# FREDERICKS COMPANY | TELEVAC

## MX Active Gauge EthernetIP Gateway
## Part Number: 2-8900-100

### Operating Specifications

| | |
|---|---|
| Operating Range | $1*10^{-8}$ Torr to $1*10^4$ Torr |
| Communications (External) | EthernetIP |
| Communications (Active Gauge) | RS-485 |
| Active Gauge RS-485 Addresses | 1 to 4 |
| Active Gauge RS-485 Baud | 38400 |
| Supply Voltage | 22 V DC to 26 V DC |
| Maximum Power | 30 W max |
| Operating Temperature | 0 °C to 50 °C |
| Storage Temperature | -20 °C to 70 °C |
| Maximum Active Gauges Controlled | 4 |
| Maximum CDGs Controlled | 1 |
| Response Time | ≤100 ms |

### Physical Characteristics

| | |
|---|---|
| Enclosure | Aluminum |
| Electrical Connections | 4-pin connector |
| Weight | 0.65 kg (1.4 lbs) |
| Dimensions | See dimensional drawings |

### Key Features and Benefits

- Rack mountable with a highly configurable design
- EthernetIP for simple connection with a PC, PLC, or other equipment
- Indicator LED for gateway status
- Bootloader for field upgradeable firmware via USB
- Access all settings for Televac® MX series active gauges
- Monitor pressure readings from up to (4) active gauges and (1) CDG
- DHCP enable or disable with programmable IP address
- Status LEDs for network/module status/port data activity
- 10/100 Mbit, half or full duplex port operation
- Built-in secure web server for network and unit data and settings
- Excellent customer support

### 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 treating
- Vacuum glove boxes

### Certifications, Compliance, and Ratings

- Certified to UL 61010-1
- CE certified to EN 61010-1, EN 61326, EN 55011
- Certified to CAN/CSA C22.2 No. 61010-1-12
- RoHS and REACH compliant
- IP40

### Description

The Televac® MX Active Gauge EthernetIP Gateway controls up to 4 Televac® active gauges and one capacitance diaphragm gauge (CDG). The gateway supports EthernetIP (EIP) communications and is designed as a serial port replacement to interface directly with Rockwell Automation Allen-Bradley programmable logic controllers (PLCs). All data and commands can be sent and received as a class 3 acyclic request, allowing the user to change settings and read data from the active gauges through the PLC at a remote location.

All pressure data is available as a class 1 cyclic output that can be transmitted at a rate settable by the user. The unit includes status LEDs that show network and gateway status, as well as port activity. The gateway also comes with a built-in web server that can host a password protected web page which allows the user to change network settings and access all commands from a web browser.

The EIP gateway utilizes an industry recognized HMS Anybus CompactCom module to handle the network interface. The module has been pre-certified by HMS to provide EthernetIP network conformance.

### Ordering Information

| Part Number | Description |
|---|---|
| 2-8900-100 | MX Series Active Gauge EthernetIP Gateway |

### Cables and Accessories

| Part Number | Description |
|---|---|
| 1-2403-001 | Active Gauge RJ45 to DB15 |
| 1-2403-002 | 24 VDC CDG RJ45 to DB15 |
| 1-2403-003 | ±15 VDC CDG RJ45 to DB15 |
| 1-2403-004 | 24 VDC CDG RJ45 to DB9 |
| 1-2403-005 | ±15 VDC CDG RJ45 to DB9 |
| 1-2401-010 | Ethernet Cable Cat5e Unshielded 10 ft |
| 1-2401-050 | Ethernet Cable Cat5e Unshielded 50 ft |
| 1-2401-100 | Ethernet Cable Cat5e Unshielded 100 ft |
| 1-2402-010 | Ethernet Cable Cat5e Shielded 10 ft |
| 1-2402-050 | Ethernet Cable Cat5e Shielded 50 ft |
| 1-2402-100 | Ethernet Cable Cat5e Shielded 100 ft |

### Compatible Active Vacuum Gauges

| Part Number | Description |
|---|---|
| 2-8910-1XX | MX2A Thermocouple Gauge ($10^{-4}$ to $10^3$ Torr) |
| 2-8930-1XX | MX4A Convection Gauge ($10^{-4}$ to $10^3$ Torr) |
| 2-8940-XXX | MX7B Cold Cathode Gauge ($10^{-8}$ to $10^{-3}$ Torr) |
| 2-8950-1XX | MX7M Cold Cathode Gauge ($10^{-11}$ to $10^{-2}$ Torr) |

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### Electrical Connections

| | |
|---|---|
| P1 | EthernetIP RJ45 port 1 to PLC/PC |
| P2 | EthernetIP RJ45 port 2 to PLC/PC |
| NS | Network status LED |
| MS | Module status LED |
| 1 | Active gauge 1 connection |
| 2 | Active gauge 2 connection |
| 3 | Active gauge 3 connection |
| 4 | Active gauge 4 connection |
| CDG | CDG connection |
| 24 | +24 VDC supply |
| GND | Ground supply |
| +15 | +15 VDC supply for CDG (optional) |
| -15 | -15 VDC supply for CDG (optional) |
| BTLD | Bootload button |
| USB | USB communication for bootloading |

### EthernetIP Network Interface

| | |
|---|---|
| Connectors | (2) RJ45 |
| Ports | 10/100 Mbit, half or full duplex |
| DHCP | Enable or disable |

### Class 1 Connections

| | |
|---|---|
| Connection Type | Point-to-point, multicast |
| Target to Originator Instance ID | 100 |
| Data Size | 20 |
| Originator to Target Instance ID | 150 |
| Data Size | 4 |
| Configuration Instance | 3 |
| Supported Connections | 4 |
| Requested Packet Interval | 1 ms to 3200 ms |
| Trigger Types | Cyclic, change of state |
| Priorities | Low, high, schedule, urgent |

### Class 3 Connections

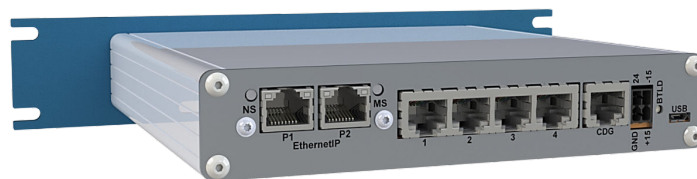| | |
|---|---|
| Service | 0xE (get), 0x10 (set) |
| Class | 0xA2 |
| Instance | See ADI table |
| Data Value Attribute | 5 |
| Supported Connections | 6 |
| Requested Packet Interval | 100 ms to 10000 ms |
| Connection Type | Point-to-point |
| Trigger Type | Application |
| Priority | Low |

Please refer to the manual for a complete list of Class 1 and Class 3 connection details, a complete list of ADIs, and information about the Electronic Data Sheet (EDS) file.

### Network Configuration

The RJ45 connectors labeled P1 and P2 are the EthernetIP connections that will run to the PLC or PC. The RJ45 connectors labeled 1 through 4 are the active gauge inputs. These will run through Cat5e Ethernet cables and through an adapter to attach to the active gauges in the network. **All active gauges must be set to separate RS-485 addresses 1 through 4 and baud rate 38400 to communicate with the gateway.** The RJ45 connector labeled CDG will connect to the CDG in the network if one is available. The CDG must be turned on through the appropriate parameter in the ADI table.

The power input connector accepts a +24 V DC and GND connection, as well as an optional ±15 V DC input to run to the attached CDG if required. Regardless of the alternate supply, the gateway and attached active gauges require the +24 V DC input to be connected in order to operate. The pushbutton labeled BTLD is to be pressed while powering the gateway to send the unit into bootload mode for the ability to easily update the firmware, and the update occurs over the USB connection.

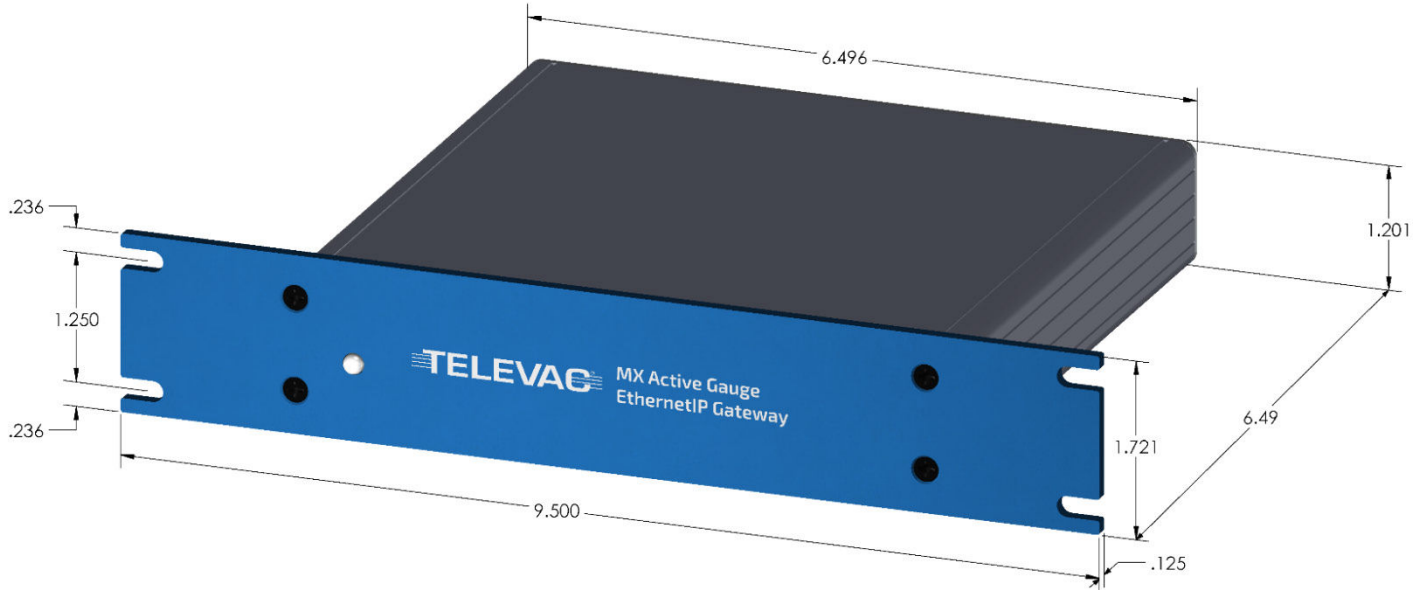### Additional Images



2-9800-100 Back

### Additional Documentation

| | |
|---|---|
| Manual | MX EthernetIP Gateway Instruction Manual |
| EDS File | MX Active Gauge EthernetIP Gateway EDS File |
| AN3010 | Torr Scientific/Torr Decimal/mTorr/Micron Conversions |
| AN3015 | Recommended Practices for Vacuum Calibration |
| AN3020 | Vacuum Terminology Reference |
| Resource | Televac® Tolerances |

# MX Active Gauge EthernetIP Gateway
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**Dimensional Drawing**



**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.

**Contact Us**

The Fredericks Company
2400 Philmont Avenue
Huntingdon Valley, PA 19006

tel: +1 215 947 2500
fax: +1 215 947 7464
email: sales@frederickscompany.com
web: www.frederickscompany.com