

TECHNICAL DATA

XM-120E ECCENTRICITY MODULE

SPECIALITY MONITORING

The Allen-Bradley XM® series is the world's first machine monitoring and protection system designed as a distributed network of modules deployed on an open standard industrial bus.

The XM-120E Eccentricity Module is an XM-120 Dynamic Measurement Module with alternative, XM-120E, firmware loaded. The XM-120E firmware is included on the distribution CD with every standard XM-120.

Eccentricity is the measure of the amount of bow in a rotor. Rotor bow can be a fixed mechanical bow, or it can be a temporary bow caused by uneven thermal heating or simply by the weight of the rotor (gravity bow). Knowing and managing the amount of rotor bow is critical to the startup of most steam turbines.

The XM-120E provides four key measurements including the peak-to-peak eccentricity value, the instantaneous gap value and the minimum and maximum observed gap values.

Because the XM-120E uses the XM-120 Standard Vibration Module hardware, many of the specifications of that module are common to the XM-120E, particularly with respect to approvals and its physical and environmental specifications. Refer to the XM-120 & 121 Dynamic Measurement Module data sheet for details regarding these and other characteristics of the hardware.



SPECIFICATIONS

Communications

DeviceNet: The XM-120E uses only the DeviceNet protocol, not power. Module power is provided independently.

- Standard DeviceNet protocol for all functions
- Available Electronic Data Sheet (EDS) file provides support by most DeviceNet compliant systems
- Baud rate automatically set to 125kb, 250kb or 500kb

Serial: Local configuration via Serial Utility Program.

- RS-232 via mini-connector or terminal block

Inputs

2 channels of:

- Eddy current transducer signals

Transducer Power:

- Constant voltage: -24V dc (Tachometer may be powered, constant voltage, or configured as voltage input.)
- None (voltage input)

Voltage Range:

Selectable in software as 0 to $\pm 20V$ (min) 40Vmax.peak-to-peak

Sensitivity: User configurable in software

Input Impedance: >100k

Tachometer

1 Tachometer Inputs:

- $\pm 25V$ (50V max. peak to peak)
- 1 to 50,000 events per revolution

Input Impedance: 120k minimum

Speed/Frequency Range:

- 1 to 1,200,000 RPM
- 0.0167 to 20,000Hz

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

Outputs

4-20mA Outputs:

- 2 isolated banks of 3 outputs each (one per channel)
- 300 Ω max load

Buffered Outputs:

- 1 active buffer per vibration input channel
- Resistive buffer for tachometer

Indicators

7 LEDs:

- Module Status -red/green
- Network Status - red/green
- Channel 1 Status - off/yellow/red
- Channel 2 Status - off/yellow/red
- Tachometer Status - off/yellow/red
- Eccentricity - off/yellow/red
- Relay - off/red

Complex Data

Time Waveform (asynchronous)

Signal Conditioning

Frequency Response:

Peak-to-peak Eccentricity, Max Gap - Min Gap:
0.0039 to 20 Hz (0.235 to 1200 cpm)

Accuracy:

At ambient temperature of +25°C (+77°F)

- $\pm 1\%$ of measurement
- Noise Floor: 8mV RMS

Amplitude Range: $\pm 21V$

Gap Resolution: 5.2mV

Waveform:

- Block Size: 256, 512, 1024, 2048
- Period: 5 to 800 seconds

Measured Units: μm , mils, volt

Measured Parameters

- **Peak-to-peak Eccentricity**
Difference between the positive and negative extremes of the rotor bow in μm or mils.
- **Gap:** Volts
- **Min Gap:** Volts
- **Max Gap:** Volts
- **Speed:** RPM

Alarms

Number: 2 alarm and danger pairs

Speed Inhibit:

A speed range may be specified for each alarm. When applied, if the speed is outside of the defined range, the alarm is disabled.

HOW TO ORDER

To order the XM-120 Dynamic Measurement Module with XM-120E Eccentricity firmware included, contact your local authorized Allen-Bradley distributor or Rockwell Automation sales office.

Catalog Number	Description
1440-VSTO2-01RA	XM-120 Dynamic Measurement Module*
1440-TB-A	Terminal Base A for XM-12x
1440-SCDB9FXM2	XM Serial Communications Cable

* Requires Terminal Base A

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