



Temperature Transmitter TxRail-USB

TxRail-USB is a USB configurable DIN rail mount temperature transmitter. It allows selection and configuration of input type, measurement range, output type and calibration. Its output can be set to either loop powered 4-20mA or 0-10V. Highly accurate and user-friendly, the TxRail-USB performs well from simple to sophisticated measurement applications



Features

- Universal input accepts Thermocouples J, K, T, E, N, R, S, B, Pt100, Pt1000, NTC and 0-50 mV
- Configurable measurement range
- Sensor break detection according to NAMUR Ne43 recommendations
- Internal cold junction compensation
- Pt100/Pt1000 connection for 2, 3 and 4 wires
- Accuracy (@ 25 °C): typical 0,1% of span for thermocouple, mV, Pt100 and Pt1000
- Temperature effect <± 0,16% @ 25°C
- Configurable output to 4-20 mA loop powered or 0-10 V.
- Output Linearized according to measured temperature
- Output resolution: 4-20 mA output: 2 µA
0-10 V output: 2,5 mV
- Power supply: 10 to 35 Vdc (4-20 mA output)
12 to 30 Vdc (0-10 Vdc output)
- Operating temperature: -40 to 85 °C
- Free Windows® configuration software
- USB micro-B port allows direct PC connection for configuration. USB Class CDC
- Dimensions: 99,5 x 114 x 12,5 mm

Configuration Software

The USB port makes configuration easy. By using an ordinary USB Micro-B cable and **NOVUS** free configuration software the Transmitter can be totally configured and calibrated.

The **TxConfig II** software, required to communicate with the **TxRail-USB** is available for download at www.novusautomation.com.



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Smart Isolated Temperature Transmitter

TxIsoRail



Introduction

TxIsoRail is fully programmable isolated temperature transmitters dedicated to Pt100 and thermocouple industrial sensors. TxIsoRail is a DIN rail mount unit. Both units can be easily user configured for input type and working range by means of an interface cable connected to a PC USB port.

Why use isolated transmitters?

Isolated transmitters protect the electrical instruments by eliminating ground loop effects and reduce substantially the undesirable interferences and instabilities in sensor measurements.

Features

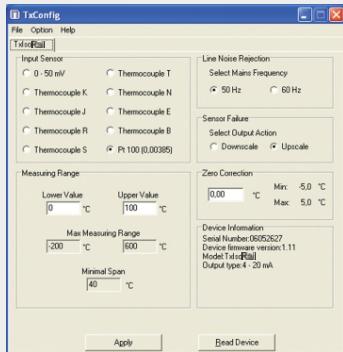
TxIsoRail is two-wire signal conditioning devices that deliver 1000 Vac isolation between input and output. These devices can be fully programmed by the end user for different industrial applications. One single model can be configured to accept several thermocouple types and Pt100 RTDs. TxIsoRail can also accept 0 to 50 mV, 0-20 mA and 4-20 mA field signals. The flexibility of in-the-field configuration translates into a one model fits all signal conditioning and isolator module.

Specifications

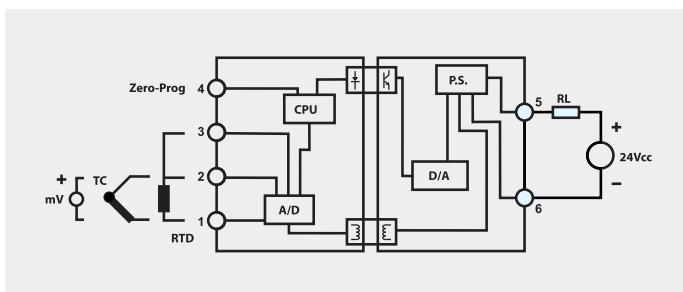
- Programmable input: thermocouples type J, K, T, E, N, R, S, B, Pt100 RTD, 0-50 mV, 0-20 mA, 4-20 mA and 0-10 V
- User programmable working range
- 2-wire loop powered 4-20 mA or 20-4 mA output
- 2 or 3-wire Pt100 input with linearized output
- Cold junction compensation for thermocouples
- Option: 0 to 10 Vdc
- TxConfig Windows® configurator software
- Configuration with a PC via TxConfig interface
- Manual zero (offset) adjustment can be done by means with 1 front key in the TxIsoRail
- Power supply: 12 to 35 Vdc
- Accuracy: Pt100, 0-50 mV (tension) and 0-20 mA (current) $\pm 0.20\%$ of full scale. Thermocouples $\pm 0.25\%$ of full scale $\pm 1^\circ\text{C}$
- Temperature effect: 0.003% of maximum SPAN/ $^\circ\text{C}$
- Working temperature: -40 to +85 $^\circ\text{C}$ (-40 to 185 $^{\circ}\text{F}$)
- Sensor failure protection: programmable burnout upscale or downscale
- Dimensions: 72 mm (H) x 78 mm (D) x 19 mm (W)
- Isolation: 1000 Vac between sensor input and 4-20 mA output loop
- Selectable mains filter: 60 Hz or 50 Hz

Configuration

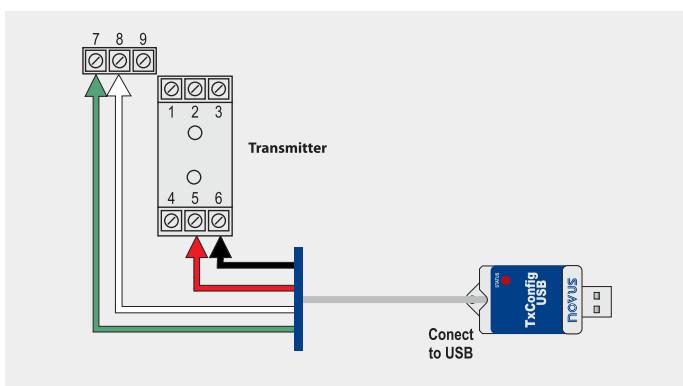
Configuration is achieved by means of an interface cable connected to a RS232 PC port along with the convenient configurator software TxConfig. Through this convenient software, the end user can easily configure the input type, the desired working range and the necessary upscale or downscale protections. Minor sensor error corrections can also be made whenever necessary.



Block Diagram

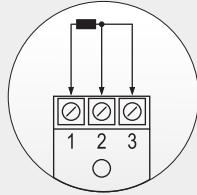


TxConfig Connections

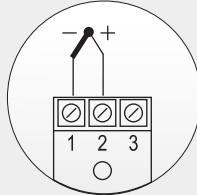


Electrical Connections

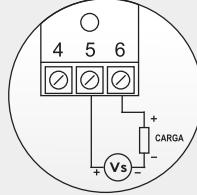
Pt100



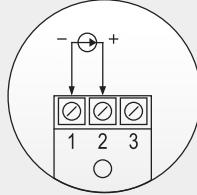
Thermocouple



Output



4-20 mA

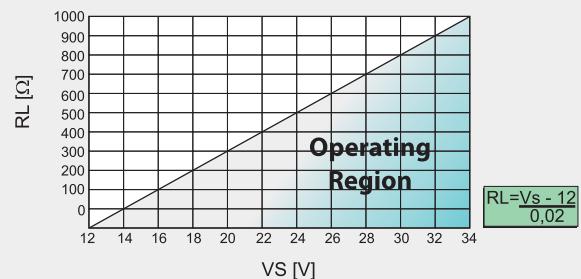


Input Types and Ranges

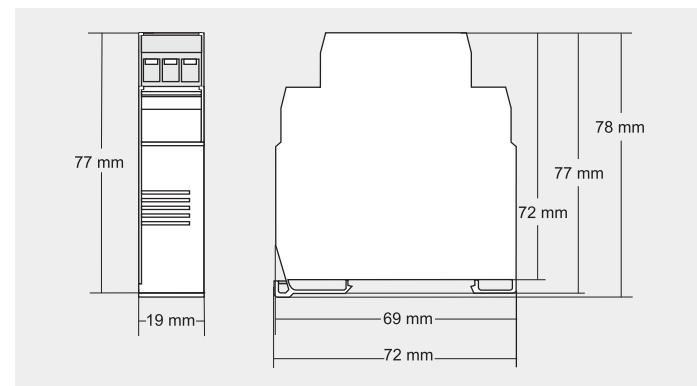
Users can easily program input type and temperature range as below:

INPUT	MAX. RANGE	MIN. SPAN
Thermocouple K	-150 to 1370 °C / -238 to 2500 °F	100 °C
Thermocouple J	-100 to 760 °C / -148 to 1400 °F	100 °C
Thermocouple R	-50 to 1760 °C / -58 to 3200 °F	400 °C
Thermocouple S	-50 to 1760 °C / -58 to 3200 °F	400 °C
Thermocouple T	-160 to 400 °C / -256 to 752 °F	100 °C
Thermocouple N	-270 to 1300 °C / 454 to 2372 °F	100 °C
Thermocouple E	-90 to 720 °C / -130 to 1328 °F	100 °C
Thermocouple B	500 to 1820 °C / 932 to 3308 °F	400 °C
Pt100	-200 to 600 °C / -328 to 1112 °F	40 °C
Voltage	0 to 50 mV	5 mV
Voltage	0 to 10 V	1V
Current	0 to 20 mA	2 mA
Current	4 to 20 mA	2 mA

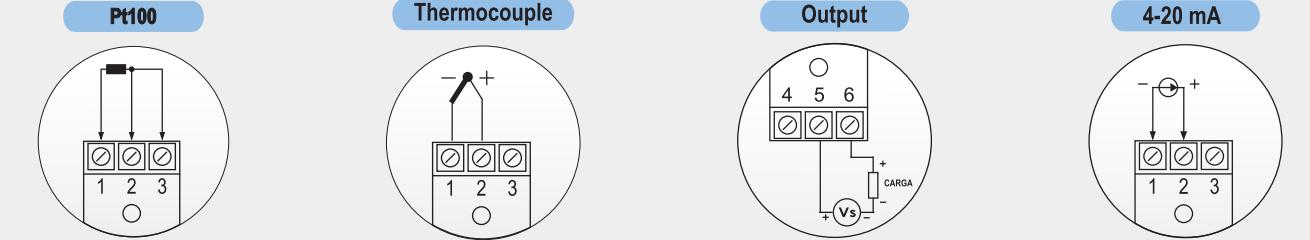
Load & Power Supply



Dimensions



Electrical Connections





HART Temperature Transmitters

TxIsoRail-HRT and TxIsoBlock-HRT



COMMUNICATION PROTOCOL



TxIsoRail-HRT



TxIsoBlock-HRT

- Full compatibility with worldwide HART® devices
- Standardized supervision with standardized software
- Fully configurable through the current loop
- Galvanic surge protection

The TxIsoRail-HRT and TxIsoBlock-HRT temperature transmitters combine the proven quality of HART® certification with the robustness of NOVUS devices, since they have electrical isolation between input and output, withstand voltage surges up to 1.5 kVrms.

They stand out due to the total flexibility of configuration through the two-wire 4-20 mA loop, allowing more resources for the configuration and the monitoring of the device. In this way, it is possible to perform interactions with the devices remotely, eliminating the need to remove them from the plant to change configuration.

By using a world-renowned protocol with more than 40 million field instruments supporting this technology, NOVUS TxIsoRail-HRT and TxIsoBlock-HRT temperature transmitters enable the use of standardized HART® configuration and monitoring software, providing reliability and flexibility to users.

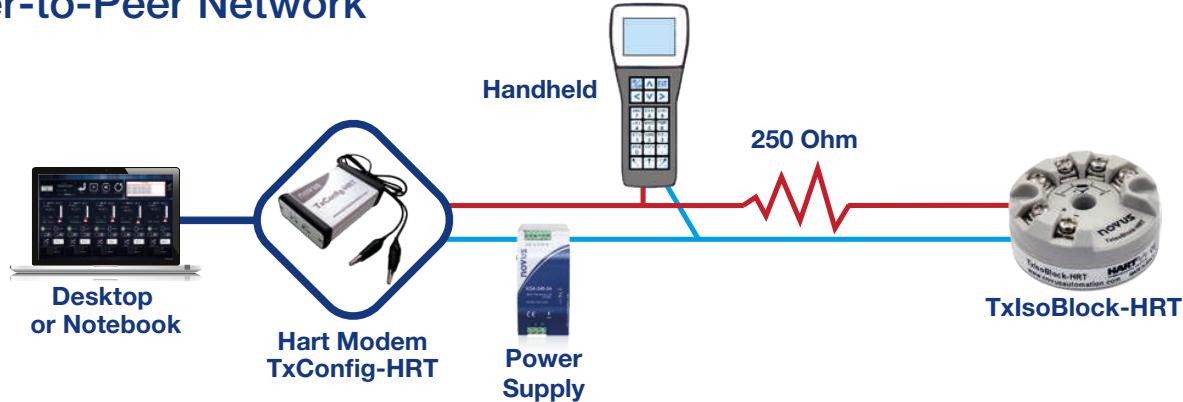


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Technical Specifications

Input Type	Thermocouples J, K, T, N, R, S, B, E, Pt100, Pt1000, NTC and 0-50 mV	
Precision	Typical: Pt1000 / mV: 0.07 % span Pt100: 0.08 % span T/C: 0.07 % span ± 1 °C NTC: 0.2 °C	Maximum: Pt1000 / mV: 0.15 % span Pt100: 0.15 % span T/C: 0.15 % span ± 1 °C NTC: 0.45 °C
Output Type	4-20 mA	
Output Resolution	0.25 µA	
Thermal Drift	< 0.05 % / 25 °C	
Input-Output Isolation	1.5 kVrms	
Electrical Protection	Reverse polarity	
Version of HART® protocol	HART V7, compatible with HART V5	
Configuration Interface	Through TxConfig-HRT adapter or Handheld HART® certified	
Software of Configuration	TxConfig II or HART® certified software	
Certifications and Approvals	CE, NAMUR NE43, RoHS, Reach, HART®	
Electromagnetic Compatibility	CISPR 11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 and EN 61000-4-8	
Conditions of Operation	-40 to 85 °C / 0 to 90% RH	
Power Supply	Loop powered, 4-20 mA, (8.5 - 36 Vdc)	
Dimensions	114 x 99.5 mm (4.49 x 3.92 in) (DIN rail model) 20.5 x 43.5 mm (0.81 x 1.71 in) (head mount model)	
Enclosure	ABS UL94-HB (DIN rail model) Polyamide (head mount model)	

Peer-to-Peer Network



Multi-Drop Network

