

*Field Configurable...*

**Multi-Channel RTD,  
T/C, mV, or mA Inputs**

**TRANSMITTERS**

**ALARMS TRIPS**

**I TO I ISOLATORS**

**X54-3000**  
S E R I E S



# Field Configurable... MULTI-CHANNEL

## TWO CHANNEL ALARM TRIPS



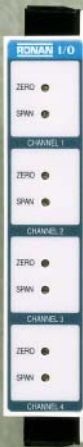
Available in two models, X54-3402 and X54-3412, for RTD and for mV, Volt, mA, and thermocouple inputs respectively, these field configurable units are an ideal solution for simple shutdown or alarm trigger applications. Each isolated channel provides two independent adjustable setpoints with one form "C" contact each. Field configurable options include; adjustable hysteresis (deadband), normally energized or de-energized relays, and selection of High or Low alarm functions for each setpoint. Input scaling and input types are also field configurable, in the event that process parameters change. Standard input types and ranges are available from stock. For the 4 to 20 mA inputs on the X54-3412 model, an isolated 24 Vdc input loop power supply option is also available.

## TWO CHANNEL TRANSMITTERS



Sensor signal amplification, linearization, and re-transmission functions are available in 24 Vdc or 4 to 20 mA loop powered configurations (X54-33XX and X54-32XX respectively). The RTD models (X54-3202 and X54-3302) and the mV, Volt, mA, thermocouple models (X54-3212 and X54-3312) all feature field configurable input types and input scaling. Standard ranges are available from stock with factory-set output linearization for the highest accuracy. For the 4 to 20 mA inputs on the X54-3312 model, an isolated 24 Vdc input loop power supply option is also available.

## FOUR CHANNEL 4 TO 20mA LOOP ISOLATORS



The X54-3224 provides four totally isolated loop isolators. Each channel is independently powered by its respective 4 to 20 mA input signal. Two self powered isolated outputs are then available for loads from 0 to 99 ohms or from 100 to 500 ohms. High RFI protection, 1000 Vac isolation, low input loop burden (< 6 Vdc with 250 ohm loads), and independent ZERO and SPAN adjustments per channel, assure accuracy and versatility.

## STANDARD FEATURES

- Standard 35 mm DIN Rail Mounting
- High Density 2 or 4 Channel Models
- Full Input, Output, Power and Channel Isolation
- Field Re-configurable Input Types, Ranges, and Output Options
- Two Piece Plug-in Connectors for Field Wiring
- Standard Ranges Available from Stock
- Front Panel Access to Zero, Span, and Setpoint Adjustments
- High RFI Immunity
- High Temperature Stability
- LED Indicators for Power and Alarm Functions (except loop powered units)



# RTD, T/C, mV, mA INPUTS

## KEY SPECIFICATIONS

### Dual Channel 2-Wire Loop Powered Transmitters Models X54-3202 RTD and X54-3212 T/C, Volt, mV, mA

**Inputs:** RTD Sensor Types: 100 ohm platinum, 120 ohm nickel, 10 ohm copper; Thermocouple Types: E, J, K, T, R, S, or mV, volt, mA

**Outputs:** 4 to 20 mA into 700 ohms with 24 Vdc loop power

**Span and Zero Adjustment:** Front-accessible, multi-turn potentiometer

**Calibrated Accuracy:** +/- 0.1% of span (linearization errors additional on larger spans – consult factory)

**Isolation:** 1000 Vac between channels, input and output

**Common Mode Rejection:** > 120 dB, DC at 60 Hz

**Ambient Temperature Coefficient:** Gain: < +/- 0.01%/°F;  
Zero: < +/- 0.01%/°F

**Ambient Temperature Range:** -20° to 158° F (-25° to 70° C)

**Power Supply Range:** 10 to 40 Vdc

**RFI Effects:** < 0.4 mV (referred to input) +0.2% of span when exposed to 5 watt transmitter, from 20 to 460 MHz at 1 meter

### Dual Channel 24 Vdc Powered 4-Wire Transmitters Models X54-3302 RTD and X54-3312 T/C, Volt, mV, mA

**Inputs:** RTD Sensor Types: 100 ohm platinum, 120 ohm nickel, 10 ohm copper; Thermocouple Types: E, J, K, T, R, S, or mV, volt, mA

**Outputs:** 4 to 20 mA or 0 to 20 mA into 650 ohm loads  
1 to 5 volts, 0 to 5 volts with 250 ohm output impedance

**Span and Zero Adjustment:** Front-accessible, multi-turn potentiometer

**Sensor Failure Response:** Red front-panel LED indication with upscale drive

**Calibrated Accuracy:** +/- 0.1% of span (linearization errors additional on larger spans – consult factory)

**Isolation:** 1000 Vac between channels, input and output

**Common Mode Rejection:** > 120 dB, DC at 60 Hz

**Ambient Temperature Coefficient:** Gain: < +/- 0.01%/°F;  
Zero: < +/- 0.01%/°F

**Ambient Temperature Range:** -20° to 158° F (-25° to 70° C)

**Power Supply Range:** 18 to 30 Vdc (Maximum current draw = 190 mA DC at 24 Vdc)

**RFI Effects:** < 0.4 mV (referred to input) +0.2% of span when exposed to 5 watt transmitter, from 20 to 460 MHz at 1 meter

### Dual Channel 24 Vdc Powered Alarm Trips Models X54-3402 RTD and X54-3412 T/C, Volt, mV, mA

**Input:** RTD Sensor Types: 100 ohm platinum, 120 ohm nickel, 10 ohm copper; Thermocouple Types: E, J, K, T, R, S, or mV, volt, mA

**Setpoint Adjustment:** Front-accessible, multi-turn potentiometer (2 setpoints per channel). Field select normally energized or de-energized relays and high or low setpoints

**Setpoint Repeatability:** +/- 0.1% of span

**Alarm Indication:** Front panel Red LED for each setpoint

**Power On/Sensor Failure Response:** Green “Power On” LED turns Red if sensor fails

**Response Time:** 100 milliseconds

**Hysteresis:** Internal adjustment for 1 to 15% of range

**Contact Outputs:** One set of normally open and closed contacts per setpoint

**Contact Rating:** Standard Relays: 0.6 amps at 125 Vdc or 110 Vac, 2 amps at 30 Vdc (resistive loads)

**Isolation:** 1000 Vac between channels

**Common Mode Rejection:** > 120 dB, DC at 60 Hz

**Ambient Temperature Range:** -20° to 158° F (-25° C to 70° C)

**Power Supply Range:** 18 to 30 Vdc (maximum current in alarm = 190 mA at 24 Vdc)

**RFI Effects:** < 0.4 mV (referred to input) +0.2% of span when exposed to 5 watt transmitter from 20 to 460 MHz at 1 meter

### Quad Channel Input Loop Powered Current-to-Current Isolators Model X54-3224

**Inputs:** 4 to 20 mA; Input Loop Burden: < 6 Vdc + ( $I_{load} \times R_{load}$ )

**Outputs:** Output “a”: 4-20 mA into 0 to 99 ohm load  
Output “b”: 4-20 mA into 100 to 500 ohm load

**Span and Zero Adjustment:** Front-accessible, multi-turn potentiometers

**Calibrated Accuracy:** +/- 0.1% of span

**Isolation:** 1000 Vac between channels, input and output

**Common Mode Rejection:** >120 dB, DC at 60 Hz

**Ambient Temperature Coefficient:** Gain: < +/- 0.02%/°F;  
Zero: < +/- 0.01%/°F

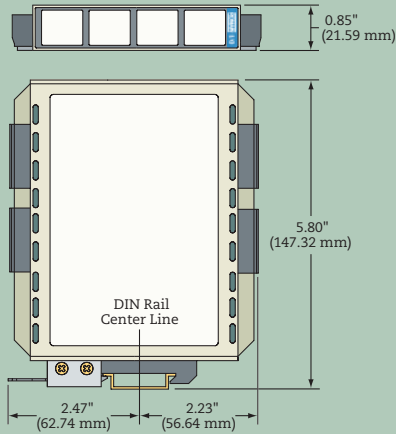
**Ambient Temperature Range:** -20° to 158° F (-25° to 70° C)

**RFI Effects:** < 0.4 mV (referred to input) +0.2% of span when exposed to 5 watt transmitter, from 20 to 460 MHz at 1 meter



# MECHANICALS AND ORDERING

MODEL X54-3224



## Plug-In Connectors

All model feature two piece connectors assemblies. Field wiring is attached to the removable half of the connector assembly and is then plugged into a mating part permanently attached to the X54. This simplifies disconnecting and reconnecting field wiring for calibration, commissioning and service.

## DIN Rail Mounting

All X54-3000 Series models are DIN rail mounted on standard 35 mm "U" or top hat style rails. The rails can be 35 mm wide by 7.5 mm or 15 mm high. The mounting "Foot" features glass filled nylon construction with a stainless steel spring and release mechanism. There are no plastic springs or snaps to weaken or break.

## THERMOCOUPLES, mV, VOLT, mA INPUTS

Model Number	Description	Max. Power
X54-3212-(I)(L)(II)    -(I)(L)(II)	T/C, mV, Volt, mA Input Loop Powered Transmitter	1.0 Watts
X54-3312-(I)(L)(II)(III)    -(I)(L)(II)(III)	T/C, mV, Volt, mA Input 24 Vdc Powered Transmitter	4.6 Watts
X54-3412-(I)    (II)    -(I)    (II)	T/C, mV, Volt, mA Input 24 Vdc Powered Dual Setpoint Trips	4.6 Watts
<div style="display: inline-block; width: 45%; text-align: center;">Channel 1</div> <div style="display: inline-block; width: 45%; text-align: center;">Channel 2</div>		

- (I) = Input Code: (V = Volt or mV; I = mA or T/C Type E, J, K, R, S, T)
- (L) = Optional Linearized Output (for X54-3212,3312 only)
- (II) = Range, e.g. (0/750 °F = 0-750 °F) or Standard Range Code: A through H (see chart)
- (III) = Output Code: (B = 4 to 20 mA; H = 0 to 20 mA; D = 1 to 5 Vdc; F = 0 to 5 Vdc)

## RTD INPUTS

Model Number	Description	Max. Power
X54-3202-(I)(L)(II)    -(I)(L)(II)	RTD Input Loop Powered Transmitter	1.0 Watts
X54-3302-(I)(L)(II)(III)    -(I)(L)(II)(III)	RTD Input 24 Vdc Powered Transmitter	4.6 Watts
X54-3402-(I)    (II)    -(I)    (II)	RTD Input 24 Vdc Powered Dual Setpoint Trips	4.6 Watts
<div style="display: inline-block; width: 45%; text-align: center;">Channel 1</div> <div style="display: inline-block; width: 45%; text-align: center;">Channel 2</div>		

- (I) = Input Code: (V = Volt or mV; I = mA or T/C Type E, J, K, R, S, T)
- (L) = Optional Linearized Output (for X54-3212,3312 only)
- (II) = Range, e.g. (0/750 °F = 0-750 °F) or Standard Range Code: A through H (see chart)
- (III) = Output Code: (B = 4 to 20 mA; H = 0 to 20 mA; D = 1 to 5 Vdc; F = 0 to 5 Vdc)

## FOUR CHANNEL CURRENT ISOLATOR

Model Number	Description	Power
X54-3224	Four Channel Input Loop Powered 4 to 20 mA Current-tp-Current Isolator	0.85 Watts (0.21/ch)

Standard Input Ranges			
Range Code	°F or Input Range	°C or Input Range	Sensor/ Input Code
A	-450 to 0	-267 to -18	T, K, E
B	0 to 750	-18 to 399	J, T
C	0 to 2100	-18 to 1149	J, E
D	0 to 2500	-18 to 1371	K
E	0 to 3200	-18 to 1760	R, S
F	4 to 20 mA without Loop Power		I
G	4 to 20 mA with Loop Power Option		I
H	1 to 5 Vdc		V

Range Code	°F or Input Range	°C or Input Range	Sensor/ Input Code
A	-40 to 40	-40 to 4	100, 120
B	-40 to 104	-40 to 40	J, T
C	32 to 100	0 to 38	100, 120, 10, 9
D	32 to 212	0 to 100	100, 120, 10, 9
E	0 to 500	-18 to 260	100, 120
F	32 to 932	0 to 500	100
G	0 to 1500	-18 to 815	100

Most common ranges shown in bold type. Above ranges are standard offerings for fastest delivery. Contact Ronan for prices and delivery of non-standard ranges.



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