VDC to + 30 VDC @ 35 mA
Output Signal	0 - 10 VDC into > 10 kΩ load
Electrical Connector	15-pin D-subminiature standard, terminal block adapter optional
Compliance**	CE
Fittings	
Standard	½" (12.7 mm) OD tube standard
Optional	4 VCR® female, 8 VCR female, 8 VCR male, 8 VCO® female, NW16-KF, NW25-KF, 1.33" (33.8mm) OD Conflat®, 2.75" (70 mm) OD Conflat

* Includes hysteresis, non-linearity, and non-repeatability.
** For CE compliance, the mating connector must be properly grounded.

Ordering Information

Ordering Code Example: AA01A11TBAS3B00000	Code	Configuration
AA01A Unheated Capacitance Manometer	**AA01A**	AA01A
Range Full Scale		
1	01	11
2	02	
10	11	
20	21	
100	12	
500	52	
1000	13	
Engineering Units		
Torr/mmHg	T	T
mbar	M	
kPa	K	
Fittings (compatible with)		
½" (12.7 mm) OD tube	BA	BA
4 VCR female (V sensor only)	CD	
8 VCR female	CE	
8 VCR male	CF	
NW16-KF	GA	
NW25-KF	GC	
1.33" (33.8 mm) Conflat, rotatable	HA	
2.75" OD Conflat, rotatable	HC	
8 VCO female	DA	
Sensor		
Standard	S	S
Short Standard (GC or HA fitting only)	T	
¼" dia. tube (CD fitting only)	V	
Input/Output Voltage		
+24 VDC input, 0 to 10 VDC output	3	3
Electrical Connector		
15 POS D-subminiature-M with screw locks	B	B
15 POS D-subminiature-M with slide lock posts	P	
Reserved		
Reserved	00	00
Calibration Orientation		
Ranges ≥ 1 Torr	0	0
Ranges ≤ 1 Torr, horizontal	H	
Ranges ≤ 1 Torr, vertical	V	
Accuracy		
Standard	0	0
Options		
None	0	0
15 pin D terminal block adapter	U	

MKS Instruments, Inc.
Global Headquarters

2 Tech Drive, Suite 201
Andover, MA 01810

Tel: 978.645.5500
Tel: 800.227.8766 (in U.S.A.)
Web: www.mksinst.com

MKS Instruments, Inc.
Pressure & Vacuum Measurement Solutions

Six Shattuck Road
Andover, MA 01810

Tel: 978.975.2350

a-Baratron Unheated Manometer - 3/18

Gambetti
Vacuum Technology and Related Solutions
Via A. Volta n. 27
20082 Binasco (Milano)
Tel. 39 02 90093082
Fax. 39 02 9052778
info@gambetti.it
www.gambetti.it
www.plasmi.eu

mks

Pressure & Vacuum Measurement Solutions

WWW.MKSINST.COM

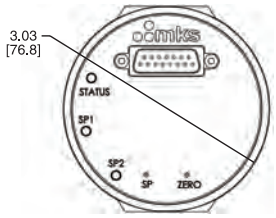
a-Baratron®

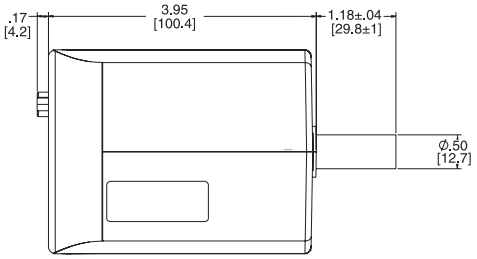
ABSOLUTE ANALOG HEATED CAPACITANCE MANOMETER GENERAL PURPOSE VACUUM/PRESSURE MEASUREMENT FROM 0.1 TO 1000 TORR (13.3 Pa TO 133.3 kPa)

The *a*-Baratron® manometer 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 MKS's patented Etch Baffle sensor 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.

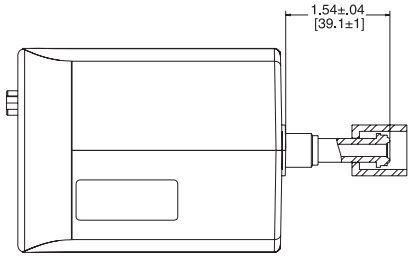
Features & Benefits

- 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 sensor 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

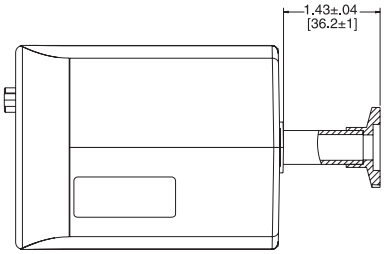




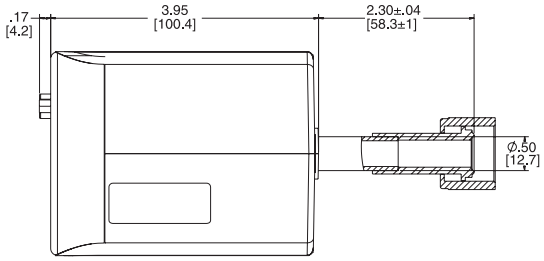
Fitting Code BA
Straight Tube .50 O.D.



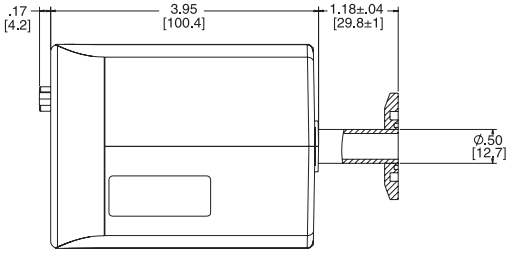
Fitting Code CD
4 VCR Female



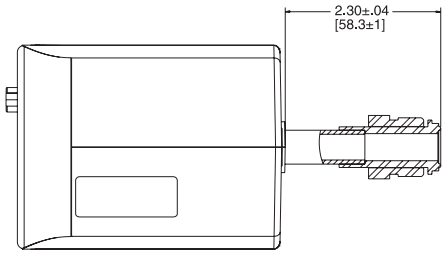
Fitting Code GA
NW-16 KF



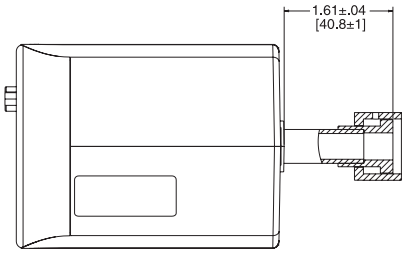
Fitting Code CE
8 VCR Female



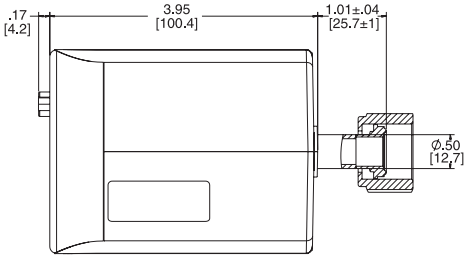
Fitting Code GC
NW-25 KF



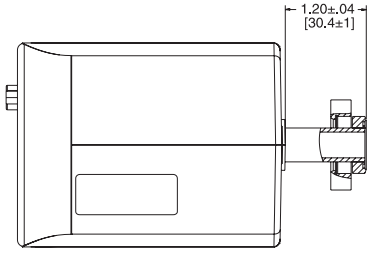
Fitting Code CF
8 VCR Male



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% FS[1]
Zero Temperature Coefficients	
45°C Models	0.002% FS/°C for 1 - 1000 Torr, 0.005% FS/°C for < 1 Torr
80° and 100°C Models	0.002% FS/°C for 1 - 1000 Torr, 0.01% FS/°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's 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 FS Range	AA	
Trip A above 50%, Trip B below 50% of FS Range	AB	
Trip A below 50%, Trip B below 50% of FS Range	BB	
Trip A below 50%, Trip B above 50% of FS 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

MKS Instruments, Inc.
Global Headquarters

2 Tech Drive, Suite 201
Andover, MA 01810

Tel: 978.645.5500
Tel: 800.227.8766 (in U.S.A.)
Web: www.mksinst.com

MKS Instruments, Inc.
Pressure & Vacuum Measurement Solutions

Six Shattuck Road
Andover, MA 01810

Tel: 978.975.2350

a-Baratron Heated Manometer - 3/18