

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1440-VAD02-01RA

XM-123 AERODERIVATIVE MODULE

Used with the applicable Allen-Bradley XM Condition Monitoring configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Rockwell Automation XM-123 Aeroderivative Module User Manual

XM-123 Aeroderivative Module



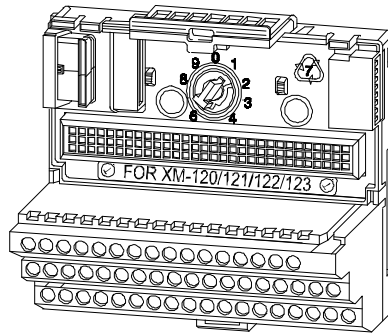
User Guide
Firmware Revision 5

1440-VAD02-01RA

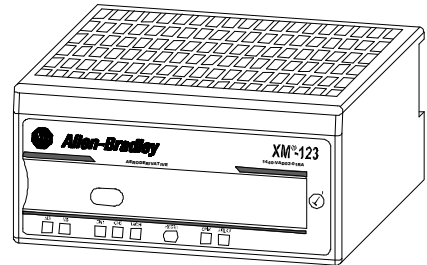
XM-123 Components

The XM-123 module consists of a terminal base and an instrument module. The XM-123 Aeroderivative module and the XM-940 Dynamic Measurement Terminal Base are shown below.

Figure 1.1 XM-123 Module Components



XM-940 Dynamic Measurement Module
Terminal Base Unit
Cat. No. 1440-TB-A



XM-123 Aeroderivative Module
Cat. No. 1440-VAD02-01RA

- XM-940 Dynamic Measurement Module Terminal Base - A DIN rail mounted base unit that provides terminations for all field wiring required by XM dynamic measurement modules, including the XM-123.
- XM-123 Aeroderivative Module - The module mounts on the XM-940 terminal base via a keyswitch and a 96-pin connector. The module contains the measurement electronics, processor, relay, and serial interface port for local configuration.

IMPORTANT

The XM-441 Expansion Relay module may be connected to the XM-123 module via the XM-940 terminal base.

When connected to the module, the Expansion Relay module simply "expands" the capability of the XM-123 by adding four additional epoxy-sealed relays. The XM-123 controls the Expansion Relay module by extending to it the same logic and functional controls as the on-board relay.

Using this Manual

This manual introduces you to the XM-123 Aeroderivative module. It is intended for anyone who installs, configures, or uses the XM-123 Aeroderivative module.

Specifications

The Appendix lists the technical specifications for the XM-123 module.

XM-123 Technical Specifications

Product Feature		Specification
Communications	DeviceNet	Standard DeviceNet protocol for all functions <i>NOTE: The XM-123 uses only the DeviceNet protocol, not power. Module power is provided independently.</i> Available Electronic Data Sheet (EDS) file provides support for most DeviceNet compliant systems Baud rate automatically set by bus master to 125 kb, 250 kb, 500 kb Configurable I/O Poll Response message helps optimize space utilization within scanner input tables. Selectable Poll Response Assembly Selectable Poll Response Size (bytes)
	Side Connector	All XM measurement and relay modules include side connectors that allow interconnecting adjacent modules, thereby simplifying the external wiring requirements. The interconnect provides primary power, DeviceNet communication, and the circuits necessary to support expansion modules, such as the XM-441 Expansion Relay module.
	Serial	RS-232 via mini-connector or terminal base unit Baud rate fixed at 19200. <i>NOTE: Local configuration via Serial Configuration Utility.</i>

XM-123 Technical Specifications

Product Feature		Specification
Inputs	2 Channels	Eddy current transducer signals Accelerometer signals Voltage signals from any dynamic measurement device, such as a velocity or pressure transducer
	Transducer Power	Constant current (4.5 mA $\pm$ 20% from +24V dc)* None (voltage input)
	Voltage Range	Selectable in software as 0 to $\pm$ 20 V (min) 40 V max. peak-to-peak
	Sensitivity	User configurable in software
	Input Impedance	Greater than 100 kohms
		<i>*Tachometer may be powered, constant voltage, or configured as voltage input.</i>
Tachometer	1 Tachometer Input	$\pm$ 25 V (50 V max. peak to peak) 1 to 50,000 events per revolution
	Input Impedance	120 kohms minimum
	Speed/Frequency Range	1 to 1,200,000 RPM 0.0167 to 20,000 Hz
	Speed Measurement Error	1 to 12,000 RPM* +/- 1 RPM 12,001 to 120,000 RPM* +/- 6 RPM 120,001 to 1,200,000 RPM* +/- 50 RPM
		<i>* Exponential Averaging Time Constant parameter set to $\geq$ 120ms</i>
Outputs	4-20 mA Outputs	Each output is independently programmed to represent any measured parameter, from either channel. Two isolated outputs 300 ohm max load
	Buffered Outputs	1 active buffer per vibration input channel Output range configurable by wiring: -24 to +9 V -5 to +24 V -5 to +9 V Resistive buffer for tachometer

XM-123 Technical Specifications

Product Feature		Specification
Alarms	Number	12 alarm and danger pairs
	Alarm Parameters	Speed, Overall, DC Bias, Band or Tracked Magnitude from either channel
	Operators	Greater than Less than Inside range Outside range
	Hysteresis	User configurable in software
	Startup Inhibit/Setpoint Multiplication	Period: 0 to 1092 minutes, adjustable in 0.1 minute increments Inhibit/multiplication function: floating point value in the range of 0 to 10
	Speed Inhibit	A speed range may be specified for each alarm. When applied, the alarm is disabled when speed is outside of the defined range.
Relays	Number	Single on-board relay, two sets of contacts - DPDT (2 Form C) Four additional relays when interconnected to an XM-441 Expansion Relay module, or Four virtual relays whose status can be used by remote Control Systems or the XM-440 Master Relay module
	On-board Relay Rating	Maximum Voltage: 120V dc, 125V ac Maximum Current: 3.5 A* Minimum Current: 0 Maximum Power: 60 W, 62.5 VA <i>*Max current is up to 40°C, then derates to 2 A at 65°C</i> Agency Rating: 120V ac @ 0.5 A 110V dc @ 0.3 A 30V dc @ 1.0 A
	Failsafe	Normally energized (failsafe), or Normally de-energized (non-fail-safe)
	Latching	Latching, or Non-latching
	Time Delay	0 to 65.53 seconds, adjustable in 0.01 second increments

XM-123 Technical Specifications

Product Feature		Specification
	Voting Logic	Single or paired "And" or "Or" logic applied to any alarm
	Reset	Local reset switch on top of module Remote reset switch wired to terminal base Digital reset command via serial or DeviceNet interface
	Activation On	Alarm Status: Normal Alert Danger Disarm Transducer fault Module fault Tacho fault
Peak Speed Capture		The XM-123 retains the value of the highest speed observed since module power was cycled or the "peak speed" value was manually reset.
Non-Volatile Configuration		A copy of the module configuration is retained in non-volatile memory from where it is loaded upon power up*. <i>*The configuration stored in non-volatile memory can be deleted only by a command sent via the serial interface, using the Serial Configuration Utility, or via DeviceNet from any compliant software application.</i>
Accuracy (minimum)		±1% of full scale range for the channel ±1% of alarm setpoint for speed
Power	Module	+21.6 to +26.4V dc
	Consumption	Maximum: 300 mA Typical: 175 mA
	Heat Production	Maximum: 7 Watts (24 BTU/hr) Typical: 4 Watts (14 BTU/hr)
	Transducer	Isolated 24V dc, user configurable with wiring
Environmental	Operating Temperature	-20 to +65°C (-4 to +149°F)
	Storage Temperature	-40 to +85°C (-40 to +185°F)
	Relative Humidity	95% non-condensing
	Conformal Coating	All printed circuit boards are conformally coated in accordance with IPC-A-610C.

XM-123 Technical Specifications

Product Feature		Specification
Physical	Dimensions	Height: 3.8 in (97 mm) Width: 3.7 in (94 mm) Depth: 3.7 in (94 mm)
	Terminal Screw Torque	7 pound-inches (0.6 Nm)
Approvals (when product or packaging is marked)		<div> <div>UL</div> <div>UL Listed for Ordinary Locations</div> </div> <div> <div>UL</div> <div>UL Listed for Class I, Division 2 Group A, B, C, and D Hazardous Locations</div> </div> <div> <div>CSA</div> <div>CSA Certified Process Control Equipment</div> </div> <div> <div>CSA</div> <div>CSA Certified Process Control Equipment for Class I, Division 2 Group A, B, C, and D Hazardous Locations</div> </div> <div> <div>EEX*</div> <div>European Union 94/9/EEC ATEX Directive, compliant with EN 50021; Potentially Explosive Atmospheres, Protection "n"</div> </div> <div> <div>CE*</div> <div>European Union 89/336/EEC EMC Directive</div> </div> <div> <div>C-Tick*</div> <div>Australian Radiocommunications Act, compliant with: AS/NZS 2064, Industrial Emissions</div> </div> <div> <div data-cs="2" data-kind="parent">*See the Product Certification link at www.rockwellautomation.com for Declarations of Conformity, Certificates and other certification details.</div><div data-kind="ghost"></div> </div>