



7B Penning Magnetron Cold Cathode Vacuum Gauge

Part Number: **2-2100-2XX**

Operating Specifications

Operating Range (MX200)	1*10 ⁻⁷ Torr to 1*10 ⁻³ Torr
Operating Range (MX7B)	1*10 ⁻⁸ Torr to 1*10 ⁻³ Torr
Analog Output	Controller dependent
Supply Voltage	Controller dependent
Mounting Orientation	Any
Calibration Medium	Dry air or nitrogen
Overpressure	150 PSI
Analog Output Resolution	Controller-dependent
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 70 °C
Bakeout Temperature	120 °C
Response Time	≤ 50 ms
Accuracy (MX200, MM200, MC300)	
1*10 ⁻⁶ to 1*10 ⁻³ Torr	±0.2 decade
Accuracy (MX7B)	
1*10 ⁻⁷ to 1*10 ⁻³ Torr	±30% of reading

Physical Characteristics

Electrical Connections	MHV
Weight	795 g (1.75 lbs) (NW25)
Dimensions	See dimensional drawings

Key Features and Benefits

- Supported by various controllers and active gauges
- Reliable Penning magnetron cold cathode technology
- Easily cleaned for extended sensor lifetime
- Excellent resolution and repeatability

Applications and Industries

- Medical particle accelerators
- National labs, research and development
- Semiconductor
- Thin film deposition
- Vacuum furnace, heat treat

Ordering Information

Part Number	Description
2-2100-263	3/4" NPT Brass
2-2100-265	1" Straight Brass
2-2100-266	1 1/4" Straight Brass
2-2100-272	NW25/KF25 Stainless Steel

Compatible Vacuum Controllers

Part Number	Description
2-7900-034	MX200 Vacuum Controller RS-232/RS-485/USB
2-7900-037	MX200 Vacuum Controller Ethernet/IP/USB
2-8940-XXX	MX7B Cold Cathode Active Vacuum Gauge

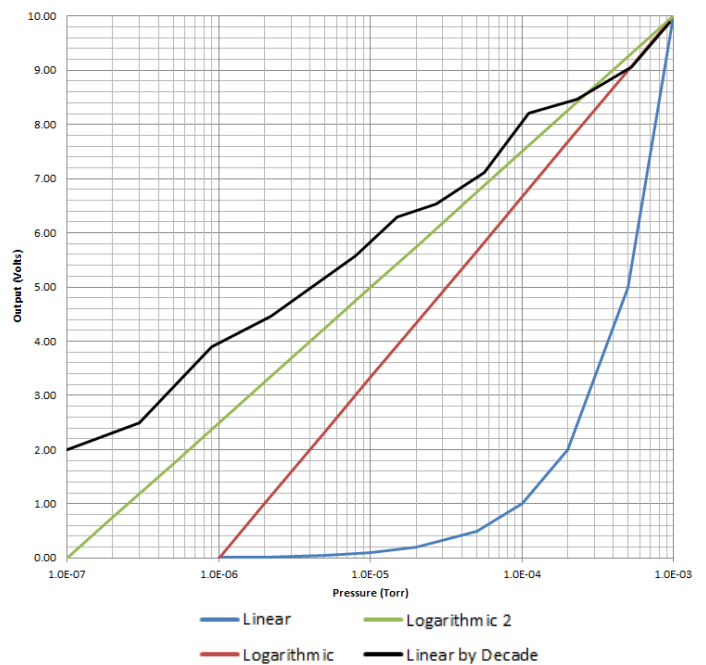
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Description

The **7B Penning Magnetron Cold Cathode Passive Sensor** has a measurement range from 1*10⁻⁸ up to 1*10⁻³ Torr. It indirectly measures absolute pressure by ionizing gas in the presence of a magnetic field. Unlike hot filament sensors, the 7B is resistant to inrushes of gas and does not have a filament that can burn out. The sensor design allows for easy disassembly enabling quick cleaning for an extended lifetime.

The 7B can be operated by the Televac® **MX200** vacuum controller, or the **MX7B Cold Cathode Active Vacuum Gauge**. The MX200 will automatically operate the cold cathode to provide a full range vacuum measurement solution when the 7B is used in conjunction with rough vacuum sensors like the **2A thermocouple** or **4A convection**.

Analog Output Behavior



Materials Exposed to Vacuum

- Brass
- Stainless Steel
- Tophet
- Kovar
- Ceramic
- Glass
- Fluoropolymer Elastomer
- Nickel
- Solder

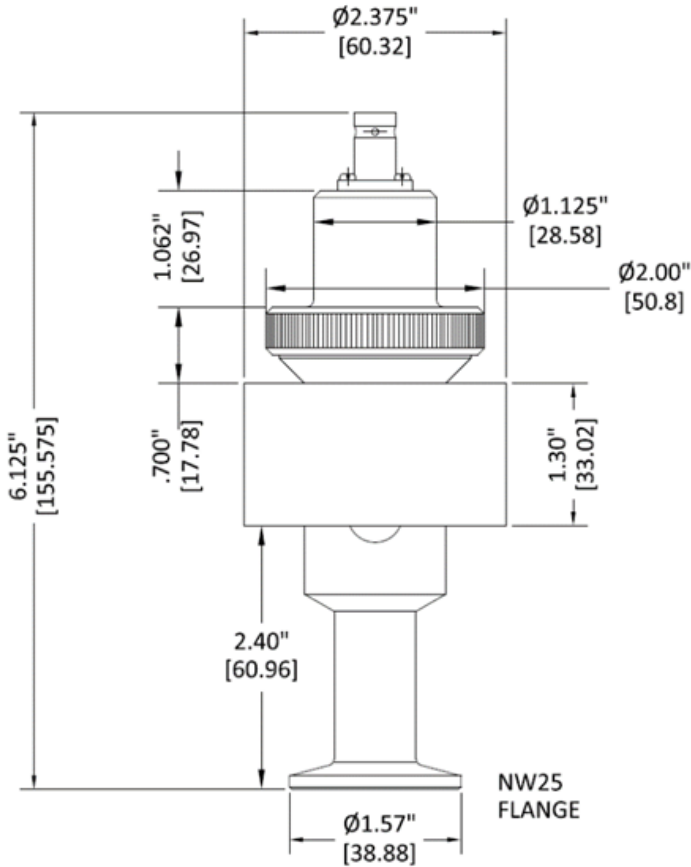
Ratings and Compliance

- RoHS compliant



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Dimensional Drawing



Additional Documentation

AN3002	Cleaning the 7B and 7E Cold Cathode Vacuum Gauges
AN3010	Torr Scientific/Torr Decimal/mTorr/Micron Conversions
AN3015	Recommended Practices for Vacuum Calibration
AN3020	Vacuum Terminology Reference
Video	Cleaning the 7B Instructional Video
Video	7B Disassembly Instructional Video
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.

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