

## 4A Convection Vacuum Sensor

Part Number: 2-2119-0XX and 2-2120-0XX

### Operating Specifications

<b>Operating Range 1</b> for MX4A	1*10 <sup>-4</sup> to 1000 Torr 1*10 <sup>-2</sup> to 1*10 <sup>5</sup> Pa
	1*10 <sup>-4</sup> to 1000 mbar
<b>Operating Range 2</b> for MX200, MM200, MC300, MP4AR	1*10 <sup>-3</sup> to 1000 Torr 1*10 <sup>-1</sup> to 1*10 <sup>5</sup> Pa
	1*10 <sup>-3</sup> to 1000 mbar
<b>Analog Output Characteristics</b>	Controller dependent
<b>Analog Output Resolution</b>	Controller dependent
<b>Maximum Filament Temperature</b>	250° C
<b>Mounting Orientation</b>	Vertical
<b>Calibration Medium</b>	Dry air or nitrogen (N <sub>2</sub> )
<b>Overpressure</b>	150 PSI
<b>Operating Temperature</b>	0 °C to 50 °C
<b>Storage Temperature</b>	-40 °C to 85 °C
<b>Maximum Bakeout Temperature</b>	200° C (stainless steel) 120° C (nickel-plated brass)
<b>Response Time</b>	Controller dependent
<b>Accuracy (MX4A, MX200)</b>	
<b>0.1 to 1 mTorr</b>	0.1 mTorr resolution
<b>1 to 10 mTorr</b>	±1 mTorr
<b>10 mTorr to 1000 Torr</b>	±10% of reading
<b>Accuracy (MM200, MC300, MP4AR)</b>	
<b>1 to 10 mTorr</b>	±1 mTorr
<b>10 mTorr to 1 Torr</b>	±10% of reading
<b>1 to 100 Torr</b>	±20% of reading
<b>100 to 1000 Torr</b>	±10% of reading

### Ordering Information

4A Sensor 1/8" NPT Nickel-Plated Brass	2-2119-001
4A Sensor NW16 (DN16 ISO-KF) Nickel-Plated Brass	2-2119-016
4A Sensor NW25 (DN25 ISO-KF) Nickel-Plated Brass	2-2119-025
4A Sensor 1/8" NPT Stainless Steel	2-2120-001
4A Sensor NW16 (DN16 ISO-KF) Stainless Steel	2-2120-030
4A Sensor NW25 (DN25 ISO-KF) Stainless Steel	2-2120-031
4A Sensor 8-VCO Male Stainless Steel	2-2120-040
4A Sensor 8-VCO Female Stainless Steel	2-2120-041
4A Sensor 8-VCR Male Stainless Steel	2-2120-042
4A Sensor 8-VCR Female Stainless Steel	2-2120-043
4A Sensor 4-VCR Male Stainless Steel	2-2120-044
4A Sensor 4-VCR Female Stainless Steel	2-2120-045
4A Sensor 1.33" CF (DN16 ISO-CF-F) Stainless Steel	2-2120-050
4A Sensor 2.75" CF (DN40 ISO-CF-F) Stainless Steel	2-2120-052

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### Materials Exposed to Vacuum

<b>4A Nickel-Plated Brass</b>	<b>4A Stainless Steel</b>
<b>PN: 2-2119-0XX</b>	<b>PN: 2-2120-0XX</b>
Solder	Glass
Glass	Alloy 52
Alloy 52	304 Stainless Steel
Nickel	Chromel
Chromel	Constantan
Constantan	

 Now with full range ±10% accuracy!

### 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<sup>-4</sup> 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 several Televac® controllers and active gauges. See page 2 under Related Products for a full list of products and part numbers.

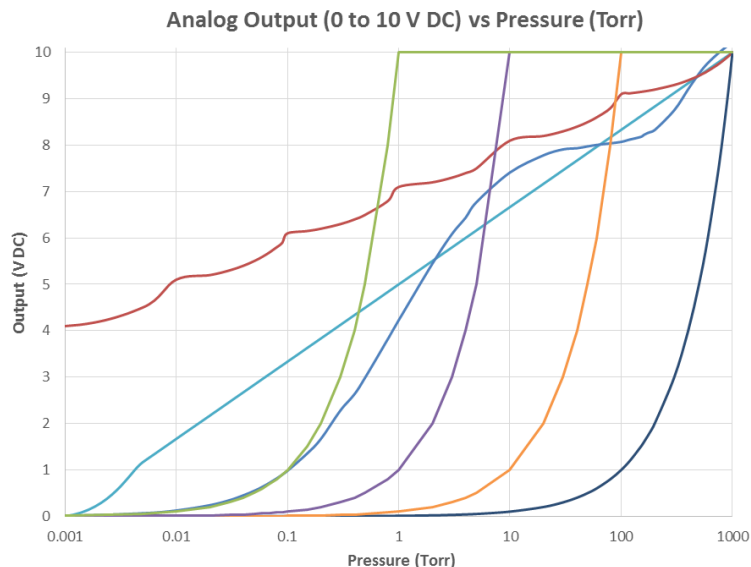
### Benefits

- Competitively priced
- Compact, robust design
- Many flanges and fittings available
- Excellent resolution and repeatability
- Minimal sensor to sensor output variation
- Excellent customer support

### Ratings and Compliance

- RoHS compliant

### Analog Output (0 to 10 V DC) Characteristics



- Logarithmic - (Controllers) MX200, MM200 - (Active Gauges) MX4A, MP4AR
- Non-Linear - (Controllers) MM200 - (Active Gauges) MX4A
- Linear by Decade - (Controllers) MX200, MM200, MC300 - (Active Gauges) MX4A
- Linear 1 - (Controllers) MX200 - (Active Gauges) MX4A
- Linear 2 - (Controllers) MX200 - (Active Gauges) MX4A
- Linear 3 - (Controllers) MX200, MM200 - (Active Gauges) MX4A
- Linear 4 - (Controllers) MX200, MM200, MC300 - (Active Gauges) MX4A, MP4AR

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### Additional Documentation

- Televac® Tolerances
- AN 3001 - Comparison of the MX2A and MX4A Active Gauges
- AN 3010 - Torr Scientific/Torr Decimal/mTorr/Micron Conversions
- AN 3015 - Televac® Recommended Practices for Vacuum Calibration
- AN 3020 - Vacuum Terminology Reference

### Related Products

Description	Part Number
MX4A Active Gauge	2-8930-1XX
MX200 Vacuum Controller RS-232/RS-485/USB	2-7900-034
MX200 Vacuum Controller EthernetIP/USB	2-7900-037
MC300 Vacuum Controller	2-4502-XOX
(Legacy) MM200 Vacuum Controller	2-7900-20
(Legacy) MP4AR Active Gauge	2-7930-XYX



MX4A



MX200 EthernetIP/USB



MC300

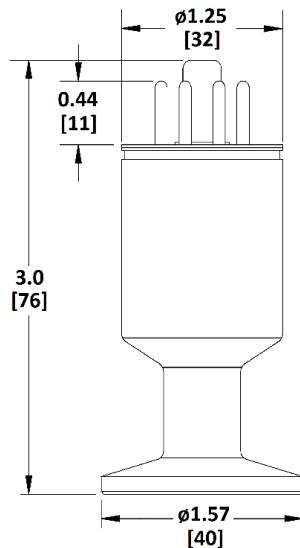
Visit our website at [www.televac.com](http://www.televac.com) for a full list of compatible instruments.

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### Physical Characteristics

Electrical Connections	Octal male
Weight	126 g (0.28 lbs) (NW25)
Dimensions	See dimensional drawings

### Dimensional Drawings



\*NW25 SS Fitting

### Company Information

**Specialty manufacturing services that promise precision** – For more than 85 years, Televac® 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 and end users achieve even the most complex designs.

**High performance products designed and manufactured in the USA** – Televac® is a global provider and U.S. manufacturer and designer of high-performance 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** – Televac® 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** – Televac®’s world-class vacuum sensors, gauges, and control instrumentation are engineered for the most demanding applications and environments. Our 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.

[Read more about us!](#)

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