

# TECHNICAL DATA

## XM-320 POSITION MODULE

### TURBINE SUPERVISORY INSTRUMENTATION

The Allen-Bradley XM®-320 Position Module is a 2-channel general-purpose monitor that supports the following measurements per channel:

- Axial Position Independent measurements per channel.
- Valve Position Independent measurements per channel.
- Case Expansion Independent measurements per channel or the differential between them.
- Differential Expansion single or independent measurement from any of:
  - Dual axial position measurements
  - Ramp measurements
  - Complementary input measurements

The XM-320 position module accepts input from linear variable differential transformers (LVDT), non-contact eddy current probes, rotary cam (valve) potentiometers or any voltage output position measurement devices.

With two 4-20mA outputs and a single onboard relay, expandable to five, the XM-320 position module is a complete position monitoring system in a small, simple, easily installed, easily maintained package.

The XM-320 can operate stand alone, with no interface to higher-level control systems or interactive user interfaces. It can also be deployed on a standard or dedicated DeviceNet network where it can provide real-time data and status information to other XM® modules, PLC's, DCS and Condition Monitoring Systems.

Configuration can be performed remotely via the DeviceNet network, or locally by a PC connected to the integral serial interface.



### SPECIFICATIONS

#### Communications

##### DeviceNet:

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

*NOTE: The XM-320 uses only the DeviceNet protocol, not power. Module power is provided independently.*

**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:** Local configuration via Serial Utility Program

- RS-232 via mini-connector or terminal block
- Baud rate auto baud to 19200

## Inputs

2 channels of:

- Eddy current transducer signals
- Linear variable differential transformer
- Voltage signals from any position measurement sensor

**Transducer Power:** Isolated 24 Volts that can be wired to be either +24V or -24V

**Voltage Range:** Selectable in software between -24V and +24V

**Sensitivity:** User configurable in software

**Input Impedance:** >100k $\Omega$

## Outputs

4-20mA Outputs:

- 2 isolated outputs
- 300 ohm max load

**Buffered Outputs:** 1 active buffer per channel

## Indicators

6 LEDs:

- Module Status -red/green
- Network Status - red/green
- Channel 1 Status - off/yellow/red
- Channel 2 Status - off/yellow/red
- Setpoint Multiplier – off/yellow
- Relay - off/red

## Measurement Modes

Sampling Modes:

- Normal: Two independent channels
- Head-to-head
- Radial Cancel

## Data Buffer

Stores a set of records containing measured parameters in response to a trigger event.

- Trend Record: Either or both channel values
- Trend Interval: 1 to 3600 seconds
- Trigger: The trend is saved when a specified relay actuates, or on command from an XM-440, host or controller
- Capacity: 1024 or 2048 records depending on the number of parameters stored

## Alarms

**Number:** 2 alarm and danger pairs

**Operators:**

- Greater than
- Less than
- Inside Range
- Outside Range

**Hysteresis:** User defined

**Startup inhibit/Set point multiplication:**

- Period: 0 to 1092 minutes in 0.1 min increments
- Inhibit/multiplication function:
  - Multiply by 2
  - Multiply by 3
  - Disarm
- Operation:
  - Setpoint Inhibit/multiplication initiated by:
    - o Front terminal SPM circuit closure
    - o DeviceNet command
  - Setpoint Inhibit/multiplication terminated by:
    - o Expired timer
    - o Front terminal SPM circuit open
    - o DeviceNet command

## Relays

**Number:**

- Single on-board relay, two sets of contacts – DPDT (2 Form C)
- Four additional relays when linked to an XM-441 Expansion Relay module - or -
- Four virtual relays whose status can be used by remote Control Systems

**Onboard Relay Rating:**

- Max. Voltage = 120 Vdc, 125 Vac
- Max. Current = 3.5 A (*Max current is up to 40°C, then derates to 2A at 65°C*)
- Min. Current = 0
- Max. Power = 60 W, 62.5 VA
- UL Rating:
  - 120 Vac @ 0.5 Amps resistive;
  - 110 Vdc @ 0.3 Amps resistive;
  - 30 Vdc @ 1.0 Amps resistive

**Failsafe:**

- Normally energized (failsafe), - or -
- Normally de-energized (non-fail-safe)

**Latching:**

- Latching - or -
- Non-latching

**Time Delay:** 0 to 25.5 seconds in 100msec increments

**Voting Logic:** Single or paired "And" or "Or" logic applied to any alarms

**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

### Non-Volatile Configuration

A copy of the module configuration is retained in nonvolatile memory from where it is read upon power up.

### Power

**Module:** 21.6 - 26.4Vdc

**Consumption:**

- Max: 200mA
- Typical: 165mA

**Heat Production:**

- Max: 5.28 Watts (18 BTU/hr)
- Typical: 3.96 Watts (13.5 BTU/hr)

**Transducer:** Isolated 24V DC, user configurable with wiring

**Redundant Power:** All XM Measurement and Relay modules support redundant power. Each module includes redundant power inputs on its terminal base.

### 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 conformal coated:

- Per material specifications  
MIL-I-46058C / IPC-CC-830
- In accordance with IPC-A-610C

### Physical

**Dimensions**

- Height: 3.8in (97mm)
- Width: 3.7in (94mm)
- Depth: 3.7in (94mm)

**Weight:**

- Module: 5.0 ounces (142 grams)
- Terminal Base: 8.1 ounces (230 grams)

### Approvals

CE, C-Tick, ODVA  
CSA Class I, Div 2, Groups A, B, C, D  
UL, EEX

## HOW TO ORDER

To order the XM-320 Series Position module, and for information about XM-441 Expansion Relay module, contact your local authorized Allen-Bradley distributor or Rockwell Automation sales office.

Catalog Number	Description
1440-TPSO2-01RB	XM-320 Position Module*
1440-TB-B	Terminal Base B for XM-320
1440-SCDB9FXM2	XM Serial Communications Cable

\* Requires Terminal Base B

[www.rockwellautomation.com](http://www.rockwellautomation.com)

### Power, Control and Information Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846