BROOKS® INSTRUMENT

Beyond Measure

XacTorr® CMX Series

Rugged, Stable, Digital Capacitance Manometers for Process Vacuum Measurement

Brooks Instrument XacTorr® CMX Series digital vacuum capacitance manometers (also referred to as capacitance diaphragm gauges) incorporate industry-leading features that improve measurement reliability, maximize stability, resist diaphragm contamination, and negate thermal effects. The result is an exceptionally reliable capacitance manometer family for all vacuum measurement applications.

Since they are fully digital devices, XacTorr® vacuum capacitance manometers operate over a wide dynamic range with excellent accuracy. The flexible, digital signal, processor-based electronics eliminates the need for manual potentiometers and provides improved stability. In addition, intelligent zero adjustment, local push-button, and remote zeroing makes maintenance easier and improves long-term repeatability.

Features	Benefits
Patented Mark IV Sensor	Enhanced stability with superior protection from deposition of process gases
Dual Zone Temperature Control	Fast warm-up, precise temperature control, rapid response to changes
Digital Calibration	Multi-decade calibration provides superior window of known accuracy and incorporates real-time compensation of ambient temp effects
Digital Architecture	Eliminates manual potentiometers and drift associated with electronics
Intelli-Touch Zero Adjustment	Enables simple zeroing and prevents improper zeroing if the pressure is too high or the device is not warmed-up

Product Specifications

Performance

Sensor Temperature	Unheated, 45°C, 100°C, 160°C
Ambient Operating Temperature	Unheated: 0°C to 50°C 45°C: 15°C to 35°C 100°C: 15°C to 45°C 160°C: 15°C to 35°C
Full Scale Pressure Range[1,2]	0.1, 0.2, 0.5, 1, 2, 5, 7.5, 10, 20, 50, 100, 200, 300, 500, 1000 Torr (pascal equivalent available)
Accuracy[3]	CMX0: ±0.25% of Reading 45°C & 100°C: ±0.15% of Reading 160°C: ±0.25% of Reading
Response Time	Pressure: 40mSec
Zero Temperature Coefficient	45°C, 100°C & 160°C: 0.002% Full Scale/°C
Span Temperature Coefficient	0.02% Reading/°C
Warm-Up Time	2 Hours 4 Hours (Full Scale ≤1 Torr)

Mechanical

Wetted Materials	Inconel® and/or AISI 316L Stainless Steel
Over-Pressure Limit	17 psia or 125% of Full Scale, whichever is greater

Electrical

Electrical Connectors	Analog: 15-pin Male Sub D or 9-Pin Male Sub D DeviceNet: 5-Pin Eurofast (DeviceNet) Diagnostic Port: 2.5mm RS-485
Communication	Analog: 0-10Vdc 5k Ω load Digital: DeviceNet & RS-485 (Diagnostic)
Power Supply / Consumption[4]	Unheated: ±15% @ 200mA; 45°C: +24V ±10% @ 400mA; ±15Vdc @ 300mA 100°C: +24V ±10% @ 900mA; ±15Vdc @ 650mA 160°C: +24V ±10% @ 1 A; ±15Vdc @ 1 A

Environmental

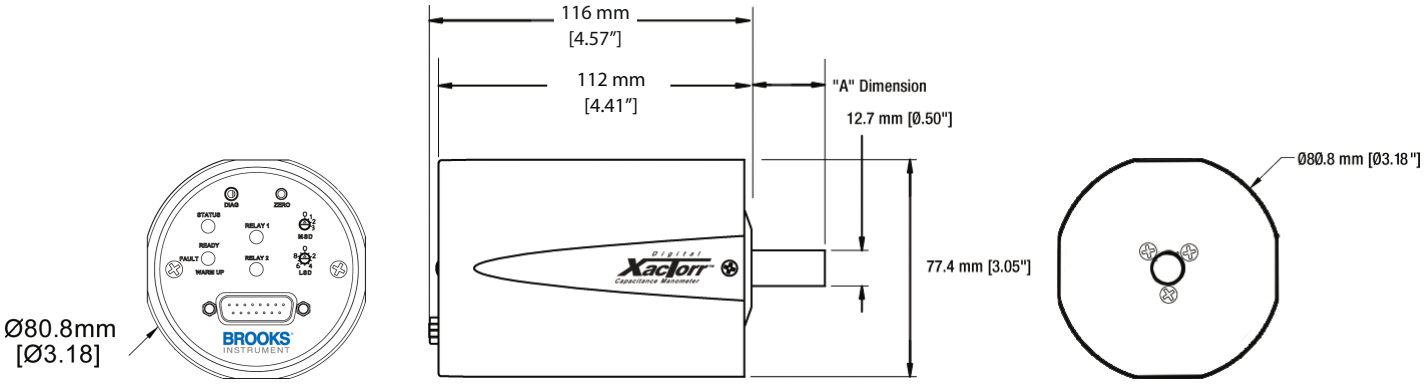
Compliance	EMC: 2014/30/EU EMC Directive EN:61326-1: 2013 Environmental Compliance Directive: 2011/65/EU & 2015/863/EU RoHS Directive EC 1907/2006 REACH

Notes:

[1] Includes hysteresis, linearity, and repeatability within the calibrated range at 21°C. Does not include reference uncertainty.
[2] Other F.S. pressure ranges available upon request.
[3] Accuracy of reading specification is from 10% of FS to FS unless otherwise specified.
[4] 15-Pin Male Sub D Model requires an additional 40 mA to power the internal relays (if energized).

Product Dimensions

CMX0, CMX1, CMX2 Series - Analog Models



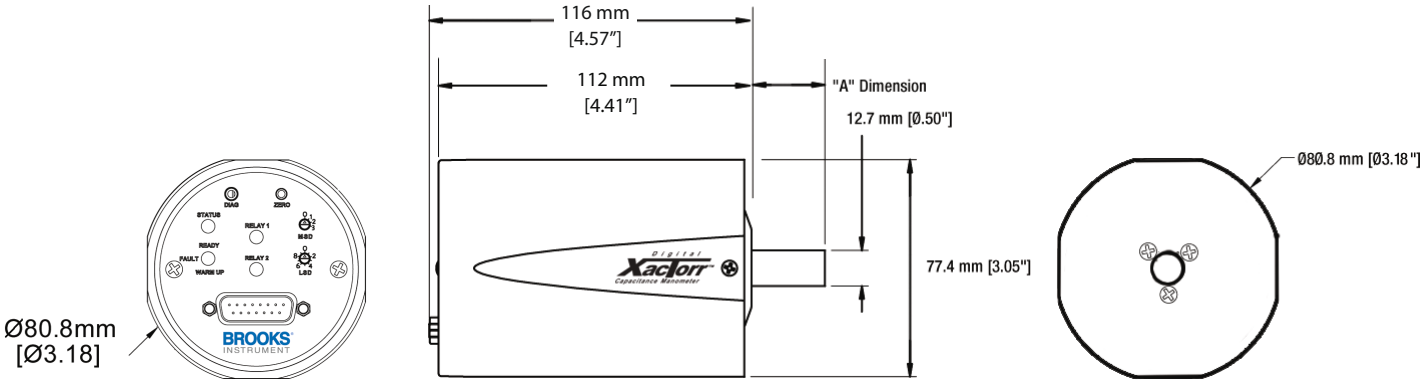
Fitting Type	Fitting Code	Dim A
0.50" OD Tube	0	26.7mm [1.05in]
KF-10 Flange	1	39.4mm [1.55in]
KF-16 Flange	2	39.4mm [1.55in]
KF-25 Flange	3	30.5mm [1.20in]
8 VCR Female	4	55.1mm [2.17in]
Mini CF	5	28.0mm [1.10in]

Port	Pin	Description
Analog Port (9-Pin Male D Sub)	1	Pressure Output
	2	Not Used
	3	Temperature Status
	4	+15 Vdc Supply
	5	-15 Vdc Supply
	6	Case Ground
	7	Remote Zero
	8	Signal Common
	9	Power Supply Common
RS-485 Port (2.5mm Jack)	Tip	RS_A
	Ring 1	RS_B
	Sleeve	Ground

Port	Pin	Description
Analog Port (15-Pin Male D Sub)	1	Temperature Status
	2	Pressure Output
	3	Remote Zero
	4	Not Used
	5	Power Supply Common
	6	-15 VDC Supply
	7	+15 VDC Supply
	8	Relay 1-Normally Open
	9	Relay 1-Common
	10	Relay 1-Normally Closed
	11	Relay 2-Normally Open
	12	Signal Common
	13	Relay 2-Common
	14	Relay 2-Normally Closed
	15	Case Ground
RS-485 Port (2.5mm Jack)	Tip	RS_A
	Ring 1	RS_B
	Sleeve	Ground

Product Dimensions

CMX3 Series - Analog Models



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	4	+15 Vdc Supply
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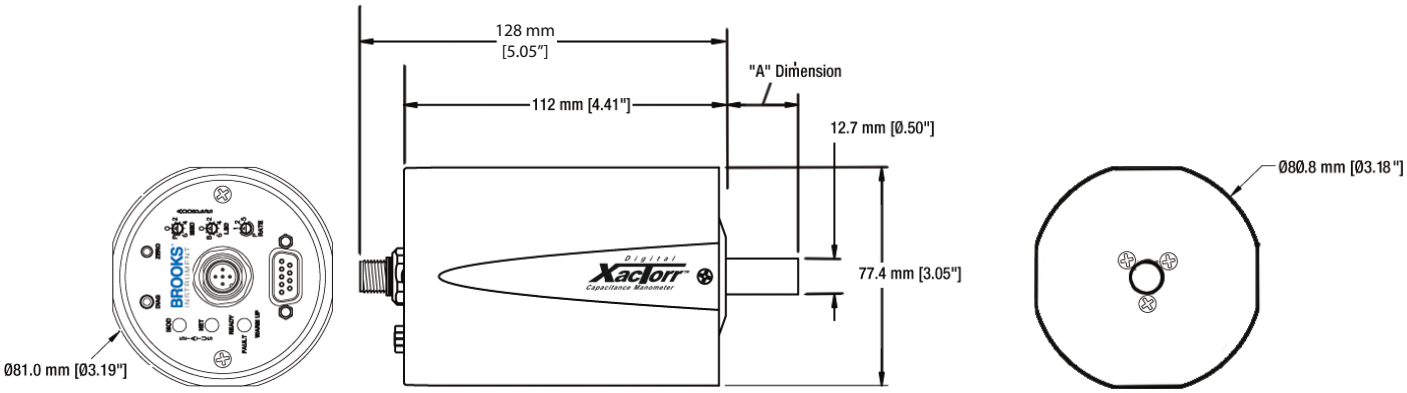
	6	Case Ground
	7	Remote Zero
	8	Signal Common
	9	Power Supply Common
RS-485 Port (2.5mm Jack)	Tip	RS_A
	Ring 1	RS_B
	Sleeve	Ground

Port	Pin	Description
Analog Port (15-Pin Male D Sub)	1	Temperature Status
	2	Pressure Output
	3	Remote Zero
	4	Not Used
	5	Power Supply Common
	6	-15 VDC Supply
	7	+15 VDC Supply
	8	Relay 1-Normally Open
	9	Relay 1-Common
	10	Relay 1-Normally Closed
	11	Relay 2-Normally Open
	12	Signal Common
	13	Relay 2-Common
	14	Relay 2-Normally Closed
	15	Case Ground
RS-485 Port (2.5mm Jack)	Tip	RS_A
	Ring 1	RS_B
	Sleeve	Ground

Product Dimensions

CMX0, CMX1, CMX2 Series - DeviceNet Models



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Mini CF	5	28.0mm [1.10in]

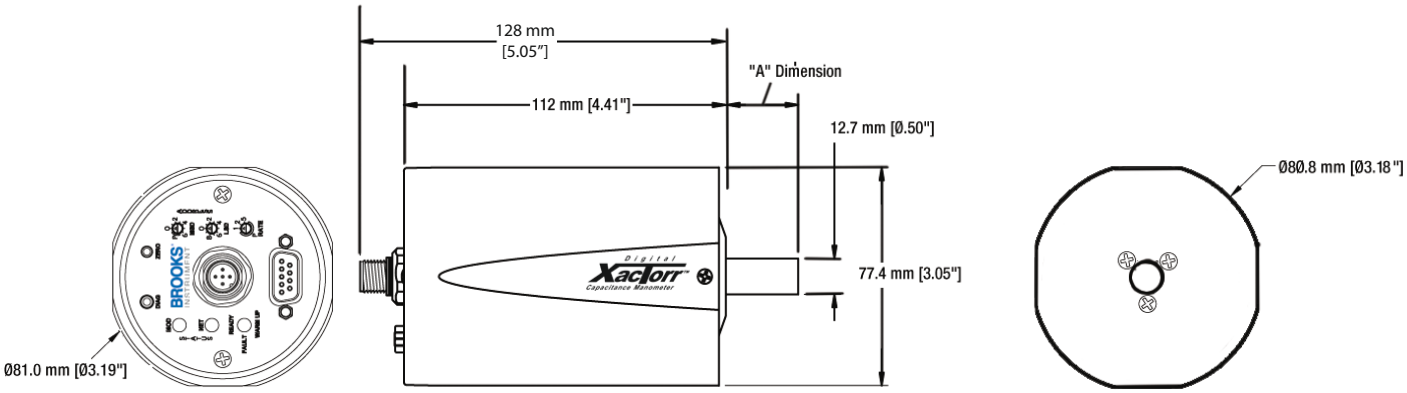
Port	Pin	Description
DeviceNet Port (5-Pin Eurofast)	1	Drain
	2	V+
	3	V-
	4	CAN_H
	5	CAN_L
Analog Port (9-Pin Male D Sub)	1	Pressure Output
	2	Not Used
	3	Temperature Status
	4	Not Used
	5	Not Used
	6	Case Ground
	7	Remote Zero
	8	Signal Common
	9	Not Used
RS-485 Port (2.5mm Jack)	Tip	RS_A
	Ring 1	RS_B
	Sleeve	Ground

DeviceNet*	
Date Rate / Network Length	User Selectable: 125 kdps, 500m (1,640ft), 250 kdps, 250m (820ft) 500 kdps, 100m (328ft)
Digital Functions	Read pressure, set zero, reset factory defaults, report run time (hours), change device address and baud rate
Data Rate Switch	4 Positions: 125, 250, 500k, PGM (programmable over the network)
MAC ID Switches	2 switches, 10 positions each, 00 to 63 are valid MAC ID (addresses) numbers; Switch settings from 64 through 99 are in the PMG range, and the MAC ID can then be programmable over the network.
Network Message Size	Master / Slave information flow (Group 2 only server)
Network Size	Up to 64 nodes
Network Topology	Linear (trunkline / dropline) power and signal on same network cable
Visual Communication Indicators	LED network status (green / red), LED module status (green / red)

*Meets SEMI E54 and ODVA SEMI SIG vacuum gauge profile

Product Dimensions

CMX3 Series - DeviceNet Models



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Port	Pin	Description
DeviceNet Port (5-Pin Eurofast)	1	Drain
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Network Size	Up to 64 nodes
Network Topology	Linear (trunkline / dropline) power and signal on same network cable
Visual Communication Indicators	LED network status (green / red), LED module status (green / red)

*Meets SEMI E54 and ODVA SEMI SIG vacuum gauge profile

Model Code

Code Description	Code Option	Option Description
I. Base Model Code	CMX	Capacitance Manometer
II. Model / Ordering Temperature	0	CMX0 (Ambient)
	1	CMX45 (45°C)
	2	CMX100 (100°C)
	3	CMX160 (160°C)
III. Full Scale Range	M11*	100 mTorr
	M25*	250 mTorr
	M50*	500 mTorr
	T01	1 Torr
	T02	2 Torr
	T05	5 Torr
	T07	7.5 Torr
	T11	10 Torr
	T12	20 Torr
	T15	50 Torr
	T21	100 Torr
	T22	200 Torr
	T23	300 Torr
	T25	500 Torr
	T31	1000 Torr
	PX1*	13.33 Pa (100 mTorr)
	PX2*	33.32 Pa (250 mTorr)
	PX5*	66.65 Pa (500 mTorr)
	P01	133.3 Pa (1 Torr)
	P02	266.6 Pa (2 Torr)
	P05	666.6 Pa (5 Torr)
	P11	1.333 kPa (10 Torr)
	P12	2.666 kPa (20 Torr)
	P21	13.33 kPa (100 Torr)
	P31	133.3 kPa (1000 Torr)
IV. Communication and Electrical Connector	1	9 Pin Male Sub D
	2	15 Pin Male Sub D
	3	DeviceNet with 9-Pin Female Sub D, Default Configuration, Real Data
	4	15-Pin D Sub Connector with 2 Process Relays and a Temperature in Control Relay
	5	15-Pin D Sub Connector with 1 Process Relay, 1 Temperature in Control Relay, and an Overheat Indicator Relay
V. Fitting	0	0.5" OD Tube Stub (No Fitting)
	1	KF 10 Flange
	2	KF 16 Flange
	3	KF 25 Flange
	4	8 VCR (1/2") Female
	5	Mini CF
	N	4 VCR (1/4") Female
VI. Calibration	(Blank)	Horizontal
	V	Vertical
VII. Special Options	K9	10 mV output offset, DAC Filter Samples = 64, DAC Filter Window = 250, DAC Filter Window Sample Limit = 32
VIII. Compliance	R	RoHS Compliant

Service and Support

Brooks is committed to assuring all of our customers receive the optimal solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users, and maintenance persons. Please contact your nearest sales representative for more details. Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

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