XM-361 Universal Temperature Module

XM-362 Isolated Thermocouple Temperature Module

The XM-361 (1440-TUN06-00REA) and XM-362 (1440-TTC06-00REA) modules measure temperature from RTDs and thermocouples. The modules report, and can alarm on, the measured temperature, rate of change for each channel, and difference between adjacent channels.

When only thermocouples are monitored, the XM-362 module is the preferred solution.

Attribute	XM-361 (1440-TUN06-00RE) XM-362 (1440-TTC06-00RE)
Inputs	
Channels	1…6 RTD or thermocouple signals, user configurable XM-361 accepts RTD and isolated thermocouple inputs XM-362 accepts isolated or grounded thermocouple inputs
Supported thermocouple types (XM-361 and XM-362)	• B 0…1810 °C (32…3290 °F) • C 0…1316 °C (32…2400 °F) • E 5…284 °C (41…543 °F) • J 0…364 °C (32…687 °F) • K -40…484 °C (-40…903 °F) • N -40…620 °C (-40…1148 °F) • R -40…1760 °C (-40…3200 °F) • S -40…1760 °C (-40…3200 °F) • T -40…379 °C (-40…714 °F)
Supported RTD types (XM-361 only)	• 100 Ω 2-wire and 3-wire platinum (alpha = 0.00385) -40…660 °C (-40…1220 °F) • 200 Ω 2-wire and3-wire platinum (alpha = 0.00385) -40…453 °C (-40…847 °F) • 100 Ω 2-wire and 3-wire platinum (alpha = 0.003916) -40…660 °C (-40…1220 °F) • 200 Ω 2-wire and 3-wire platinum (alpha = 0.003916) -40…443 °C (-40…829 °F) • 250 Ω 2-wire and 3-wire platinum (alpha = 0.00392) -40…389 °C (-40…732 °F) • 100 Ω 2-wire and 3-wire nickel (alpha = 0.00618) -40…180 °C (-40…356 °F) • 120 Ω 2-wire and 3-wire nickel (alpha = 0.00672) -40…439 °C (-40…822 °F) • 10 Ω 2-wire and 3-wire copper (alpha = 0.00427) -40…260 °C (-40…500 °F)
RTD current source value	1.004 mA ±1%
Common mode input voltage (XM-361 only)	±3V
Input impedance	XM-361: 1 MΩ voltage input XM-362: 10 kΩ voltage input
Outputs	
4…20 mA outputs	Two isolated banks of three outputs (one per channel) 600 Ω max load
Accuracy	±1% of full scale, max ±0.2% of full scale, typical
Isolation	250V
Indicators	
Status indicators	Module - red/green Network - red/green Channel 1 - yellow/red Channel 2 - yellow/red Channel 3 - yellow/red Channel 4 - yellow/red Channel 5 - yellow/red Channel 6 - yellow/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
Signal Conditioning	
Accuracy	C thermocouples: ±3 °C (±6 °F) or 0.6% of full scale, whichever is greater E, J, K, N, T thermocouples: ±1 °C (±2 °F) or 0.6% of full scale, whichever is greater B, R, S thermocouples: ±4 °C (±7 °F) or 0.6% of full scale, whichever is greater Platinum and nickel RTDs (3-wire only): ±1 °C (±2 °F) or 0.6% of full scale, whichever is greater Copper RTDs (three-wire only): ±7 °C (±13 °F) or 5% of full scale, whichever is greater
Resolution	0.025% of temperature range

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Low pass filter	User configurable for the measurement and rate of change value from each channel
Sampling rate	200 Hz
Units	°C, °F
Measurements	
Measured value	Temperature
Rate of change	Per minute Updated once per second
Delta Time Buffer	
Number of records	2048
Delta time interval	1…3600 s
Trigger mode	Relay on an XM-441 expansion relay module is activated, or by a trigger event (for example, DeviceNet command from a controller or host)
Alarms	
Number	18 alarm and danger pairs Measurement value and rate of change value from each channel
Operators	Greater than Less than Inside range Outside range
Hysteresis	User configurable in software
Relays	
Number	Up to eight relays when interconnected to one or two XM-441 expansion relay modules or Eight virtual relays whose status can be used by remote control systems
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 Digital reset command via serial or DeviceNet interface
Activation on	Alarm status Normal Alert Danger Disarm Sensor Out of Range Module fault

Attribute	XM-361 (1440-TUN06-00RE) XM-362 (1440-TTC06-00RE)
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 Class 2/SELV
Consumption	400 mA, max for XM-361, 300mA for XM-362
Heat production	7.2 W (24.6 BTU/hr), max 4 W (14 BTU/hr), typical
Environmental	
Temperature, operating	-20…65 °C (-4…149 °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

Attribute	XM-361 (1440-TUN06-00RE) XM-362 (1440-TTC06-00RE)
Emissions CISPR 11 (IEC 61000-6-4)	Class A
ESD immunity IEC 61000-4-2	6 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 shielded signal ports ±1 kV at 5 kHz on XMbus port
Surge transient immunity IEC 61000-4-5	±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	XM-362 Supply: 24V DC, 0.3 A max, Class 2/SELV XM-361 Supply: 24V DC, 0.4 A max, Class 2/SELV
Power dissipation	7.2 W max
Isolation voltage	Not rated
Wiring category(1)	2 - on shielded signal ports 3 - on Serial and power ports 2 - on XMbus ports
Wire type	Signal connections: shielded Power connections: unshielded
North American temp code	T4
IEC temp code	T4
Physical	
Terminal base	1440-TB-E
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.

Attribute	XM-361 (1440-TUN06-00RE) XM-362 (1440-TTC06-00RE)
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)
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
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.