

# Industry-Leading Vacuum Gauging Solutions



### Televac® 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, industrial gas, and LNG applications, among many others, with fast lead times and industry-leading performance. From atmosphere to ultra high vacuum, our products deliver rapid response vacuum readings and superior sensitivity.

### Specialty Manufacturing Services That Promise Precision and Partnership

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.

Even though timely customer service and expert product support should be a standard for doing business, in recent times we've found it to be the exception instead of the rule. Getting the quick, ongoing support you need is critical when you have time sensitive engineering challenges to work through. At that point, you don't just need a part – you need a partner, and expert product support is something you can rely on from Fredericks with anytime access to our product specialists and leadership team.



### Guaranteed Two Week Lead Times

We're committed to maintaining the shortest possible lead times for our customers. We understand the importance of fast delivery for your business continuity; long lead times are not only frustrating, but can result in an immediate halt to your operations, decreasing productivity and causing revenue loss.

How do we get lead times this fast? We provide you with a dedicated customer service representative who handles your order from start to finish. Our team makes sure that you receive everything you need, so we get it right the first time, every time!



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**High Performance Products Designed and Manufactured with Pride in the USA**

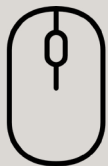
Fredericks is a global provider and U.S. manufacturer and designer of high-performance tilt and vacuum measurement products. Built to last, our products are made with state-of-the-art sensing technologies, proven processes and an intrinsic passion for the trade. Offering simple integration and quality 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.

**Women-Owned Small Business**

Fredericks is proud to be a Women-Owned Small Business (WOSB). We are ISO 9001:2015 certified and registered with the U.S. State Department as ITAR compliant. All of our products are designed and manufactured at our facility in Huntingdon Valley, PA.



Visit our website to view all of our Televac<sup>®</sup> products, purchase online, download datasheets, and more.

[www.televac.com](http://www.televac.com)



Contact our sales and application support teams to answer questions about our products.

[sales@televac.com](mailto:sales@televac.com)



Chat with our sales and application support teams online today.

Chat with us online today!



Visit our YouTube channel to view product demonstration and how-to videos.

View our channel!



## MX200 Vacuum Controller

The Televac® MX200 vacuum controller can be connected to up to 10 Televac® passive vacuum gauges including cold cathode gauges, convection gauges, diaphragm gauges, and thermocouple gauges. It also includes 0 to 10 V DC analog outputs for each vacuum gauge connected to the vacuum controller, RS-232/RS-485/USB digital communications for simple integration with a PC or PLC, and up to 8 optional set point relays to act as a vacuum pressure controller for process control in your vacuum system.



### MX200 Benefits & Features

- Rack mountable with a highly configurable design
- USB included in every unit for simple connection with a PC
- High contrast OLED display with 180° viewing angle
- Selectable units of measurement (Torr, mbar, Pascal)
- Bootloader for field upgradeable firmware
- Gas conversion functions
- User-configurable analog output ranges
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-11</sup> to 1*10 <sup>4</sup> Torr
Communications	RS-232/RS-485/USB/EthernetIP
Analog Output	0 to 10 V DC (1 per sensor)
Analog Output Resolution	16 Bits
Programmable Set Points	4 per module (8 max)
Set Point Type	Relay
Supply Voltage	115/230 V AC (2/1A), 50-60 Hz
Maximum Sensors Controlled	10
Maximum Sensors Displayed	8
Response Time	≤ 10 ms

## MC300 Vacuum Controller

The Televac® MC300 vacuum controller controls up to two Televac® thermocouple gauges or convection gauges and an optional cold cathode gauge or mini BA hot ion gauge. It features a 0 to 10 V DC analog output for each vacuum gauge, 4 relay set points for process control, and large, bright LED display, making it easy to read from a distance.



### MC300 Benefits & Features

- Rack mountable
- Built-in self-diagnostics
- Easy to read, large LED display
- Four process relays with individually assignable set points
- Analog outputs for each sensor
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-11</sup> to 1*10 <sup>3</sup> Torr
Communications	None
Analog Output	0 to 10 V DC (1 per sensor)
Analog Output Resolution	12 Bits
Programmable Set Points	4
Set Point Type	Relay
Supply Voltage	115/230 V AC (2/1A), 50-60 Hz
Maximum Sensors Controlled	3

## MV2A Vacuum Controller

The Televac® MV2A vacuum controller can be connected to 1 Televac® 2A thermocouple vacuum gauge. It includes a 0 to 5 V DC analog output for the gauge connected to the vacuum controller for simple integration with a PLC, and 2 set point relays to act as a vacuum pressure controller for process control in your vacuum system.



### MV2A Benefits & Features

- Rack mountable
- High contrast LED display with 180° viewing angle
- Gas conversion functions available
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Communications	None
Analog Output	0 to 5 V DC
Programmable Set Points	2

## Compact 2A Vacuum Controller

The Televac® Compact 2A vacuum controller can be connected to 1 Televac® 2A passive thermocouple vacuum gauge. It includes a 0 to 10 V DC analog output for the connected vacuum gauge for simple integration with a PLC, and acts as a vacuum pressure controller for process control in your vacuum system.



### Compact 2A Benefits & Features

- Panel mountable
- Analog 0 to 10 V DC output for simple integration
- Analog sweeping needle display
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Communications	None
Analog Output	0 to 10 V DC
Supply Voltage	110/220 V AC, 50-60 Hz

## VacuGuard™ Portable Vacuum Controller

The Televac® VacuGuard™ is a small, battery-powered, portable vacuum controller. It's designed for use with Televac 2A® thermocouple gauges (Pirani) or competing DV-4 and DV-6 series thermocouple gauges (Pirani). This vacuum pressure controller has a range of 1\*10<sup>-3</sup> Torr to 20 Torr and a bright LED display that reads in Torr and mTorr.



### VacuGuard™ Benefits & Features

- Lightweight and compact vacuum controller
- Bright LED display that is easy to read outdoors
- Vacuum controller displays reads in Torr or mTorr (microns)
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Size	4" x 2.5" x 5.5"
Battery	Rechargeable D cell, 1.5 V DC
Battery Life	Up to 40 hours

## B2A Portable Vacuum Controller

The Televac® B2A Portable is a small, battery-powered, portable vacuum controller. It's designed for use with Televac® 2A thermocouple gauges (Pirani). This vacuum pressure controller has a range of  $1 \times 10^{-3}$  Torr to 20 Torr, and an analog display that reads in microns (mTorr).



### B2A Portable Benefits & Features

- Lightweight and compact vacuum controller
- Easy-to-read analog display designed to be used outdoors
- Rechargeable battery that last up to 12 hours
- NIST traceable calibration optional

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### Specifications

Operating Range	$1 \times 10^{-3}$ to 20 Torr
Size	6.32" x 6.15" x 2.52"
Supply Voltage	115 V AC, 50-60 Hz
Battery Life	Up to 12 hours

## MX2A Thermocouple Active Vacuum Gauge

The Televac® MX2A Active Vacuum Gauge utilizes an easily replaceable Televac® 2A thermocouple gauge. This vacuum gauge has a variety of features including a pressure measurement range from  $1 \times 10^{-4}$  Torr up to 1000 Torr, RS-485 communications, two programmable set points, and a selectable analog vacuum gauge output.



### Compact 2A Benefits & Features

- Very compact vacuum gauge
- Easy-to-read color OLED digital vacuum gauge display
- Excellent resolution and repeatability
- Simple sensor replacement - no screws to remove
- NIST traceable calibration optional

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### Specifications

Operating Range	$1 \times 10^{-4}$ to 1000 Torr
Communications	RS-485, EthernetIP
Analog Output	7 selectable 0 V DC to 10 V DC
Programmable Set Points	2

## MX4A Convection Active Vacuum Gauge

The Televac® MX4A Active Vacuum Gauge utilizes an easily replaceable Televac® 4A convection vacuum gauge. This vacuum gauge has a variety of features including a measurement range from  $1 \times 10^{-4}$  Torr up to 1000 Torr, RS-485 communications, two programmable set points, and a selectable 0 to 10 V DC analog vacuum gauge output.



### MX4A Benefits & Features

- Robust and compact gauge with a easy-to-read OLED display
- Simple sensor replacement - no screws to remove
- Excellent resolution and repeatability vacuum gauge
- NIST traceable calibration optional

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### Specifications

Operating Range	$1 \times 10^{-4}$ to 1000 Torr
Communications	RS-485, EthernetIP
Analog Output	7 selectable 0 V DC to 10 V DC
Programmable Set Points	2

## MX7B Cold Cathode Active Vacuum Gauge

The MX7B is an active vacuum gauge featuring the well-known Televac® 7B cold cathode ionization gauge. This gauge provides robust, contamination resistant measurement from  $10^{-3}$  to  $10^{-8}$  Torr. The Penning ionization gauge is easy to disassemble, making gauge replacement and cleaning stress-free while also saving you time and money.

### MX7B Benefits & Features

- Contamination-resistant cold cathode gauge design
- Robust and compact display with a easy-to-read OLED display
- Easily cleaned gauge for extended sensor lifetime
- NIST traceable calibration optional

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### Specifications

Operating Range	$1 \times 10^{-8}$ to $1 \times 10^{-3}$ Torr
Communications	RS-485, Micro USB, EthernetIP
Analog Output	Configurable 0 to 10 V DC
Programmable Set Points	2



## MX7M Cold Cathode Active Vacuum Gauge

The MX7M is an active vacuum gauge featuring the Televac® 7M cold cathode ionization gauge with a wide operating range of  $5 \times 10^{-11}$  to  $1 \times 10^{-2}$  Torr. This vacuum gauge has all-metal seals, significantly reducing outgassing.

### MX7M Benefits & Features

- Contamination-resistant cold cathode ionization gauge design
- All-metal seals leading to low outgassing
- Easily cleaned for extended sensor lifetime
- NIST traceable calibration optional

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### Specifications

Operating Range	$5 \times 10^{-11}$ to $1 \times 10^{-2}$
Communications	RS-485, EthernetIP
Analog Output	7 selectable 0 V DC to 10 V DC
Programmable Set Points	2



## MX Active Gauge EthernetIP Gateway

The MX Active Gauge EthernetIP Gateway is the first and only solution designed to provide an EthernetIP connection between Televac® active vacuum gauges and Rockwell Automation® Allen-Bradley® PLCs. An increasingly popular industrial network communication standard, EthernetIP communication offers users faster and more reliable vacuum measurements and eliminates the need for additional analog-to-digital converters or other vacuum controllers and vacuum pressure controllers.

### MX Active Gauge EthernetIP Gateway Features

- Controls up to four Televac® MX active vacuum gauges and one CDG
- Significantly reduces latency from analog signals
- Digitally calibrate vacuum gauges from your HMI
- Configure all settings for all active vacuum gauges

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### Specifications

Operating Range	$5 \times 10^{-11}$ to 1000 Torr
Communications	EthernetIP
Gauges Controlled	Up to 5



## CC-10 Wide Range Active Vacuum Gauge

The Televac® CC-10 Wide Range Active Vacuum Gauge utilizes two internal sensors to measure full range vacuum from UHV to above atmosphere. This vacuum gauge has a variety of features including RS-485 communications, two programmable set points, and a selectable analog vacuum pressure gauge output.



### CC-10 Benefits & Features

- Very compact wide range vacuum pressure gauge
- Easy-to-read LED digital vacuum gauge display
- Excellent resolution and repeatability vacuum gauge
- NIST traceable calibration optional

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### Specifications

Operating Range	1*10 <sup>-9</sup> to 1000 Torr
Communications	RS-485
Analog Output	Configurable 0 to 10 V DC
Programmable Set Points	3 relays

## 2A Thermocouple Vacuum Gauge

Our 2A thermocouple vacuum gauge tube is widely considered our most robust and contamination resistant low vacuum pressure gauge due to the thermocouple filament design and operating temperature, and it's simple to install because it can be mounted in any orientation. The 2A thermocouple vacuum gauge tube's primary limitation is that with all of our vacuum controllers (except the MX2A), this thermocouple vacuum transducer will only read from 1\*10<sup>-3</sup> Torr to 20 Torr, instead of all the way up to atmosphere.



### 2A Thermocouple Benefits & Features

- Compact, robust, and contamination resistant
- Numerous vacuum transducer fittings available
- Drop-in vacuum pressure gauge replacement
- Excellent resolution and repeatability

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	120°C (brass) 200°C (stainless steel)
Response Time	≤2 s

## 2A VacuMini Thermocouple Vacuum Gauge

The Televac® 2A VacuMini is a commercial version of Televac®'s highly successful NASA 2A gauge. Our 2A VacuMini thermocouple vacuum gauge tube is widely considered our most robust and contamination resistant low vacuum pressure gauge due to the thermocouple filament design and operating temperature, and it's simple to install because it can be mounted in any orientation.



### 2A VacuMini Thermocouple Benefits & Features

- Compact, robust, and contamination resistant
- Standard 1/8" NPT flange/fitting
- Weather-capped vacuum transducer with gasket and tether
- Drop-in vacuum pressure gauge replacement

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	140°C
Response Time	≤1 s



## 2A NASA Mini Thermocouple Vacuum Gauge

The Televac® 2A NASA Mini is a smaller, more robust version of our 2A thermocouple vacuum gauge tube originally designed for NASA. Our 2A NASA Mini thermocouple vacuum gauge tube is widely considered our most robust and contamination resistant low vacuum pressure gauge due to the thermocouple filament design and operating temperature, and it's simple to install because it can be mounted in any orientation.



### 2A NASA Mini Thermocouple Benefits & Features

- Compact, robust, and contamination resistant
- Standard thermocouple 1/8" NPT flange/fitting
- Weather-capped vacuum transducer with gasket and tether
- Drop-in vacuum pressure gauge replacement

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 20 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	400°C
Response Time	≤ 1s

## 2V6 Thermocouple Vacuum Gauge

Our 2V6 thermocouple vacuum gauge tube is a direct replacement for the Teledyne-Hastings DV-6M vacuum gauge. No adjustments are needed when used with appropriate Televac®, Teledyne Hastings, VRC, or Varian instruments and controllers. These thermocouple vacuum gauges are a robust solution with a measurement of 1\*10<sup>-3</sup> Torr to 1 Torr, and can withstand overpressure of up to 300 PSI.



### 2V6 Thermocouple Benefits & Features

- Compact, robust design
- Compatible with many different manufacturers' equipment
- Excellent resolution and repeatability
- Minimal sensor-to-sensor output variation

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 1 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	100°C
Response Time	100 ms

## 4A Convection Vacuum Gauge

Our 4A convection gauge is a fast, robust, contamination resistant, and high accuracy low vacuum pressure gauge due to the convection filament design. The 4A convection gauge will read from 1\*10<sup>-3</sup> Torr to 1000 Torr with improved accuracy over the 2A, with several of our active gauges and controllers offering ±10% accuracy over the full operating range of the vacuum gauge.



### 4A Convection Benefits & Features

- Compact, robust, and contamination resistant
- Numerous vacuum transducer fittings available
- Drop-in vacuum pressure gauge replacement
- Excellent resolution and repeatability

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### Specifications

Operating Range	1*10 <sup>-3</sup> to 1000 Torr
Mounting Orientation	Vertical
Maximum Bakeout Temperature	120°C (brass) 200°C (stainless steel)
Response Time	≤ 1 s

## 1E Piezo Diaphragm Vacuum Gauge

Our 1E piezo diaphragm gauge is a fast, robust, contamination resistant, and high accuracy low vacuum pressure gauge due to its piezo-resistive diaphragm design. Note that by comparison to the 2A and 4A vacuum gauges which have a thermocouple gauge design, the 1E piezo diaphragm vacuum sensor design is gas-independent and can be mounted in any orientation.

### 1E Piezo Diaphragm Benefits & Features

- Compact, robust, and contamination resistant
- Numerous fittings available
- Drop-in vacuum pressure gauge replacement
- Excellent resolution and repeatability

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### Specifications

Operating Range	1 to 1000 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	120°C
Response Time	≤100 ms

## 1F Piezo Diaphragm Vacuum Gauge

Our 1F piezo diaphragm gauge is a fast, robust, contamination resistant, and high accuracy low vacuum pressure gauge due to the piezo diaphragm design. Note that by comparison to the 2A and 4A vacuum gauges which have a thermocouple gauge design, the 1F piezo diaphragm vacuum sensor design is gas-independent and can be mounted in any orientation.

### 1F Piezo Diaphragm Benefits & Features

- Compact, robust, and contamination resistant
- Numerous vacuum transducer fittings available
- Drop-in vacuum pressure gauge replacement
- Excellent resolution and repeatability

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### Specifications

Operating Range	10 to 10,000 Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	120°C
Response Time	≤100 ms

## 7B Cold Cathode Vacuum Gauge

The Televac® 7B cold cathode gauge has a measurement range from  $10^{-7}$  Torr up to  $10^{-3}$  Torr. This vacuum gauge makes indirect absolute pressure measurements by ionizing gas in the presence of a magnetic field. Unlike hot filament vacuum gauges, the 7B cold cathode gauge is cleanable, contamination resistant, and isn't as easily damaged by inrushes of gas.

### 7B Cold Cathode Benefits & Features

- Easily cleaned for extended sensor lifetime
- Durable Penning ionization gauge construction
- Reliable cold cathode ionization gauge technology
- Mountable in any orientation

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### Specifications

Operating Range	$1 \cdot 10^{-7}$ to $1 \cdot 10^{-3}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	120°C
Response Time	≤ 50 ms

## 7E Cold Cathode Vacuum Gauge

The Televac® 7E cold cathode gauge has a measurement range from  $10^{-8}$  Torr up to  $10^{-2}$  Torr. This vacuum gauge makes indirect absolute pressure measurements by ionizing gas in the presence of a magnetic field. Unlike hot filament vacuum gauges, the 7E cold cathode gauge is cleanable, contamination resistant, and isn't as easily damaged by inrushes of gas.

### 7E Cold Cathode Benefits & Features

- Easily cleaned for extended sensor lifetime
- Durable double-inverted magnetron gauge construction
- Reliable cold cathode ionization gauge technology
- Mountable in any orientation

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### Specifications

Operating Range	$1 \cdot 10^{-8}$ to $1 \cdot 10^{-2}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	150°C
Response Time	$\leq 10$ ms

## 7F Cold Cathode Vacuum Gauge

The Televac® 7F cold cathode gauge has an extremely wide measurement range from  $10^{-11}$  Torr up to  $10^{-2}$  Torr (making it an ultra-high vacuum or UHV solution). This vacuum gauge makes indirect absolute pressure measurements by ionizing gas in the presence of a magnetic field. Unlike hot filament vacuum gauges, the 7F cold cathode gauge is contamination resistant, and isn't as easily damaged by inrushes of gas.

### 7F Cold Cathode Benefits & Features

- High bakeout temperature for extended sensor lifetime
- Durable double-inverted magnetron gauge construction
- Reliable cold cathode ionization gauge technology
- Mountable in any orientation

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### Specifications

Operating Range	$1 \cdot 10^{-11}$ to $1 \cdot 10^{-2}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	150°C
Response Time	$\leq 10$ ms

## 7FC Cold Cathode Vacuum Gauge

The Televac® 7FC cold cathode gauge has an extremely wide measurement range from  $10^{-11}$  Torr up to  $10^{-2}$  Torr (making it an ultra-high vacuum or UHV solution). This vacuum gauge makes indirect absolute pressure measurements by ionizing gas in the presence of a magnetic field. Unlike hot filament vacuum gauges, the 7FC cold cathode gauge is cleanable, contamination resistant, and isn't as easily damaged by inrushes of gas.

### 7FC Cold Cathode Benefits & Features

- Easily cleaned for extended sensor lifetime
- Durable double inverted magnetron gauge construction
- Reliable cold cathode ionization gauge technology
- Mountable in any orientation

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### Specifications

Operating Range	$1 \cdot 10^{-11}$ to $1 \cdot 10^{-2}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	200°C
Response Time	$\leq 10$ ms

## 7FCS Cold Cathode Vacuum Gauge

The Televac® 7FCS cold cathode gauge has an extremely wide measurement range from  $10^{-11}$  Torr up to  $10^{-2}$  Torr. This vacuum gauge makes indirect absolute pressure measurements by ionizing gas in the presence of a magnetic field. Unlike hot filament vacuum gauges, the 7FC cold cathode gauge is cleanable, contamination resistant, and isn't as easily damaged by inrushes of gas. Unlike other cold cathode gauges, this gauge has quick start capability, allowing it to start within 5 seconds in UHV.



### 7FCS Cold Cathode Benefits & Features

- Easily cleaned for extended sensor lifetime
- Durable double inverted magnetron gauge construction
- Ignitor for quick start capability in UHV
- Mountable in any orientation

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### Specifications

Operating Range	$1 \times 10^{-11}$ to $1 \times 10^{-2}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	200°C
Response Time	$\leq 10$ ms

## 3F Mini BA Hot Ion Vacuum Gauge

The Televac® 3F Mini BA Hot Cathode Ionization UHV gauge maximizes performance with proven accuracy and unmatched durability in high vacuum. The miniature sensor's rugged all-metal construction is ideal for most applications, with the primary enclosure and many of the internal elements fabricated from 304 stainless steel.



### 3F Mini BA Hot Ion Benefits & Features

- Compact and robust design
- Two filaments for longer lifetime
- High accuracy measurement solution

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### Specifications

Operating Range	$1 \times 10^{-10}$ to $1 \times 10^{-2}$ Torr
Mounting Orientation	Any
Maximum Bakeout Temperature	200°C
Response Time	$\leq 100$ ms

## Sensor Simulators

Sensor simulators are designed to electrically simulate Televac® sensors at specific pressures. These units allow for simple troubleshooting of issues relating to cabling, sensors, and electronics. We offer simulators for the Televac 2A, 4A, 7B, 7E, and 7F sensors.

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## Sensor Filters

Sensor filters are designed to trap solid particles, condensable gases, and pump oil droplets that may enter the sensor and contaminate the elements. It consists of a three-stage optically dense baffle and should be installed between the sensor tube and vacuum chamber. The connection is an 1/8" NPT fitting. The filter may be installed in any position although the most effective position is vertical with the threads downward.

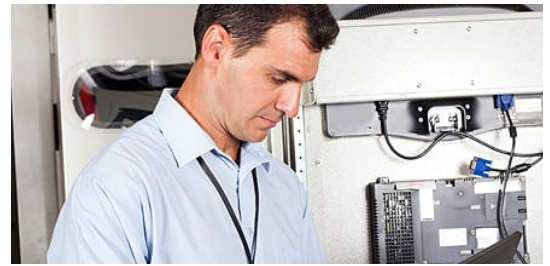
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# Televac® Calibration & Repair Services


Televac® calibration and repair services are available for all Televac® vacuum controller, active vacuum gauge, and passive vacuum gauge systems. Whether your old equipment needs repair or your vacuum system requires quarterly, semi-annual, or annual calibration, Televac®'s calibration and service department can handle your most demanding requirements.



Calibration is a critical component of any company's quality management system. More than ever, these systems require traceability to standards that ensure performance within specified accuracy requirements. Televac®'s calibration lab performs vacuum calibrations traceable to NIST standards (National Institute of Standards and Technology). Standard or factory electrical calibrations are also available. Our lab is equipped with traceable vacuum measurement systems enabling us to calibrate your vacuum controller or active vacuum gauge from 760 Torr to  $1 \times 10^{-8}$  Torr.

All calibrations, as defined by our controlled procedures, include calibration certificates documenting the details of the calibration performed. Calibrations traceable to NIST receive both incoming and outgoing calibration data.

## Televac® Calibration & Repair Service

 <b>Product Matrix</b>															MX200	MC300	MX2A	MX4A	MX7B	MX7M	CC-10	VacuGuard™	B2A Portable	MV2A	Compact 2A
Sensor Measurement Ranges															Instrument Selection Guide										
$10^{-11}$	$10^{-10}$	$10^{-9}$	$10^{-8}$	$10^{-7}$	$10^{-6}$	$10^{-5}$	$10^{-4}$	$10^{-3}$	$10^{-2}$	$10^{-1}$	$10^0$	$10^1$	$10^2$	$10^3$	Torr										
$10^{-8}$	$10^{-7}$	$10^{-6}$	0.00001	0.0001	0.001	0.01	0.1	1	10	100	1000	10,000	$10^5$	$10^6$	mTorr (microns, millitorr)										
$10^{-9}$	$10^{-8}$	$10^{-7}$	$10^{-6}$	$10^{-5}$	$10^{-4}$	$10^{-3}$	$10^{-2}$	$10^{-1}$	$10^0$	$10^1$	$10^2$	$10^3$	$10^4$	$10^5$	Pascal										
$10^{-11}$	$10^{-10}$	$10^{-9}$	$10^{-8}$	$10^{-7}$	$10^{-6}$	$10^{-5}$	$10^{-4}$	$10^{-3}$	$10^{-2}$	$10^{-1}$	$10^0$	$10^1$	$10^2$	$10^3$	mbar (millibar)										
															1F Diaphragm 1 - 7600 Torr	●									
															1E Diaphragm 1 - 1000 Torr	●									
															4A Convection $10^3$ - 1000 Torr	●	●								
															MX4A Convection $10^4$ - 1000 Torr					●					
															2A Thermocouple $10^3$ - 20 Torr	●	●					●	●	●	
															MX2A Thermocouple $10^4$ - 1000 Torr					●					
															CC-10 Wide Range $10^9$ - 1000 Torr								●		
															7B Cold Cathode $10^7$ - $10^3$ Torr	●	●								
															MX7B Cold Cathode $10^8$ - $10^3$ Torr					●					
															MX7M Cold Cathode $10^{11}$ - $10^2$ Torr								●		
															7E Cold Cathode $10^8$ - $10^2$ Torr	●	●								
															7F/7FC/7FCS Cold Cathode $10^{11}$ - $10^2$ Torr	●	●								
															3F Mini BA Hot Ion $10^{10}$ - $10^2$ Torr		●								



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