DA01A

Absolute Baratron® Capacitance Manometer with DeviceNet™ Communications

The DA01A is a dual-output absolute vacuum transducer with both DeviceNet™ digital communications and legacy 0-10 VDC analog output signals. Available in four different operating temperatures for different applications, the DA01A uses an efficient microprocessor-based digital structure that provides exceptional stability and repeatability under demanding conditions such as semiconductor manufacturing equipment. The DA01A also uses the patented MKS all-welded Inconel® diaphragm sensor, which has exceptionally high resistance to corrosion from common process chemicals. It is able to tolerate bursts of pressure to as much as 45 psia (310 kPa) without suffering physical damage or permanent calibration shifts.

The DeviceNet communications and main power are fed through a bayonet-style 5-pin connector on the top of the product, and the analog output signal is available on the standard 9-pin D-subminiature electrical connector. It is available in unheated, 45°C, 80°C, or 100°C versions in Full Scale pressure ranges from 1000 to 1 Torr (133 to 0.13 kPa) for the unheated models, and 1000 to 0.1 Torr (133 to 0.013 kPa) for the heated versions.

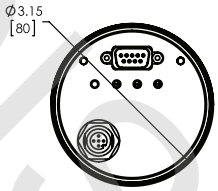
Product Features

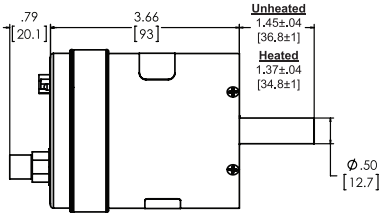
- Full Scale ranges of 1000 to 1 Torr/mbar (unheated), 1000 to 0.1 Torr/mbar (heated)
- Fully-welded Inconel and Incoloy® sensor offers extremely high corrosion resistance from common process gases
- Standard or etch sensors available
- High overpressure specification of 45 psia (3 bar/310 kPa) prevents shifting or permanent calibration changes

Key Benefits

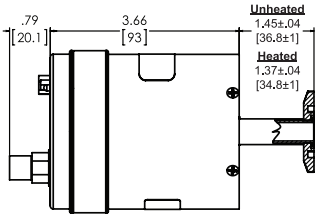
- Excellent long-term stability
- Microprocessor-based electronics provide superior accuracy and repeatability

Dimensional Drawing

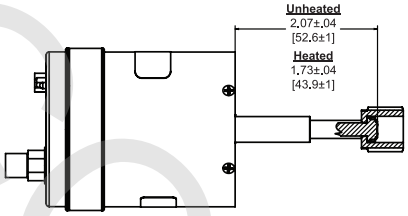




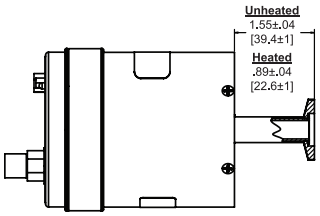
FITTING CODE BA
STRAIGHT TUBE .50 OD



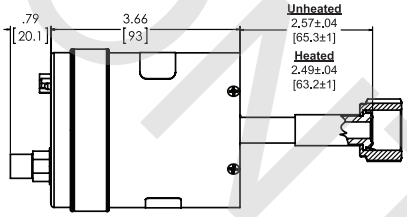
FITTING CODE GC
NW-25-KF



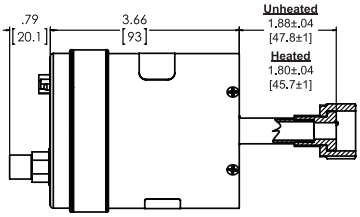
FITTING CODE CD
4 VCR FEMALE



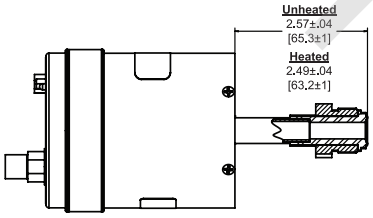
FITTING CODE GD
NW-16-KF, SHORT TUBE



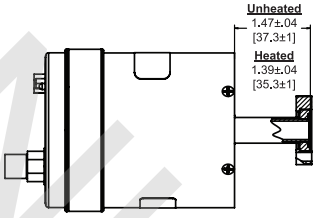
FITTING CODE CE
8 VCR FEMALE



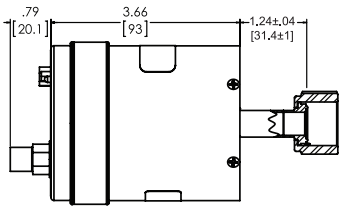
FITTING CODE DA
8 VCO FEMALE



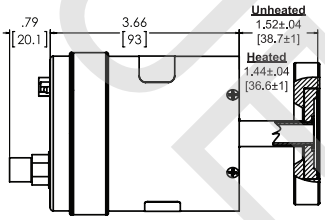
FITTING CODE CF
8 VCR MALE



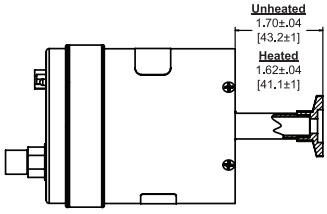
FITTING CODE HA
MINI - CONFLAT, ROTATABLE



FITTING CODE CR
8 VCR FEMALE, SHORT TUBE



FITTING CODE HC
2-3/4 CONFLAT, ROTATABLE



FITTING CODE GA
NW-16-KF

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

Specifications

Full Scale Ranges	0.1 (heated models only), 0.25 (heated models only), 1, 2, 10, 20, 100, 200, 500, and 1000 Torr/mbar
Resolution	0.001% Full Scale on digital output
Operating Temperatures	Unheated, 45°C, 80°C, and 100°C
Accuracy (including non-linearity, hysteresis, and non-repeatability)	
Unheated Models (All)	0.25% Reading
45°C Models	0.12% Reading for 1-1000 Torr/mbar, 0.15% Reading for < 1 Torr/mbar
80°C and 100°C Models	0.25% Reading for 1-1000 Torr/mbar, 0.50% Reading for < 1 Torr/mbar
Temperature Coefficients	
Zero	
Unheated Models	10 - 1000 Torr 0.005% Full Scale/°C, 2 Torr 0.010% Full Scale/°C, 1 Torr 0.015% Full Scale/°C
Heated Models	1 to 1000 Torr 0.002% Full Scale/°C; 45°C < 1 Torr 0.005% Full Scale/°C; 80°C and 100°C < 1 Torr 0.010% Full Scale/°C
Span	0.04% of Reading/°C, 50 psia to 3000 psia; 0.08% of Reading/°C, 1000 Torr
Unheated Models	0.04% Reading/°C
Heated Models	0.02% Reading/°C
Materials Exposed to Gases	Inconel and Incoloy nickel alloys (Some optional fittings are made from 300-series stainless steel)
Internal Sensor Volume	6.3 cm^3
Overpressure Limit	45 psia (310 kPa)
Fittings	
Standard Fitting	½" (12.7 mm) O.D. tube standard
Optional Fittings	4 and 8 female VCR®, 8 male VCR, 8 female VCO®, 1.33" (33.7 mm) and 2.75" (69.9 mm) O.D. CF, NW16-KF, and NW25-KF (NW-KF fittings may be ordered with standard-length inlet port or reduced-length inlet port)
Digital Protocol	DeviceNet, Group 2
Digital Electrical Connector	5-pin sealed micro-style male bayonet with anti-rotation device
Data Rate/Network Length	User-selectable data rate: 125 kbps and 500 m (1,640 ft), 250 kbps and 250 m (820 ft), or 500 kbps and 100 m (328 ft)
Level of Filtering	Adjustable via user software
Digital Functions	Read pressure, set digital trip points and hysteresis, select units (Torr, Pa, mbar, in H_2O, psi), set zero, reset factory defaults, monitor transducer trip point status, change user tags and device address
Data Rate Switch	4 positions: 125, 250, 500, PGM (programmable via network)
MAC ID Switches	2 switches, 10 positions: 0,0 to 6,3 are hardware ID numbers; 7,0 to 9,9 are software ID numbers; 6,4 to 6,9 are unused and if selected will default to hard ID number 6,3
Network Message Control	Master/slave information flow
Input Power	
Unheated Models	11 to 25 VDC @ ≤5 watts
45°C Models	Operation with heater requires 18 to 25 VDC @ ≤15 watts
80°C and 100°C Models	Operation with heater requires 18 to 25 VDC @ ≤25 watts
Heated Models	Can provide only network communications at <18 VDC (i.e. heater does not operate if input voltage is <18 VDC)
Network Size	64 nodes maximum
Network Topology	Linear (trunkline/dropline) power and signal on same network cable
Analog I/O	0 to 10 VDC into > 10KΩ load
Output Connector	9-pin female D-subminiature
Compliance	CE

Ordering Information

Ordering Code Example: DA01A12TCES24A00	Code	Configuration
DA01A DeviceNet™ Capacitance Manometer	DA01A	DA01A
Pressure Range		
0.1 (heated models only)	.1	12
0.25 (heated models only)	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) (V sensor only)	CD	
8 female VCR	CE	
8 male VCR	CF	
8 female VCR, short inlet tube	CR*	
KF16	GA	
KF25	GC	
KF16, short inlet tube	GD	
8 VCO female	DA	
1.33" OD CF	HA	
2.75" OD CF	HC	
Sensor Type		
Standard sensor	S	S
Etch sensor (range ≤ 100 Torr)	E	
¼" dia. tube (CD fitting only)	V	
Short tube standard sensor	T	
Analog Output Voltage		
0-10 VDC	2	2
Sensor Temperature		
Unheated	0	4
45°C	4	
80°C	8	
100°C	1	
Electrical Connector		
DeviceNet 5-pin bayonet-style with female 9-pin D-subminiature analog connector	A	A
Calibration Orientation		
Standard (ranges ≥ 1 Torr)	0	0
Vertical (standard for ranges < 1 Torr)	V	
Horizontal (available for ranges < 1 Torr only)	H	
Accuracy		
Standard accuracy	0	0

* CR fitting can only be used with code T sensors.

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+1-978-645-5500 | +1-800-227-8766

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