

HazardPRO™

Wireless Hazard Monitoring



Electro-Sensors is revolutionizing the way hazard monitoring is done, with its turnkey HazardPRO systems. Rugged sensors and the most advanced wireless technology combine to create the best hazard monitoring solution with the lowest installed cost.



Scalable • Flexible • Reliable

When it comes to hazard monitoring, we know it simply has to work. **HazardPRO** was designed from the ground up to provide turnkey, reliable, and consistent protection for your most valuable assets, products, facilities, and most importantly, people. Consistent operation is ensured with built-in tools such as self-diagnostics, transmission logging, and redundant transceivers providing you confidence that your critical processes are being monitored and logged at all times.

As a truly integrated system built expressly for hazard monitoring, **HazardPRO** captures and displays key information in an intuitive format allowing the user to quickly and comprehensively understand the status of their processes. The simple but powerful interface will give you insight into your operations as you strive to maximize safety and facility runtime, while minimizing costs associated with unscheduled maintenance and unplanned downtime.

Status At-A-Glance

- Quickly view what processes are running and their condition from the status screen
- Easy touchscreen navigation guides the user through equipment information

Real-Time Information

Intelligent transmitter nodes send information both on a scheduled periodic basis and when important changes are detected, ensuring that there are no polling delays or lapses in monitoring.

- Live charts continually update
- View sensor status over time leading up to an event
- Evaluate trending with interactive history charts
- Data, alerts, and alarms available through secured wireless networks
- Access information via tablets, smartphones, and PCs with Internet access

Accountability & Security

- User access levels are set by plant administrators
- Events are automatically logged for review
- Only users with password-validated authority can edit or close events
- Users can document event cause and resolution
- Full password protection

Full Integration With Your Controls

Easily integrate to your existing plant control or PLC system via:

- Modbus TCP/IP or Ethernet IP communication
- A traditional switch input/relay output system

Wear-Detect Belt Alignment

- No need to shut down the conveyor belt for rub block inspection
- A warning will be displayed when a replacement belt alignment sensor is needed
- Rate-of-rise setpoints provide additional protection

Ambient Sensors – Fewer False Alarms

- Multiple ambient temperature sensors automatically adjust setpoints eliminating the need for broad setpoint ranges
- Absolute shutdown settings are maintained to prevent catastrophic events

Approvals

HazardPRO™ Sensors

- Intrinsically Safe (I.S.) in:
 - Class II, Div. 1, Groups E, F, G; Class III

HazardPRO™ Node

- Intrinsically Safe (I.S.) apparatus located in:
 - Class II, Div. 1, Groups E, F, G; Class III
- Providing Intrinsically Safe (I.S.) circuits for use in:
 - Class II, Div. 1, Groups E, F, G; Class III



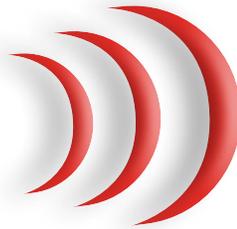
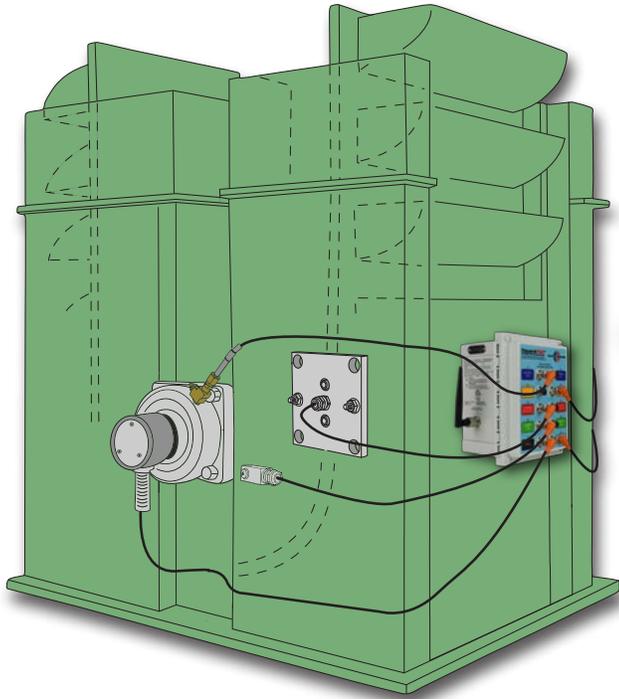
Industries Served

- | | |
|-------------------------|---------------------|
| • Grain, Feed & Milling | • Mining/Quarries |
| • Ethanol Processing | • Port Handling |
| • Waste Water | • Food Processing |
| • Bulk Materials | • Packaging |
| • Bio Mass | • Timber Processing |

Wireless System Design

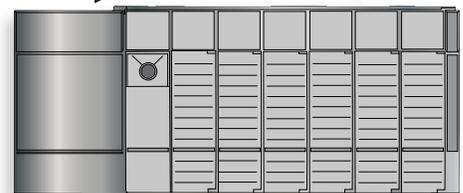
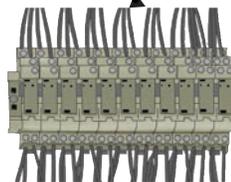
Instant Internet Access >

Instantly access any of your operation data on HazardPRO through remote access on any device!



Plant Control System >

- Modbus TCP/IP or Ethernet IP
- Run/Stop input switches
- Run/Stop output relays



PLC

Shaft Speed



Bearing Temperature



Ambient Temperature



Belt Alignment



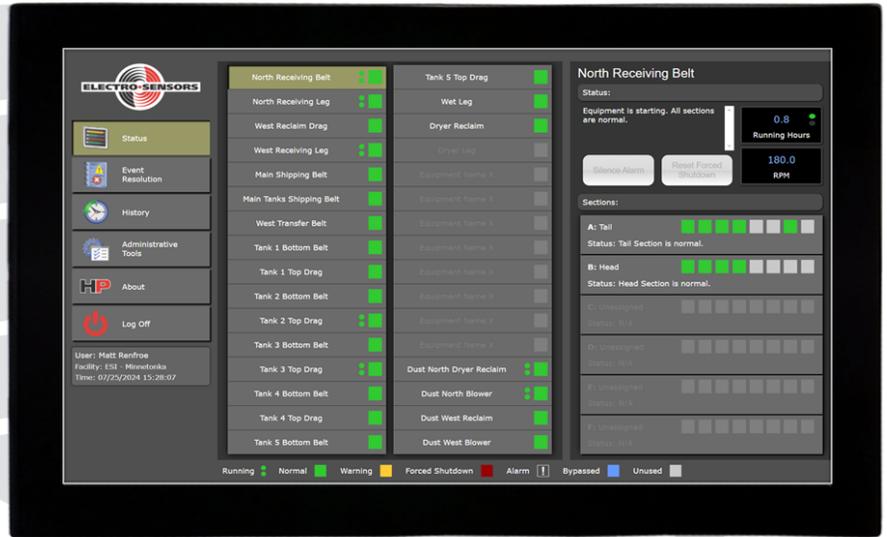
Machinery Vibration



Transmitter Node



HazardPRO XL System Manager System Status Screen

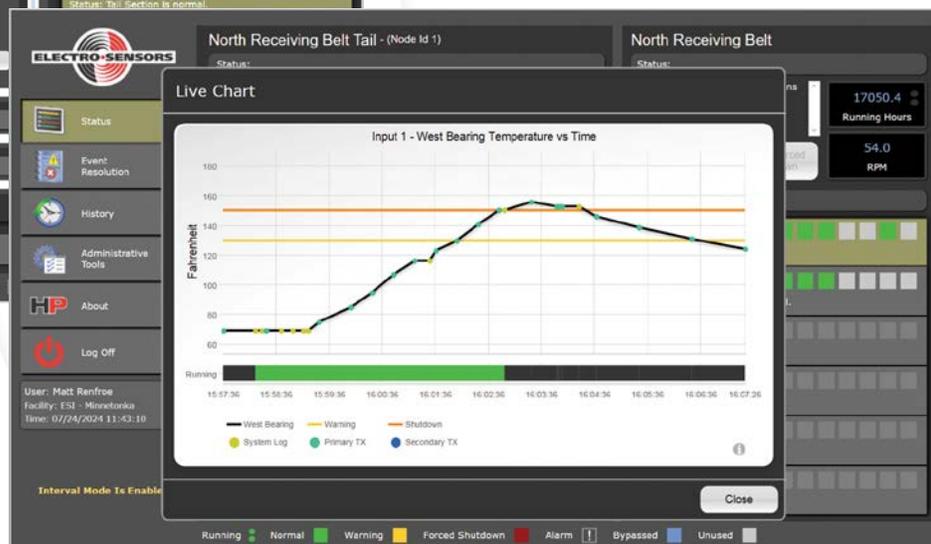


Node View Screen

Sensor values, setpoints, and alarm conditions



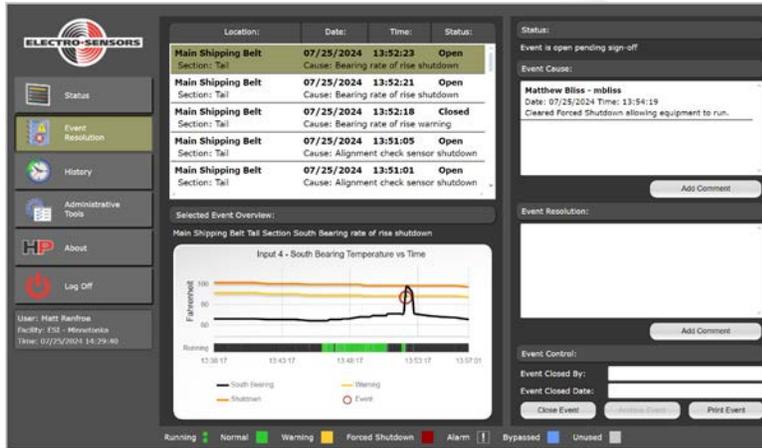
Sensor Trend Screen Live Chart



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User Interface



Event Screen

- Time-stamped event log
- Event overview details with graphical snapshot and input identification
- Cause of event and resolution text fields for logging event information
- Sign-off and date stamp



History Screen

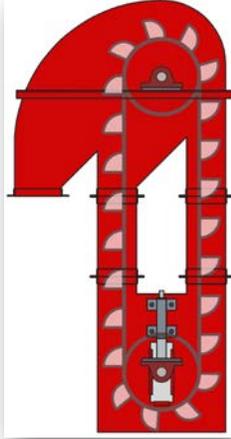
- Historical graph for all sensors
- Selectable 24-hour window
- System records all events for future viewing
- Internal data storage



- 1 Quickly and easily add equipment as needed
- 2 Warning/shutdown events and resolutions are archived
- 3 Set the company's facility information
- 4 View gateway information and enter/edit settings
- 5 Allows periodic conveyor operation in cold weather to prevent freeze-up
- 6 View PLC and I/O board interface information and enter/edit settings
- 7 Enter e-mail addresses for select individuals to receive notifications for specified events
- 8 Slowdown test to verify the correct operation of the hazard monitoring system and the plant control system
- 9 View and print historical slow-down test reports
- 10 Set the system-wide default settings
- 11 Modify and/or add new users to the system



Bucket Elevators



Bucket elevators are key to grain elevator operations. Monitor your alignment, temperature, and speed to provide safe and streamlined operations in your facility.

Industrial Automation



Industrial automation applications require reliable operation in order to maximize facility efficiency. **HazardPRO** can monitor and archive Sensor data from each monitored point of your facility. This insight into machine performance makes possible the continuous operation of automated systems.

Tripper Cars



Tripper cars are instrumental to grain storage. Tripper cars provide unique opportunities for hazard monitoring as the movement makes Class II Div. 1 monitoring difficult. **HazardPRO** wireless sensors can be mounted directly to the tripper car, providing monitoring for speed, temperature and alignment. Wireless hazard monitoring provides a solution to the most difficult equipment to be monitored in your facility.

Overhead Cranes



Overhead cranes handle and load endless amounts of merchandise and product. Monitoring the moving segment of a crane for speed and bearing temperature provides you with the confidence that is needed to ensure that your facility remains operational at all times.

Conveyors



Whether your conveyor is handling rock, grain, coal, waste, or any material vital to operations, you can be confident that your machinery will continue operating without unexpected failure. Monitoring conveyor speed, temperature, and alignment will keep your equipment running better, longer, and more efficiently. Monitored data can be viewed and used to perform preventive maintenance.

Wood Processing



Panel manufacturing plants that are responsible for the production of MDF & OSB panels deal with a lot of combustible dust. Wireless hazard monitoring provides a dust certified solution for large facilities. Monitoring bearings for rising temperature keeps production lines rolling while also ensuring the safety of plant personnel.

Insight^{HP} HazardPRO Tester

Hand Held System and Sensor Tester



▲ Insight^{HP} Sensor & System Tester

Preventive maintenance is key to facility productivity and the reduction of equipment downtime. Electro-Sensors knows that system testing is a key part of preventive maintenance and our hazard monitoring systems include features to verify the performance of the machinery which you rely upon every day. Insight^{HP} is a packaged solution to sensor and system testing that enables you to verify sensor accuracy, as well as system set-point response for all HazardPRO sensors and nodes. The tester doesn't require the unsafe heating/cooling of sensors but rather uses software simulation to verify operation of all your HazardPRO sensors.

Test Your Sensors

- Test temperature, speed, and contact sensors for correct operation.
- Verify sensor warning and shutdown setpoints
- Manually increment sensor tests for confirmation of system accuracy

Verify Your System

- Verify system response for temperature, speed, and contact tests
- Timer for shutdown response confirmation

Built Tough for Industrial Use

- Easy to use hand-held tool with backlit display
- 2 week battery life ensures uninterrupted testing
- Field friendly buttons for gloved use
- Battery powered, USB-C rechargeable
- Quick-connect M12 connectors for fast testing



Insight^{HP} connects to an elevator speed sensor to test for proper operation

Built-in System Manager Slow-Down Testing



HazardPRO system managers have built-in slow-down testing. These convenient equipment slow-down tests can be performed from the control room. Slow-down testing simulates an equipment slowdown and allows you to confirm that your system warnings and shutdowns are operating properly. Once the slow-down test is started and the emergency threshold is reached the equipment will be shutdown.



System Manager

- Modbus TCP/IP communication
**Ethernet IP Option available*
- SPDT relay for each piece of equipment
- Dedicated relay for audible notification
- Controlled levels of access
- Real-time information and live charting
- Redundant transceivers for error-free communication

Sizes

- XS (1-4 pieces of equipment, 24 Nodes, 240 Sensors)
- XM (Up to 16 pieces of equipment, 96 Nodes, 960 Sensors)
- XL (Up to 32 pieces of equipment, 192 Nodes, 1920 Sensors)



Wireless Savings

- \$ Ease of Installation**

With **HazardPRO** wireless systems all Nodes and Sensors are certified Intrinsically Safe by ETL and do not need to be wired for power. This means that whenever you install a Wireless Node and the Sensors you do not need an electrician. This makes installation quick and cost effective to you.
- \$ Conduit-Free Installations**

HazardPRO does not require the conduit or labor costs that are required to install traditional hazard monitoring systems. As such, you can count on substantial savings to the bottom line of your system installation.
- \$ No Software Programming**

When your facility decides to monitor additional equipment, you can simply add equipment without making any software changes. Adding extra equipment is now easier than ever.
- \$ Reduced Facility Downtime**

With other systems, installation can be a nightmare for plant managers but with **HazardPRO** your entire hazard monitoring system can be installed in a matter of days. This results in significantly reduced down time, which results in increased productivity during installation.
- \$ Preventive Maintenance**

Preventive maintenance is an important aspect for any facility. **HazardPRO** tracks live sensor values and displays them in data graphs, these graphs provide valuable insight into your plant equipment. This allows you to see negative trending patterns before they turn problematic.

Class II Div. 1

Wireless Node



Battery Powered Wireless Node

Independently powered with a 5+ year life battery, the HazardPRO Node provides power to sensors and wirelessly transmits data back to the System Manager or PLC.

Certified Hazard Monitoring

Intrinsically Safe (I.S.) apparatus located in: Class II, Div 1, Groups E, F, G; Class III providing Intrinsically Safe (I.S.) connections for use in: Class II, Div 1, Groups E, F, G; Class III

Installation Flexibility

- HazardPRO Wireless Nodes do not need conduit, This allows installations to be completed in a few days as opposed to the weeks or months that traditional systems need for installation.
- Nodes can easily be mounted in almost any location making HazardPRO a prime target for many non traditional applications on moving equipment.
- No wired power needed, Wireless Nodes can be mounted on any moving machinery.

Signal Reliability

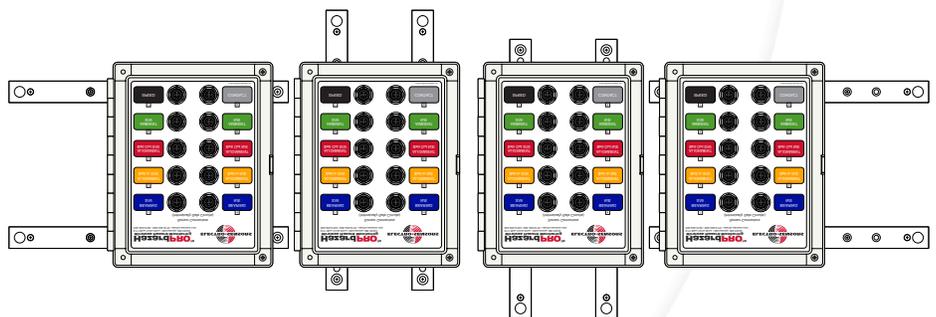
- Every time a transmission is sent, an acknowledgment must be returned by the receiver. The transmitter uses different channel frequencies on retries to ensure that the data gets through. Each transmission is logged and regular "health" checks must arrive when they are expected.

Sensor Connectivity

- HazardPRO sensors utilize M12 connectors for easy connection to the front of the Wireless Node
- Sensor cables come in two varieties, poly-urethane and poly-urethane with steel jacketed cable. Steel jacketed cable provides extra durability and protection to the sensor cables which connect the sensor to the wireless node.

Convenient Mounting

- Wireless nodes use configurable mounting brackets to fit your installation needs
- Nodes can be bolted to the mounting surface or attached via mounting magnets



Transmitter Node

- Transmit-on-change keeps data current
- Heartbeat transmissions verify reliable communications
- Standard M12 sensor connection for easy installation
- No external power required
- 5+ year battery life
- 10 inputs available for: shaft speed, belt alignment, bearing temperature, ambient temperature, and contact closure



Class II Div. 1

Shaft Speed Sensor

- Measure shaft RPM speeds between 0-300
- Multiple mounting configurations
- Optional mounting magnet if shaft is not tapped
- Tap with 1/2" thread
- Automatic calibration of 10 and 20 percent slow down



Bearing Temperature Sensor

- No calibration required, set points adjusted to ambient sensor
- Stainless steel probe with zerk (grease) fitting
- Probe lengths available 2", 4", 6"
- Replaces existing zerk (grease) fitting
- Measure between -40 °F → 248 °F (-40 °C → +120 °C)



Ambient Temperature Sensor

- Monitoring local ambient temperature continuously adjusts set points on bearing and belt alignment sensors
- Multi-point placement on each side of equipment for highly accurate tracking



Vibration Sensor

- Measures RMS vibration velocity
- Monitor Vibration Levels
- Stainless steel housing with 1/4-28 threaded mount



System Components

Belt Alignment Sensor

- Brass rub block with easy-install mounting plate
- No calibration required, set points adjusted to ambient sensor
- Built-in, wear-detect feature notifies user when the belt alignment sensor needs to be replaced
- Bolt on assembly or Electro-Sensors rub-block door options



Stud Mounted Temperature Sensor

- Compatible with any standard Electro-Sensors rub block
- Intrinsically safe 3/8-16" temperature probe
- Universal threaded sensor for multitude of applications

Additional Mounting Options

- Magnetic surface mount
- Lug mount



Diaphragm Switch

- Point level detection in bins and hoppers
- Optimal for plugged chute applications
- Adaptable sensitivity



InsightHP Sensor & System Tester

- Test HazardPRO sensor & nodes for proper operation
- Test system warning & shutdown responsiveness
- Backlight display for enhanced visibility
- Rechargeable with 2 week battery life
- Test system warning & shutdown responsiveness
- Quick-connect testing cables



Cable Types

- All sensors are offered with polyurethane or steel jacket cable
- Standard 3 meter cable length on sensors
- Extension lengths available upon request



5-Year Warranty on System Components, 1-Year on System Manager.





Hazard**PRO**TM

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Contact Electro-Sensors Today to see how
HazardPRO can change the way you
safeguard your people, processes, and facilities.

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