



4A Convection Vacuum Gauge

Part Numbers: **2-2119-0XX, 2-2120-0XX**

Operating Specifications

Operating Range	1*10 ⁻³ Torr to 1000 Torr
Analog Output	Controller-dependent
Analog Output Resolution	Controller-dependent
Max. Filament Temperature	250 °C
Mounting Orientation	Vertical
Calibration Medium	Dry air or nitrogen
Overpressure	150 PSI
Operating Temperature	0 °C to 50 °C
Storage Temperature	-40 °C to 85 °C
Max. Bakeout Temperature	120 °C (brass) 200 °C (stainless steel)
Response Time	Controller dependent
Accuracy (MX4A, MX200)	
0.1 to 1 mTorr	0.1 mTorr resolution
1 to 10 mTorr	±1 mTorr
10 mTorr to 1000 Torr	±10% of reading

Accuracy (MM200, MC300, MP4AR)

1 to 10 mTorr	±1 mTorr
10 mTorr to 1 Torr	±10% of reading
1 to 100 Torr	±20% of reading
100 to 1000 Torr	±10% of reading

Physical Characteristics

Electrical Connections	Octal male
Weight	126 g (0.28 lbs) (NW25)

Key Features and Benefits

- Compact, robust design
- Numerous fittings available
- Excellent resolution and repeatability
- Minimal sensor to sensor output variation

Applications and Industries

- E-beam welding
- Freeze dryers
- Liquefied Natural Gas (LNG), industrial gas, cryogenics
- Particle accelerators
- National labs, research, and development
- Semiconductor
- Thin film deposition
- Vacuum distillation
- Vacuum furnace, heat treat
- Vacuum glove boxes

Materials Exposed to Vacuum

PN: 2-2119-0XX	PN: 2-2120-0XX
Solder	Glass
Glass	Alloy 52
Alloy 52	304 Stainless Steel
Nickel	Chromel
Chromel	Constantan
Constantan	

Description

The Televac® 4A convection vacuum sensor (also sometimes called a thermocouple, TC, Pirani, or convection vacuum gauge) has a measurement range from 1*10⁻⁴ Torr to 1000 Torr. It indirectly measures absolute pressure by detecting the thermal dissipation of a filament. This sensor is available in stainless steel and nickel-plated brass with a variety of flanges and fittings to meet the requirements of your vacuum system.

The 4A can be operated by the Televac® [MX200](#), [MX200 EthernetIP](#), [MX200 PROFINET](#) vacuum controllers, or connect directly to the [MX4A Active Vacuum Gauge](#).

Ordering Information

Part Number	Description
2-2119-001	1/8" NPT Nickel-Plated Brass
2-2120-001	1/8" NPT Stainless Steel
2-2120-011	1/2" Straight Stainless Steel
2-2119-016	NW16/KF16 Nickel-Plated Brass
2-2120-030	NW16/KF16 Stainless Steel
2-2119-025	NW25/KF25 Nickel-Plated Brass
2-2120-031	NW25/KF25 Stainless Steel
2-2120-032	NW40/KF40 Stainless Steel
2-2120-040	8-VCO Male Stainless Steel
2-2120-041	8-VCO Female Stainless Steel
2-2120-042	8-VCR Male Stainless Steel
2-2120-043	8-VCR Female Stainless Steel
2-2120-044	4-VCR Male Stainless Steel
2-2120-045	4-VCR Female Stainless Steel
2-2120-050	CF16/1.33" CF-F Stainless Steel
2-2120-052	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 EthernetIP/USB
2-7900-038	MX200 Vacuum Controller PROFINET/USB
2-8910-1XX	MX4A Convection Active Vacuum Gauge

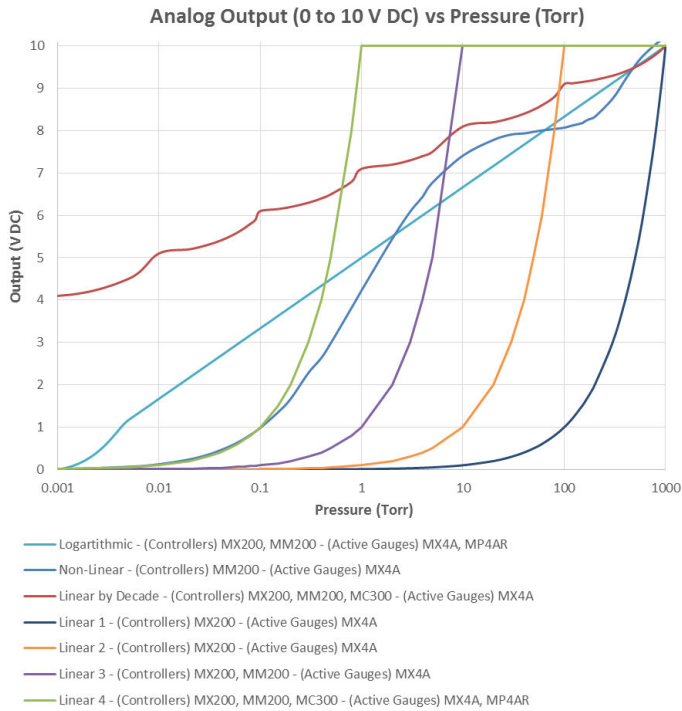
Ratings and Compliance

- RoHS compliant

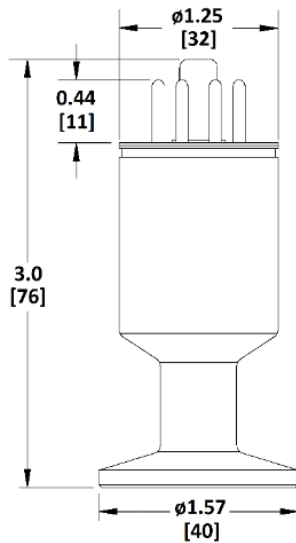


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Analog Output Behavior



Dimensional Drawing



*NW25 SS Fitting

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

Additional Documentation

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