MX7M Cold Cathode Ionization Active Vacuum Gauge
Part Number: 2-8950-XXX

Operating Specifications

Operating Range	5*10^{-11} Torr to 1*10^{-2} Torr
Display	OLED
Digital Communications	RS-485, USB (micro)
Analog Output	Configurable 0 to 10 V DC
Programmable Set Points	2
Set Point 1	Open collector
Set Point 2	Relay
Supply Voltage	22 V DC to 26 V DC
Maximum Power	8 W
Calibration Medium	Dry air or nitrogen
Overpressure	150 PSI
Digital Output Resolution	3 significant digits with exponent
Analog Output Resolution	16-bits
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 60 °C
Bakeout Temperature (electronics removed)	250 °C
Response Time	≤ 50 ms
Accuracy	
1*10^{-9} to 1*10^{-3} Torr	±30% of reading
Analog Output	±10 mV
Display Readable Distance	3 m (10 ft)

Physical Characteristics

Enclosure	Aluminum
Weight with Sensor	1 kg (2 lbs)
Weight without Sensor	0.3 kg (0.6 lbs)
Dimensions	See dimensional drawing

Key Features and Benefits

- Extended range with high bakeout temperature
- Low cost with a compact design and color OLED display
- High accuracy inverted magnetron cold cathode technology
- Easily cleaned for extended sensor lifetime
- Excellent customer service and support
- Rapid turn-around for calibration and service

Applications and Industries

- Thin film deposition and coating process
- Vacuum Furnaces, heat treating

Ratings and Compliance

- Certified to UL 61010-1
- CE certified to EN 61010-1, EN 61236-1, EN 55011
- Certified to CAN/CSA C22.2 No. 61010-1-12
- EAC certified
- RoHS Compliant
- IP40
- ISO 17025 accredited calibration optional
- NIST traceable calibration optional

Description

MX7M Cold Cathode Ionization Active Gauge utilizes a cleanable 7M triple inverted magnetron cold cathode. It has a variety of features including a wide range of measurement from 5*10^{-11} Torr to 10^{-2} Torr, RS-485 digital communications, a micro-USB port, two programmable set points, a configurable analog output, and a bright color OLED display. The unit also features 4 capacitive touch controls, making all features accessible through the display.

The selection of fittings, simplicity of use, ease of sensor cleaning, and low cost of the MX7M make it an excellent choice for a variety of vacuum applications and industries. This gauge is designed for use with the MX2A and MX4A active gauges to provide full range vacuum measurement from 5*10^{-11} Torr to 10^{-2} Torr.

When combined with the MX2A or MX4A, the MX7M will provide full range vacuum measurement from 10^{-11} Torr to 1000 Torr. This is an optimal solution for heat treat and vacuum furnaces where calibration frequency requirements vary between rough vacuum (MX2A and MX4A) and high vacuum (MX7M) gauges.

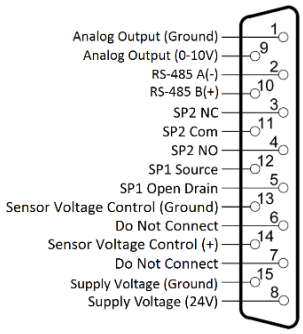
EthernetIP communications can be enabled by integrating the MX7M with the EthernetIP Gateway.

Materials Exposed to Vacuum

Stainless Steel
Alumina Ceramic
Molybdenum
Kovar
Ag-Cu Braze Alloy
Copper

Electrical Connections

Pin	Description
1	Analog Out (Ground)
2	RS-485 A (-)
3	SP2 NC
4	SP2 NO
5	SP1 Open Drain
6	Do not connect
7	Do not connect
8	Supply Voltage (+)
9	Analog Out (0 to 10) V
10	RS-485 B (+)
11	SP2 Com
12	SP1 Source
13	Sensor Voltage Control (Ground)
14	Sensor Voltage Control (+)
15	Supply Voltage (Ground)



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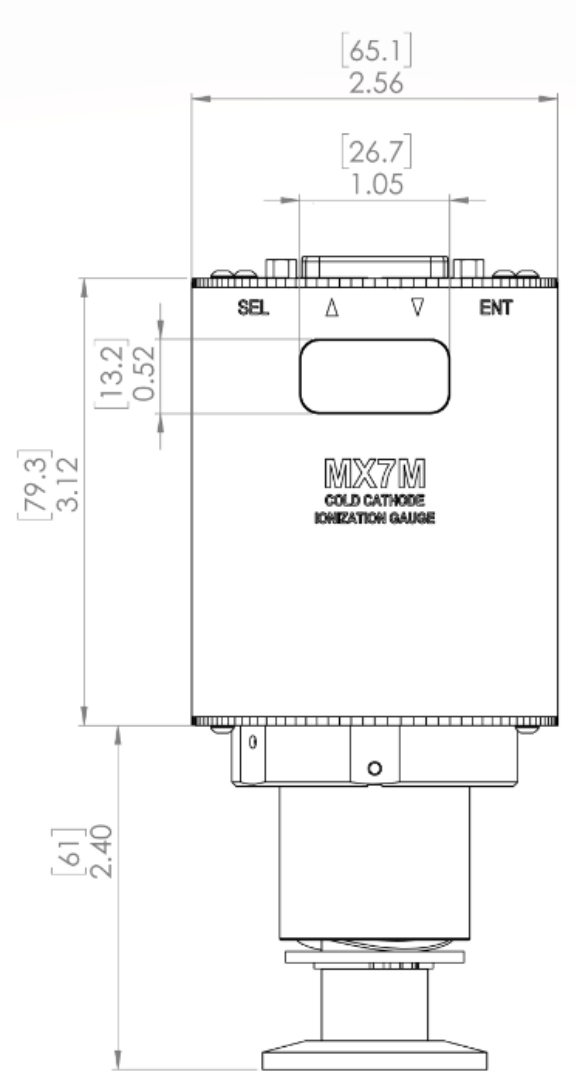
Set Points

The MX7M has two set points. Set point 1 is an N-Channel 60 V MOSFET open collector. It has a maximum current rating of 1 A. The datasheet can be found at www.vishay.com/en/product/69958/.

Set point 2 is a relay with a maximum switching voltage of 220 V DC (250 V AC) and a maximum switching current of 2 A. The datasheet can be found at www.te.com/catalog/pn/en/1393788-3.

Dimensional Drawing



Ordering Information

Part Number	Description
2-8950-KF16	NW16/KF16 Stainless Steel
2-8950-KF25	NW25/KF25 Stainless Steel
2-8950-KF40	NW40/KF40 Stainless Steel
2-8950-CF40	CF40/DN40 Stainless Steel

D-Sub 15, 6 Conductor Cable (flying leads)

Part Number	Length
2-9873-020	20 ft (6 m)
2-9873-050	50 ft (15 m)
2-9873-100	100 ft (30 m)

D-Sub 15, 15 Conductor Cable (flying leads)

Part Number	Length
2-9858-010	10 ft (3 m)
2-9858-020	20 ft (6 m)
2-9858-035	35 ft (10 m)
2-9858-050	50 ft (15 m)
2-9858-065	65 ft (20 m)
2-9858-100	100 ft (30 m)

Wall Power Supply

Part Number	Description
2-7900-097	100-240 V AC/47-63 Hz, plug types A, C, G, I

Replacement Sensors

Part Number	Description
2-2183-KF16	NW16/KF16 Stainless Steel
2-2183-KF25	NW25/KF25 Stainless Steel
2-2183-KF40	NW40/KF40 Stainless Steel
2-2183-CF40	CF40/DN40 Stainless Steel

Replacement Parts

Part Number	Description
2-7900-011	Anode Assembly

Compatible Vacuum Controller

Part Number	Description
2-8900-100	MX Active Gauge EthernetIP Gateway

Full Range Active Vacuum Gauge Solutions

Part Number	Description	Supporting Document
2-8910-1XX	MX2A Thermocouple	Application Note AN3023
2-8930-1XX	MX4A Convection	Application Note AN3023

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Additional Documentation	
Manual	MX7M Cold Cathode Active Vacuum Gauge Manual
AN3002	Cleaning the 7B Cold Cathode Gauge
AN3010	Torr Scientific/Torr Decimal/mTorr/Micron Conversions
AN3015	Recommended Practices for Vacuum Calibration
AN3020	Vacuum Terminology Reference
AN3023	Automatic Control of an MX7B with an MX2A/MX4A
Video	MX7B Cold Cathode Overview
Video	MX7B Disassembly Demonstration
Resource	Televac® Tolerances

Company Information

Specialty manufacturing services that promise precision -
For more than 85 years, Fredericks has specialized exclusively in tilt and vacuum measurement products. Today, our precise manufacturing processes produce the most accurate and advanced products on the market, ensuring perfection every time. A true specialty service provider, we are willing and eager to put our experience and capabilities to good use, helping OEMs achieve even the most complex designs.

High performance products designed and manufactured with pride -
Fredericks is a global provider and U.S. manufacturer and designer of high-performance tilt and vacuum measurement products. Built to last, our products are made with state-of-the-art sensing technology, proven processes, and an intrinsic passion for the trade. Offering simple integration and quality and safety benchmarks, our customers benefit not just from standard-setting reliability, but from our commitment to competitive pricing and performance.

A partnership that prioritizes uptime, lead time, and service -
Fredericks guarantees customer satisfaction and our 'not too big, not too small' operation is what enables us to offer a true partnership experience. Our dedicated representatives and engineers offer exceptionally responsive service and some of the fastest lead times in the industry, knowing that uptime is the key to your success. With anytime-access to our leadership team and solutions that enhance your products, you will feel the Fredericks difference.

Vacuum measurement tools built for the toughest jobs -
Fredericks' world-class vacuum sensors, gauges, and control instrumentation are engineered for the most demanding applications and environments. Our patented Televac® and ETI vacuum brands feature cold-cathode technology, thermocouple and convection gauges, and precision-manufactured hot ionization gauges. Dedicated solely to vacuum gauging and calibration services, we provide industrial heating, national laboratories, cryogenics, and industrial gas applications, among many others, with fast lead times and industry-leading performance. Covering the entire practical vacuum range, our products deliver rapid response vacuum readings and superior sensitivity.

Contact Us

The Fredericks Company
2400 Philmont Avenue
Huntingdon Valley, PA 19006
tel: +1 215 947 2500
fax: +1 215 947 7464
email: sales@frederickscompany.com
web: www.frederickscompany.com