XM-320 Position Module

The XM-320 module (catalog number 1440-TPS02-01RB) measures turbine supervisory position measurements, including axial position (thrust), valve position, differential expansion, and case expansion.

Attribute	XM-320 (1440-TPS02-01RB)
Inputs	
Two channels	Eddy current transducer signals Linear variable differential transformer Voltage signals from any position measurement sensor
Transducer power	Isolated 24V that can be wired to be either +24V or -24V
Voltage range	Selectable in software between -24…24V
Sensitivity	User configurable in software
Input impedance	> 100 kΩ
Outputs	
4…20mA outputs	Two isolated outputs 600 Ω max load
Buffered outputs	Two outputs (one per channel)
Indicators	
Status indicators	Module - red/green Network - red/green Channel 1 - yellow/red Channel 2 - yellow/red Setpoint multiplier - yellow Relay - red
Communication	
DeviceNet network	Standard DeviceNet protocol for all functions (not power—module power is provided independently) Available EDS file provides support for most DeviceNet compliant systems Communication rate automatically set by bus master to 125, 250, or 500 Kbps Configurable I/O Poll Response message helps optimize space utilization within scanner input tables: Selectable poll response assembly Selectable poll response size (bytes)
Serial	RS-232 via mini-connector or terminal base unit Communication rate fixed at 19.2 Kbps Local configuration via the Serial Configuration utility
Measurement Modes	
Measurement modes	Normal (two independent channels) Head-to-head Radial cancel
Delta Time Buffer	
Number of records	2048
Delta time interval	1…3600 s
Trigger mode	Relay on the module is activated or by a trigger event (for example, DeviceNet command from a controller or host)
Alarms	
Number	Two alarm and danger pairs
Operators	Greater than Less than Inside range Outside range
Hysteresis	User configurable in software
Startup inhibit/setpoint multiplication	Period: 0…1092 min, adjustable in 0.1 min increments Inhibit/multiplication function: Multiply by N (0…10, 0 = Disarm)
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	Voltage, max: 125V DC, 125V AC Current, max: 3.5 A Current, min: 0 Power, max: 60 W, 62.5VA Max current is up to 40 °C (104 °F), then derates to 2 A at 65 °C (149 °F).
Failsafe	Normally energized (failsafe) or Normally de-energized (non-fail-safe)
Latching	Latching or Non-latching
Time delay	0…25.5 s, adjustable in 100 ms increments
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

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Configuration	
Nonvolatile configuration	A copy of the module configuration is retained in nonvolatile memory from which the configuration is loaded upon powerup The configuration stored in nonvolatile memory can be deleted only by a module-reset command sent via a serial interface, using the Serial Configuration utility or via a DeviceNet interface from any compliant software application
Power	
Module	24V DC
Consumption	200 mA, max 165 mA, typical
Heat production	5.28 W (18 BTU/hr), max 3.96W (13.5 BTU/hr), typical
Transducer	Isolated 24V DC, user configurable with wiring
Environmental	
Temperature, storage	-40…85 °C (-40…185 °F)
Conformal coating	All printed circuit boards are conformally coated in accordance with IPC-A-610C
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-20…65 °C (-4…149 °F)
Temperature, surrounding air, max	65 °C (149 °F)
Temperature, nonoperating IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock)	-40…85 °C (-40…185 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	5…95% noncondensing
Vibration IEC 60068-2-6 (Test Fc, Operating)	2 g @ 10…500 Hz
Shock, operating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	15 g
Shock, nonoperating IEC 60068-2-27 (Test Ea, Unpackaged Shock)	20 g
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	8 kV contact discharges 8 kV air discharges
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz 10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz 3V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz
EFT/B immunity IEC 61000-4-4	±2 kV at 5 kHz on power ports ±1 kV at 5 kHz on relay and shielded signal ports ±1 kV at 5 kHz on XMbus port
Surge transient immunity IEC 61000-4-5	±1 kV line-earth(CM) on relay ports ±2 kV line-earth(CM) on shielded signal ports ±2 kV line-earth(CM) on XMbus port
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Enclosure type rating	None (open-style)
Voltage and current ratings	Supply: 24V DC, 0.2 A max, Class 2/SELV Relay: 120V AC, 50/60Hz, 0.5 A Res 110V DC, 0.3 A Res 30V DC, 1.0 A Res
Power dissipation	5.3 W max
Isolation voltage	250V (continuous), Basic Insulation Type, relay to all other circuits. Isolation between other circuits is not rated. Type tested at 1500V AC for 60 s
Wiring category[1]	2 - on relay and shielded signal ports 3 - on Serial and power ports 2 - on XMbus ports
Wire type	Signal connections: shielded Power and relay connections: unshielded
Pilot duty rating	Relay port: Not rated
North American temp code	T4A
IEC temp code	T4
Physical	
Terminal base	1440-TB-B

Attribute	XM-320 (1440-TPS02-01RB)
Dimensions (H x W x D), approx	97 x 94 x 94 mm (3.8 x 3.7 x 3.7 in.)
Certification[2] (when product is marked)	**Description**
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E234338.
c-CSA-us	CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for US and Canada. See CSA File 150115.
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) European Union 2006/95/EC LVD, compliant with: • EN 61131-2; Programmable Controllers (Clause 11)
C-Tick	Australian Radiocommunications Act, compliant with: • AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-15; Potentially Explosive Atmospheres, Protection "n" • EN 60079-11; Explosive Atmospheres, Protection "i" • EN 60079-0; General Requirements • II 3 G Ex nAC [ic] IIC T4X Gc • when used at or below 60V AC or 75V DC
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: • Article 58-2 of Radio Waves Act, Clause 3

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

(2) See the Product Certification link at http://www.rockwellautomation.com for Declarations of Conformity, Certificates, and other certification details.