



7F Double Inverted Magnetron Cold Cathode Vacuum Gauge

Part Number: **2-2144-052**

Operating Specifications

| | |
|--|---|
| Operating Range | 1*10 ⁻¹¹ Torr to 1*10 ⁻² 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 | 400 °C (without magnets) 150 °C (with magnets) |
| Response Time | ≤ 10 ms |
| Accuracy | |
| 1*10⁻⁹ to 1*10⁻² Torr | ±0.2 decade |

Physical Characteristics

| | |
|-------------------------------|--------------------------|
| Electrical Connections | SHV5 |
| Weight | 572 g (1.26 lbs) |
| Dimensions | See dimensional drawings |

Key Features and Benefits

- Cleanable design for extended use
- Resistant to inrushes of gas
- High bakeout temperature
- Improved sensitivity when compared to Penning Magnetrons
- Mountable in any orientation
- Minimal stray magnetic field
- Interchangeable with [7E](#), [7FC](#), and [7FCS](#)

Applications and Industries

- [Medical particle accelerators](#)
- [National labs, research and development](#)
- [Semiconductor](#)
- [Thin film deposition](#)

Ordering Information

| Part Number | Description |
|-------------|---------------------------------|
| 2-2144-052 | CF40/2.75" CF-F 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 |

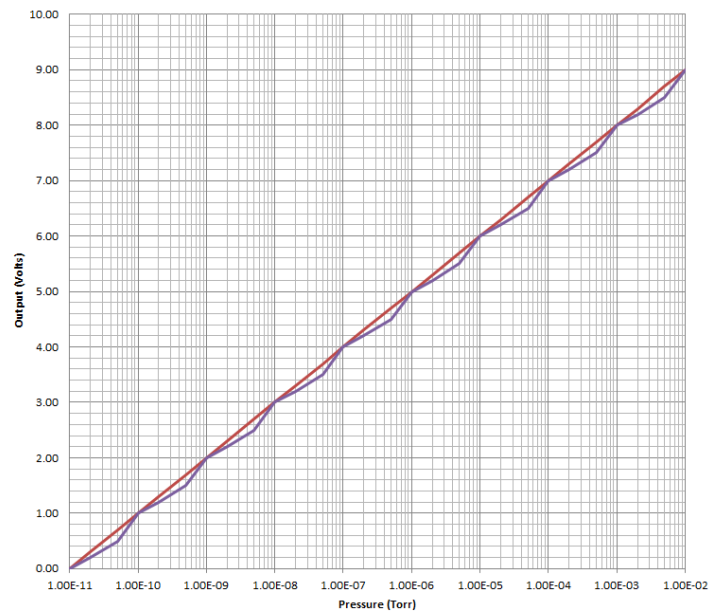
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Description

The [7F cold cathode vacuum gauge](#) has a measurement range from 1*10⁻¹¹ Torr up to 1*10⁻² Torr. It indirectly measures absolute pressure by ionizing gas in the presence of a magnetic field. Unlike hot filament sensors, the 7F is resistant to inrushes of gas. The design of this sensor allows for an extended range of measurement and high bakeout temperatures up to 400 °C.

The 7F can be operated by the Televac® [MX200](#) vacuum controller. This controller will automatically operate the cold cathode to provide a full range vacuum measurement solution when the 7F is used in conjunction with rough vacuum sensors like the [2A thermocouple](#) or [4A convection](#).

Analog Output Behavior



— Logarithmic
 — Linear by Decade

Materials Exposed to Vacuum

Stainless Steel
 Ceramic

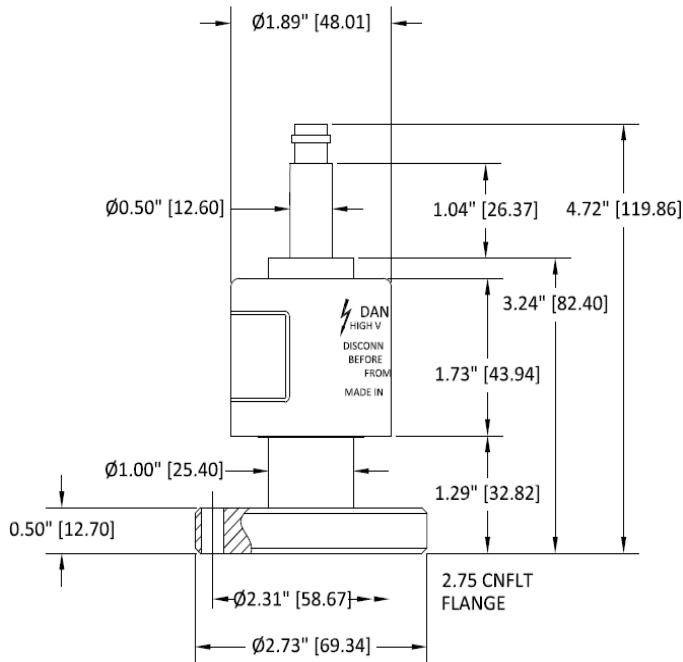
Ratings and Compliance

- RoHS complaint



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Dimensional Drawing



Additional Documentation

- [AN3010 Torr Scientific/Torr Decimal/mTorr/Micron Conversions](#)
- [AN3015 Recommended Practices for Vacuum Calibration](#)
- [AN3020 Vacuum Terminology Reference](#)
- [Resource Televac® Tolerances](#)

Company Information

Specialty manufacturing services that promise precision - Since 1935, 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 sensitivity.

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