



3F Mini Bayard-Alpert Hot Cathode Ionization Vacuum Gauge

Part Numbers: 3451-8305-25, 3451-8305-35, and 3452-8306-05

Operating Specifications

Operating Range	1*10 ⁻¹⁰ Torr to 1*10 ⁻² Torr
Sensitivity in Nitrogen	10/Torr
X-Ray Limit	<1 x 10 ⁻¹⁰ Torr
Mounting Orientation	Any
Calibration Medium	Dry air or nitrogen
Overpressure	150 PSI
Filament Type	Dual Yttria Coated Iridium
Emission Current	.01, .1, or 1 mA
Filament Potential	30 V
Grid Potential	180 V
Filament Heating Voltage	1.5 V Typical (2.5 V Max)
Filament Heating Current	1.5 A Typical (3 A Max)
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 70 °C
Bakeout Temperature	200 °C
Degas Power	5 W Electron Beam (max)
Response Time	≤ 100 ms
Accuracy	
1*10 ⁻⁹ to 1*10 ⁻² Torr	±0.1 decade

Physical Characteristics

Electrical Connections	Custom 9 Pin Connector
Weight (3451-8305-35)	70 g (.15 lbs)
Dimensions	See dimensional drawings

Key Features and Benefits

- Competitively priced
- Compact design
- Two filaments for longer lifetime
- High accuracy measurement solution
- Excellent customer support

Applications and Industries

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

Ordering Information

Part Number	Description
3451-8305-25	2.75" CF Stainless Steel
3451-8305-35	NW25/KF25 Stainless Steel
3452-8306-05	1" tube Stainless Steel

Compatible Vacuum Controllers

Part Number	Description
2-7900-20	MM200 Vacuum Controller (Legacy)
2-4502-305	MC300 2A/3F Vacuum Controller (Legacy)
2-4502-306	MC300 4A/3F Vacuum Controller (Legacy)

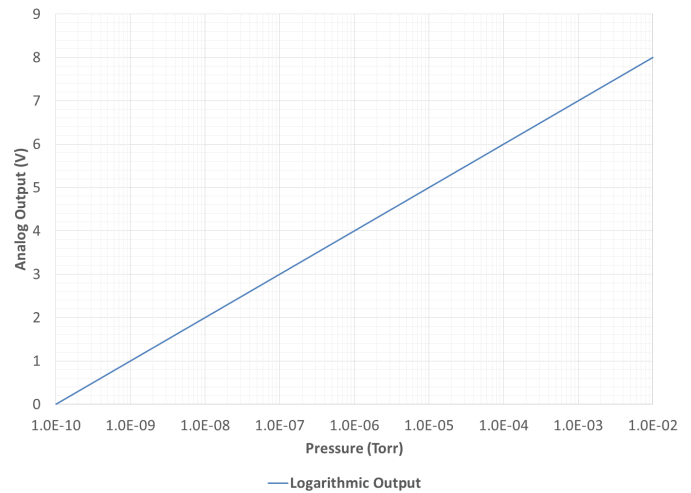
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Description

The [3F mini Bayard-Alpert Hot Cathode Ionization Gauge](#) has a measurement range of 1*10⁻¹⁰ Torr to 1*10⁻² Torr. It indirectly measures absolute pressure by ionizing gas in the presence of an electric field. The design of this sensor allows for an extended range of measurement and bakeout temperatures up to 200 °C.

The 3F can be operated by several Televac® controllers, including the [MM200](#) or [MC300](#) rack mountable controllers. The MM200 and MC300 controllers automatically operate the mini Bayard-Alpert to provide a full range vacuum measurement solution when the 3F is used in conjunction with rough vacuum sensors.

Analog Output Behavior



Materials Exposed to Vacuum

Stainless Steel	Glass
Kovar	Tungsten
Molybdenum	Tantalum
Alumina Ceramic	Nickel
Platinum	Yttria Coated Iridium

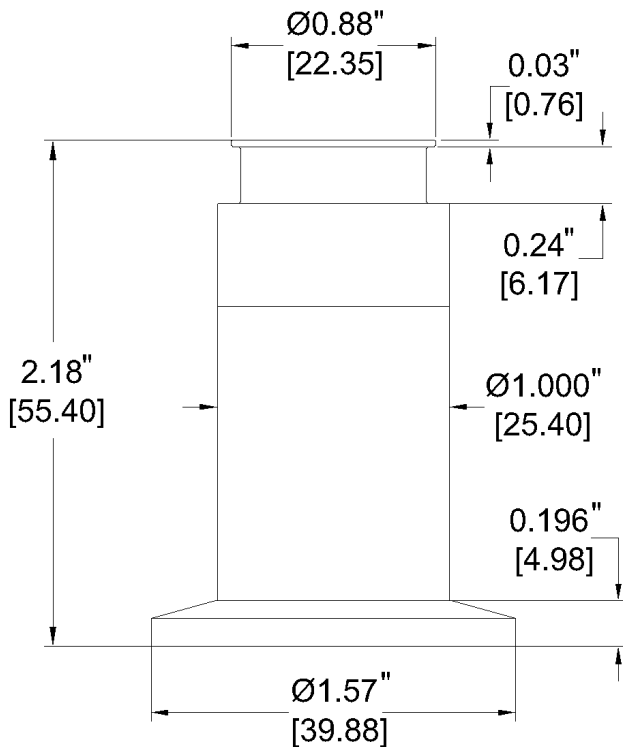
Ratings and Compliance

- 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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