DA06A

Three Decade Heated Absolute Baratron® Digital Capacitance Manometer with EtherCAT® Communications

The DA06A Baratron® Capacitance Manometer provides three decades of pressure output with enhanced accuracy and calibration points from 1 Torr to 1 mTorr for advanced processes like etch and deposition. Designed with a wide and high accuracy pressure range, a single DA06A can be used in place of multiple manometers, thereby simplifying system integration, reducing overall system mechanical and electrical hardware and cabling, and freeing up valuable process chamber space.

The DA06A uses the same Inconel® sensor as the industry-leading MKS 600 Series and DA02 Baratron Capacitance Manometer, resulting in long life, low maintenance, and high corrosion resistance. The manometer is equipped with a 1 ms EtherCAT® communication refresh rate, 12 ms nominal pressure response time, automotive grade electronics, and an extended maximum ambient operating temperature of 60°C. The DA06A, with a 10X improved signal to noise ratio over the industry-standard DA02, provides better resolution and improved accuracy.

Options are available for the standard MKS sensor or the MKS proprietary fluorine/deposition friendly sensor for enhanced stability and reduced zero drift in critical etch or deposition applications.

Product Features

- Meets current SEMI® EtherCAT® Device Profiles for vacuum gauges
- 1 ms EtherCAT refresh rate
- 12 ms pressure signal response time (typical)
- Heated at 45°C, 80°C or 100°C
- Expanded ambient operating temperature to 60°C for 80°C and 100°C heated manometers
- Standard MKS sensor or fluorine/deposition friendly sensor option available

Key Benefits

- 3 decade measurement reduces the need for multiple manometers
- 10X signal to noise improvement results in better process resolution and accuracy
- Inconel-based sensor offers superior corrosion resistance enabling longer lifetime
- Excellent long-term stability reduces maintenance needs
- Optional fluorine/deposition friendly sensor minimizes byproduct induced zero drift

Specifications

Performance	
Full Scale Pressure Ranges	1 Torr
Resolution[1]	0.001% Full Scale
Accuracy[2]	• 1000 mT to 10mT: ±0.4% of Reading • 8 mT: ±0.5% of Reading • 5 mT: ±0.7% of Reading • 3 mT: ±0.8% of Reading • 2 mT: ±1.0% of Reading • 1 mT[3]: ±1.5% of Reading
Temperature Coefficients **Zero** **Span**	 • 0.002% Full Scale/°C • 0.02% Reading/°C
Response Time **Pressure** **EtherCAT**	 • 12 ms nominal (10-90% of a step response) influenced by step size and digital pressure filter setting • Refresh Rate 1 ms
Ambient Operating Temperature	15° to 60°C (15-40 for 45°C manometer)
Internal Volume	6.3 cm^3 typical. Contact MKS for volumes with specific flanges.
Warmup Time	4 hours
Overpressure Limit	45 psia (310 kPA)
Materials Exposed to Process Gases	Inconel® and Incoloy® nickel alloys (Fittings 300 Series Stainless Steel)
Input Power	+24 VDC ±10% @ 700 mA max ±15 VDC ±5% @ 700 mA max
Output Signal **Digital**	 EtherCAT
Electrical Connectors **Power** **EtherCAT**	 • 15-pin D-subminiature male • Two (2) RJ45 female receptacles for incoming and network signals
External Indicators	• Green RUN LED and Red ERR LED for EtherCAT and manometer status • Green Link/Activity Indicator on bottom right of RJ45 connectors • Rotary hex switches supporting configured station alias and explicit device identification
Connection Fittings	0.50'' OD tube, 8 VCR Female, 8 VCR Male, NW16-KF, NW25-KF, Mini-CF 1.33'' (Contact MKS if alternative fitting is required.)
Compliance[4]	CE, UKCA

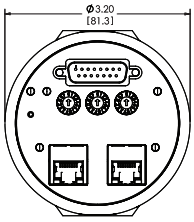
[1] *Theoretical resolution under ideal laboratory conditions. Actual resolution in service is usually determined by system design factors not under MKS' control.*

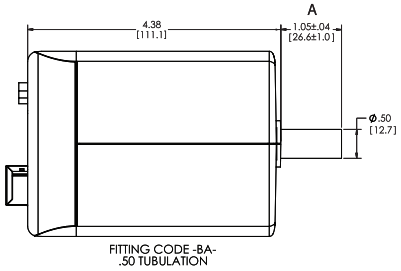
[2] *NIST Traceable calibration points and specified accuracy. Includes non-linearity, hysteresis, and non-repeatability.*

[3] *1 mT accuracy guaranteed but not verified during the calibration process.*

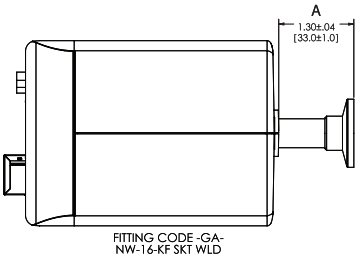
[4] *When connected to properly shielded cables, grounded at both ends.*

Dimensional Drawings





FITTING CODE -BA-
.50 TUBULATION



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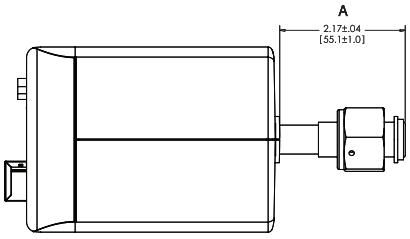
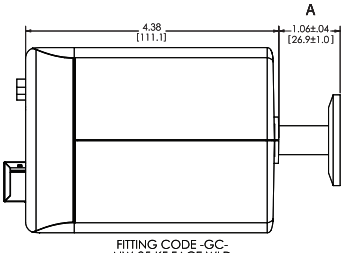
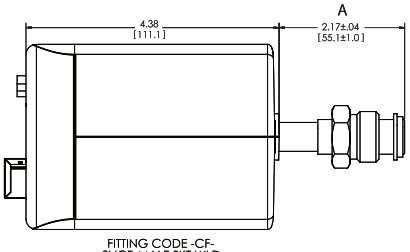
NW-16-KF SKT WLD



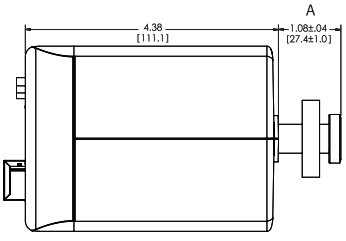
FITTING CODE -CE-
8VCR FEM SKT WLD



FITTING CODE -GC-
NW-25-KF FACE WLD



FITTING CODE -CF-
8VCR MALE SKT WLD



FITTING CODE -HA-
1.33" CF ROTATABLE

Unless otherwise specified, dimensions are nominal values in inches (mm referenced). For sensor code L, dimension A is 0.03'' longer.

Ordering Code Example: DA06A01TCEL31BAA0H00	Code	Configuration
Model		
DA06A Absolute Manometer	DA06A	DA06A
Ranges (Torr)		
1	01	01
Units of Measurement (corresponds to digital output units)		
Torr mbar	T M	T
Fittings		
½'' OD tube 8 VCR female 8 VCR male NW16-KF NW25-KF Mini-CF	BA CE CF GA GC HA	CE
Sensor Type		
Standard Fluorine/Deposition Friendly	S L	L
Input/Output Voltages		
±15 VDC +24 VDC	2 3	3
Sensor Temperature		
45°C 80°C 100°C	4 8 1	1
Electrical Connector[1]		
15-pin D with Screw Locks 15-pin D with Slide Lock Posts	B P	B
Integral Relays[2]		
No Relays Trip Point A Above Set Point, Trip Point B Above Set Point Trip Point A Above Set Point, Trip Point B Below Set Point Trip Point A Below Set Point, Trip Point B Below Set Point Trip Point A Below Set Point, Trip Point B Above Set Point	00 AA AB BB BA	AA
Reserved		
Reserved For Future Use	0	0
Calibration Orientation		
Horizontal Vertical	H V	H
Accuracy		
Standard	0	0
Other Options		
None	0	0

Notes:

[1] For CE compliance, the mating electrical connector must be properly grounded.

[2] Units with trip points have default set points of 50% of Full Scale, a default hysteresis of 5%, and actuation direction based on the part number code. The settings are user adjustable through EtherCAT.

** Custom part numbers can be requested for copy exact applications.*

*** Standard part numbers will ship with the latest firmware at the date of manufacture. A custom part number should be requested for locked firmware/EtherCAT ESI file.*

www.MKS.com

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