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Type DMB (Ambient)

i-BARATRON® DIGITAL CAPACITANCE MANOMETER

The MKS Type DMB i-Baratron® Capacitance Manometers are RoHS-compliant dual-output products with both ODVA™-certified DeviceNet™ digital communications and legacy 0-10VDC analog output signals. Available in three different operating temperatures for different applications, the DMB products use an efficient microprocessor-based digital structure that provides exceptional stability and repeatability under demanding conditions such as semiconductor manufacturing equipment. The DMB manometers use the patented MKS all-welded Inconel® diaphragm sensor, which has exceptionally high resistance to corrosion from common process chemicals and is able to tolerate bursts of pressure to as much as 45 psia (310 kPa) without suffering physical damage or permanent calibration shifts. Two different models are available: DeviceNet digital communications or legacy 0-10VDC analog output. On DeviceNet models, main power and communications are fed through a bayonet-style 5-pin electrical connector. On analog versions, the input voltage and analog output are available via a 15-pin D-subminiature connector. The ambient version of the product offers full-scale pressure ranges from 1000 to 1 Torr (133 to 0.13 kPa), and is CE approved and compliant with current EU RoHS (Restriction of Hazardous Substances) regulations.

Features & Benefits

- Excellent long-term stability
- Full-scale pressure ranges from 1000 to 1 Torr (133 to 0.13 kPa) for precise measurement of low pressures
- All-Inconel sensor offers extremely high resistance to corrosion from common process gases
- High overpressure specification of 45 psia (310 kPa) prevents shifting or permanent calibration changes

- Electronics are microprocessor-based for best accuracy and repeatability
- Choice of ODVA-approved DeviceNet digital communications or 0-10VDC analog output
- OneTouch zero pushbutton
- CE approved and RoHS-compliant

Specifications

Performance

Sensor Type	Capacitance Manometer
Pressure Ranges (Torr Full Scale)	1, 2, 10, 100, 1000
Measurement Resolution	0.001% F.S. on digital output
Accuracy (non-linearity, hysteresis and non-repeatability)	1 to 1000 Torr range; 0.25% of Reading 10 - 1000 Torr range; 0.15% of Reading (optional)
Temperature Coefficients	
Zero	10 to 1000 Torr; 0.005% of F.S./°C 2 Torr; 0.010% of F.S./°C 1 Torr; 0.015% of F.S./°C
Span	0.04% of Reading/°C
Sensor Temperature	Ambient
Ambient Operating Temperature	0° to 50°C
Warm-up Time	30 Minutes

Mechanical

Materials Exposed to Gases	Inconel® or Inconel® and S.S. fittings
Volume (P_x side)	6.3cc
Overpressure Limit w/o Damage	45 psia (310 kPa)
Fittings	
Standard	1/2" (12.7mm) tubulation
Optional	Swagelok® 8 VCR® (female), Swagelok 4 CR (female), mini-CF rotatable, NW 16 KF

Electrical

Digital

Protocol	DeviceNet™, Group 2
Electrical connector	5-pin, sealed micro-style male connector with anti-rotation device
Data rate/Network length	Data rate (user-selectable) 125 Kbps, 500m (1,640 ft.) 250 Kbps, 250m (820 ft.) 500 Kbps, 100m (328 ft.)
Level of filtering	User software adjustable
Digital functions	Read pressure Set trip points and hysteresis Select units: Torr, Pa, mbar, inH_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, 500K, PGM (programmable over the 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 hardware ID number 6,3)

Visual Communication Indicators

	LED network status (green/red) LED module status (green/red)
Network message control	Master/slave information flow
Input power	11 to 25 VDC @ $\leq$3.0 watts
Network size	Up to 64 nodes
Network topology	Linear (trunkline/dropline) power and signal on same network cable

Analog I/O

Input power	+24VDC or ±15VDC @ 65 mA max
Analog output signal	0-10 VDC into >10K Ω load
Output connector	9-pin D-subminiature or 15-pin D-subminiature depending on configuration

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Regulatory Approvals	Fully compliant to EMC Directive 2004/108/EC
Restriction of Hazardous Substances	Fully compliant to RoHS Directive 2002-95-EC

Ordering Information

Ordering Code Example: DMB11TBADANH633	Code	Configuration
Type DMB i-Baratron® Digital Capacitance Manometer (80°C)	**DMB**	DMB
Ranges		
1 Torr	01T	
2 Torr	02T	
10 Torr	11T	
20 Torr	21T	11T
100 Torr	12T	
500 Torr	52T	
1000 Torr	13T	
Fittings		
Straight Tube	BA	
4 VCR Female	CD	
8 VCR Female	CE	BA
Mini-CF, rotatable	HA	
NW 16 KF	GA	
8 VCO Female	DA	
Accuracy		
0.25% of Reading (1 - 1000 Torr)	E	D
0.15% of Reading (10 - 1000 Torr) optional	D	
Temperature		
Ambient	A	A
Options		
None	N	N
Calibration Type		
No Special Requirement, 1 Torr and above	N	
Horizontal Cal, <1 Torr	N/A	H
Vertical Cal <1 Torr	N/A	
Interface/Connector		
Devicenet/Micro Style, Male (CE)	6	6
0-10VDC analog output, 15-pin D-subminiature, +24 or ±5VDC	H	
Firmware Revision		
Version 3.3 digital (DeviceNet models only)	33	33
Version 5.4 (Analog models only)	54	
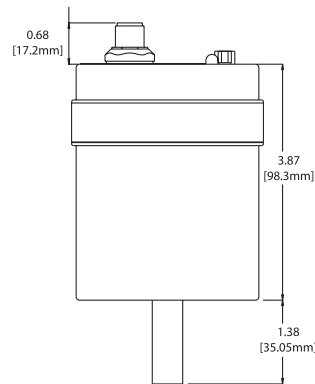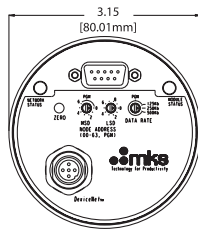
Dimensional Drawing —

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

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

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