

XM Intelligent I/O Modules



Machinery Protection and Condition Monitoring in One Solution

EASE OF INTEGRATION

XM modules are ODVA (Open DeviceNet Vendors Association) certified. This allows for seamless and easy integration with Rockwell Software products, Allen-Bradley controllers and display products.

EASE OF INSTALLATION

When compared to traditional centralized rack-based systems, a distributed XM solution can be implemented in less time, at lower cost and with far less complexity. XM modules are DIN-rail mounted and can be easily installed locally at the machine near the actual measurement locations, therefore, significantly reducing wiring cost and intricacy of installation.

EASE OF START-UP

The XM series configuration is entirely digital and is performed either locally using a PC connected to each module's serial port, or remotely via the DeviceNet network. Using the serial interface or the XM editing facility within Emonitor software, you can quickly configure XM modules to manage a wide variety of dynamic inputs - such as accelerometers, eddy-current displacement probes and speed tachometers - as well as process parameters such as temperature, pressure, and flow.

The XM Series also offers a Logix integrated solution via ControlNet that allows you to configure and manage your system from a Logix controller and Studio 5000 software.

EASE OF MAINTENANCE

After commissioning, the XM series technology continues to provide capabilities that save you time and money such as hot-swappable modules, field wiring landed onto the terminal bases rather than the module itself, field downloadable firmware.



Integration: Key to a Successful Condition-based Maintenance Program

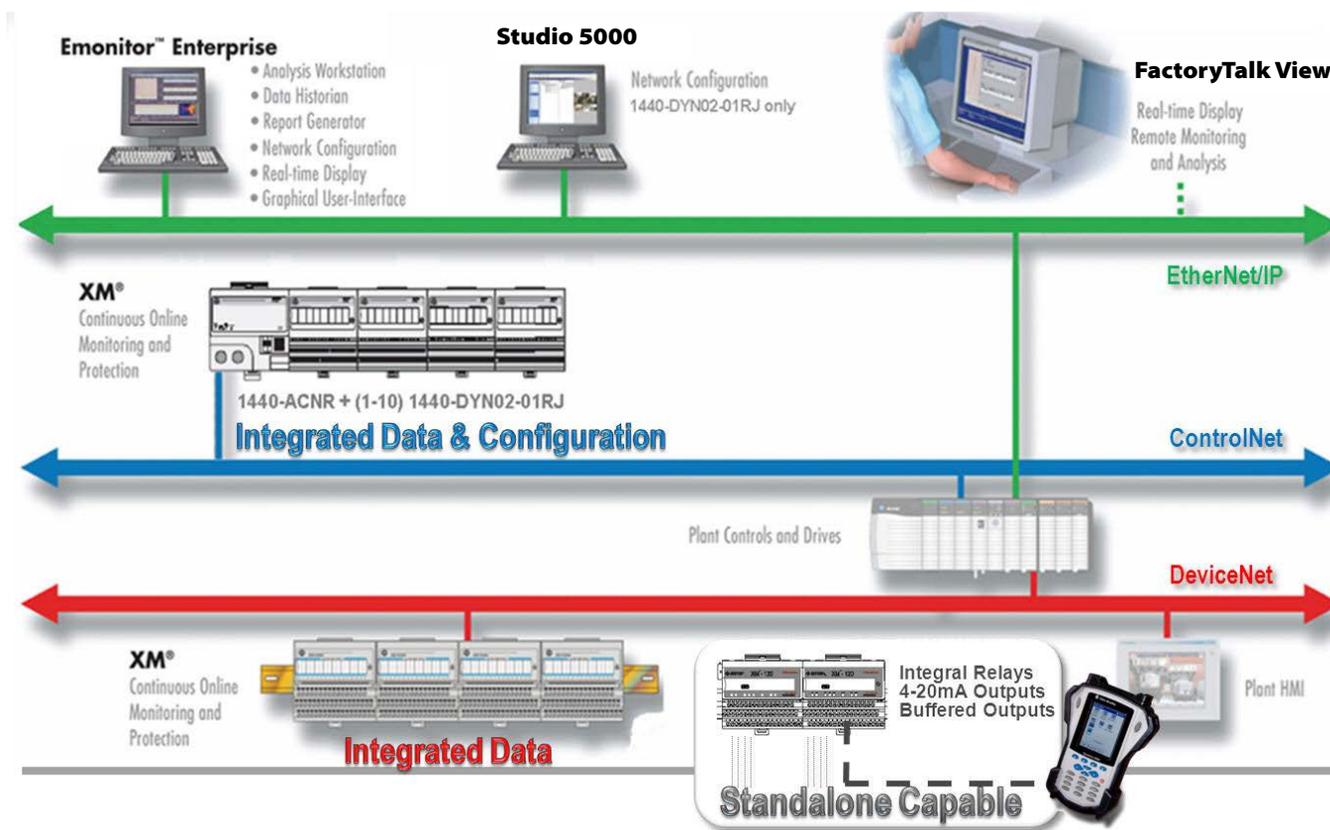
The XM Series is a family of DIN rail mounted measurement and relay modules that can be combined and deployed as necessary to service almost any machine condition monitoring or protection application.

As a protection monitor, XM modules provide the real time measurement performance, alarm logic, relay solutions and the product reliability necessary of API-670 capable protection monitors.

As a condition monitoring solution, the modules can process the unique fault indicating parameters used in assessing the current health, and predicting the future health of industrial machinery. This data, as well as the raw complex data, can be served to the industry's most advanced Predictive Maintenance Software system (Emonitor) or can be stored in standard automation historians where common process trends might be used to indicate changes in machine condition.

XM Series modules may be applied as a standalone system, or they can be integrated with existing automation and control systems. When installed as standalone, an XM system could be made to simply actuate relays. Or, with a path to Ethernet provided, could communicate to our Emonitor software, or using OPC, to any OPC capable DCS, visualization system or other software product. When installed as part of the Rockwell Automation Integrated Architecture, XM modules can communicate data to Logix controllers for use in higher level visualization, historian and control solutions or where advanced diagnostic logic may be executed to allow automated machine-condition assessment.

LISTEN.
THINK.
SOLVE.



Measurement Modules

XM-124 STANDARD DYNAMIC MEASUREMENT MODULE

The XM-124 module is an intelligent, 2-channel, general-purpose monitor. The module supports monitoring of shaft, casing or pedestal vibration in rotating equipment such as turbines, motors, pumps, compressors, fans and most other common rotating machinery where real-time condition monitoring or protection is required. The XM-124 is capable of dynamic measurements from as low as 0.2 Hz (12 CPM) making it ideal for almost any speed or type of machine from hydro turbines to high speed turbo compressors. The XM-124 accepts input from any eddy current probe, standard accelerometer, or any voltage output measurement device such as a velocity or pressure transducer. In addition to dynamic inputs, the module accepts one tachometer input to provide speed, phase and order analysis functions making it capable of calculating over 14 critical parameters per channel. The module includes a single onboard relay, expandable to five, and two 4-20mA outputs.

XM-120E ECCENTRICITY MODULE

Critical for steam turbine operation, eccentricity is the measure of the amount of bow in the rotor, usually caused by uneven heating or simply by the weight of the shaft itself when stopped.

XM DYN DYNAMIC MEASUREMENT MODULE

The 1440-DYN Dynamic Module is designed specifically for integration with ControlLogix controllers connected through the 1440-ACNR ControlNet Adapter, and with configuration using Studio 5000 software.

The module is an intelligent 2-channel general-purpose monitor that supports measurements of dynamic inputs such as vibration, pressure and strain. The built-in tachometer makes it particularly well-suited for monitoring shaft, casing and pedestal vibration in rotating equipment.

XM-122 GSE VIBRATION MODULE

The XM-122 gSE Vibration Module is an intelligent, 2-channel, special-purpose vibration monitor. While similar to the XM-124 Standard Dynamic Measurement Module, the XM-122 alternates collection of standard vibration measurements and specialized gSE overall and gSE spectra measurements. This makes the XM-122 ideal for monitoring motors, pumps, fans, gearboxes, etc. that are fitted with rolling element bearings and where continuous, real-time, protection is not required.

XM-121A ABSOLUTE SHAFT MODULE

Absolute shaft is the measure of steam turbine shaft motion relative to free space. The measure of absolute shaft vibration is a common requirement on very large steam turbines. The XM-121A module is designed to perform these measurements.



The XM modules can be combined and deployed as necessary to service almost any machine condition monitoring or protection application.

XM-123 AERODERIVATIVE MODULE

The XM-123 Aeroderivative Module is an intelligent 2-channel special-purpose monitor that is uniquely suited for monitoring Aeroderivative and Industrial Gas Turbines. The XM-123 can be configured, per channel, to perform either tracking filter or band pass style measurements while it also continuously measures each channel's broadband overall level. These capabilities, along with its extraordinary configurability, enable the XM-123 to meet the demanding monitoring requirements of almost any engine in service today.

XM-160 SERIES OVERALL VIBRATION MODULES

The XM-160 Series Overall Vibration Modules are intelligent 6-channel monitors that are designed to cost-effectively serve applications for real time monitoring of overall (direct) vibration levels. Designed as a simple but complete monitoring system in a compact, easily installed, easily maintained package, each module measures and reports the overall vibration level between selected high and low pass filters, as well as the gap or bias voltage per channel.

XM-220 DUAL SPEED MODULE

The XM-220 Dual Speed Module is an intelligent 2-channel measurement module that accepts input from two tachometers of any standard type including eddy current probes, magnetic pickups, optical tachometers and TTL output devices. The module measures speed, rotor acceleration and peak speed and is capable of detecting zero speed, locked rotor and reverse rotation. The module may also serve as a component of an Electronic Overspeed Detection System (EODS).

Process Measurement Modules

XM-320 POSITION MODULE

The XM-320 Position Module is an intelligent 2-channel measurement module. It is designed to measure all common turbine supervisory position measurements including Axial Position (Thrust), Valve Position, Differential Expansion and Case Expansion.

XM-360 PROCESS MODULE

The XM-360 Process Module is an intelligent 6-channel general-purpose process monitor. Each channel can be configured to measure a DC voltage or a loop current and will report both the data value, in engineering units, the rate of change for each channel and the difference measure between adjacent channels.

XM-361 & XM-362 TEMPERATURE MODULES

The XM-361 Universal Temperature Module and the XM-362 Isolated TC Temperature Module are intelligent 6-channel temperature monitors. Each channel of the XM-361 module can be configured to measure either an RTD or an isolated thermocouple while the XM-362 is designed specifically for thermocouple measurements - isolated or grounded. Both modules report the measured temperature, in engineering units, the rate of change for each channel and the difference measure between adjacent channels.

Relay Modules

XM-440 MASTER RELAY MODULE

The XM-440 Master Relay combines 4 relay outputs with XM bus master capabilities to provide remote, shared and voted relay operation for distributed XM measurement modules. The XM-440 offers 4 high power relays suitable for use in most protection applications. The module also supports linking of one or two XM-441 Expansion Relay modules thereby providing a total capacity of up to 12 relays.

XM-441 EXPANSION RELAY MODULE

The XM-441 Expansion Relay Module is a simple, low cost solution for adding 4 additional relays to any XM series measurement module or to the XM-440 Master Relay module. The XM-441 offers 4 high power relays suitable for use in most any protection application.

XM-442 VOTED EODS RELAY MODULE

The XM-442 module is designed to mate with three XM-220 Dual Speed Modules to provide an API compliant triple redundant Electronic Overspeed Detection System (EODS). The XM-442 provides four high power relays that serve as the EODS alarm and shutdown relays.

Configuration & Connectivity

SERIAL CONFIGURATION UTILITY

The XM Serial Configuration Utility is an easy to use Windows application for installing and configuring the XM series modules. The tool can:

- read, write, and modify configurations stored on a disk
- upload configurations from a module
- download configurations and firmware updates to a module
- view data from a module

STANDALONE SOLUTIONS

Individual XM modules, or distributed XM systems, can provide protection to individual machines independent of any host PC or controller. All XM modules include or support multiple alarms, integral and/or distributed relays, 4-20mA outputs and standard buffered outputs for each input channel. These capabilities, combined with real-time processing of key fault indicators, offer a comprehensive protection system solution in a low cost, easily installed and maintained package.

INTEGRATED SOLUTIONS

Because XM systems use the DeviceNet or ControlNet open standard for all communications, XM modules may be linked directly to a controller or other control system. Host controllers can then scan XM modules for data, alarm and relay status information in real-time. When linked via DeviceNet, prioritized messaging insures that changes to any alarm or relay status is immediately communicated to network controllers.

APPROVALS

XM modules are designed to international standards for electrical safety, electromagnetic immunity and emissions, and for service in hazardous areas and marine environments. For certification details refer to: <http://www.rockwellautomation.com/products/certification/>

API 670 COMPLIANCE

When configured properly, supplied with the correct number of modules, optional displays and power supplies, XM is fully compliant with the latest edition of the American Petroleum Institute Standard 670 for Machinery Protection Systems for vibration, axial position and electronic overspeed protection.

For More Information

Contact your local sales office or distributor, or go to:

<http://ab.rockwellautomation.com/Condition-Monitoring>



Rockwell Automation is an official ENERGY STAR® Industrial Service and Product Provider. It has proven it provides energy efficiency services and/or products to commercial buildings and industrial manufacturing plants in the United States by collaborating with an ENERGY STAR Industrial Partner to submit a teaming profile that outlines the scope and resulting savings from energy efficiency-driven projects. For more information, visit ENERGY STAR for Industry at www.energystar.gov/index.cfm?c=industry.bus_industry

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