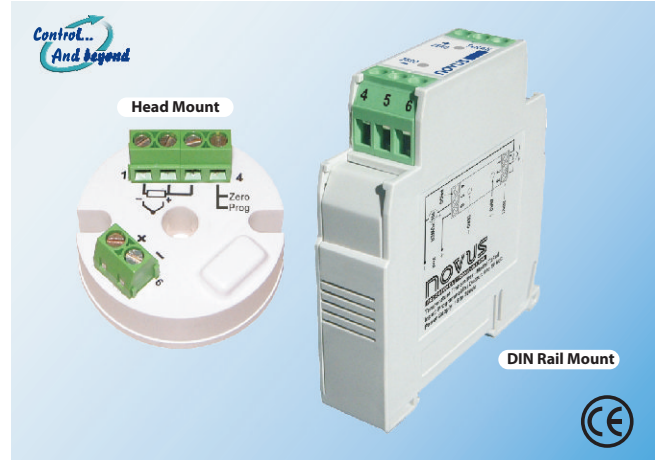**Head Mount**

DIN Rail Mount

INTRODUCTION

TxBlock is a fully customer programmable head mount temperature transmitter.

In-the-field configuration of input type and working range can be achieved by means of a cable and an RS232 port from a PC.

TxRail represents the utmost technology in DIN rail mount temperature transmitters.

Input type, working range and output calibration can be achieved by means of a cable and an RS232 port from a PC.
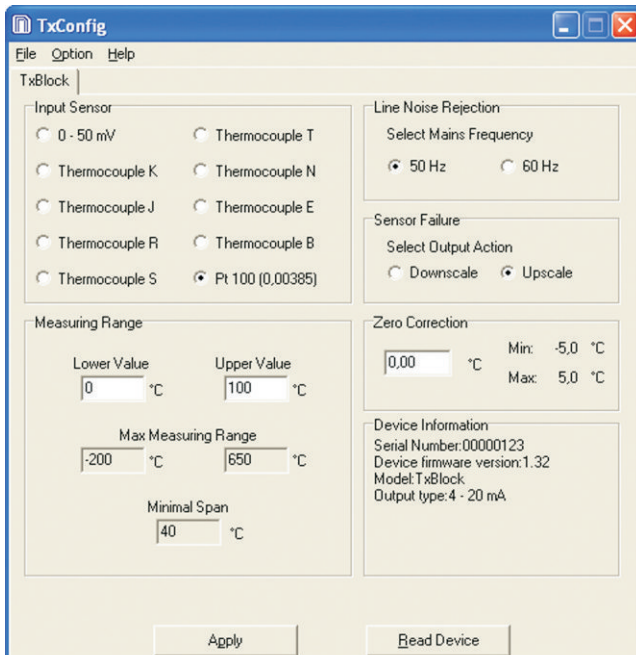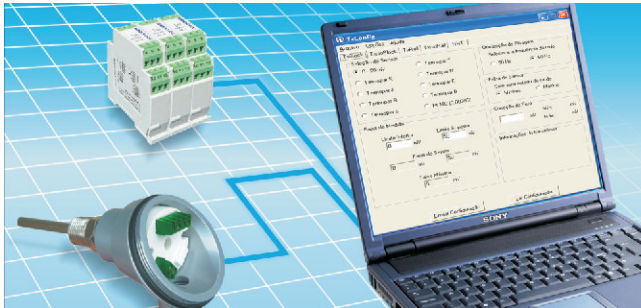
FEATURES

TxBlock and **TxRail** comprehends a family of head mount and DIN rail mount 4-20mA temperature transmitters for the most common temperature applications.

One single model can be configured to accept several thermocouple types and Pt100 RTDs.

CONFIGURATION

TxBlock and **TxRail** configuration is performed by using the **TxConfig** software and **TxConfig USB** interface connected to the PC.
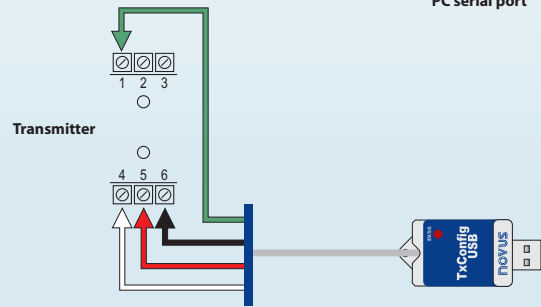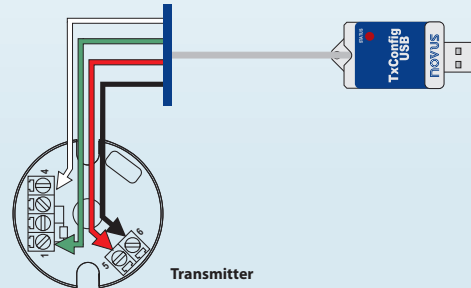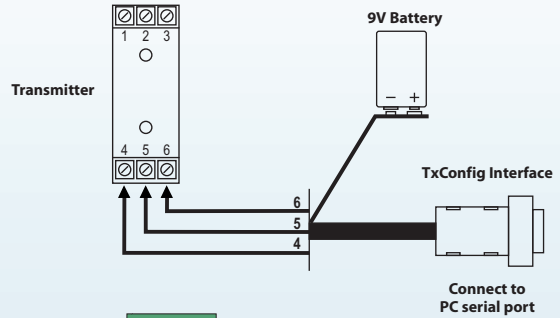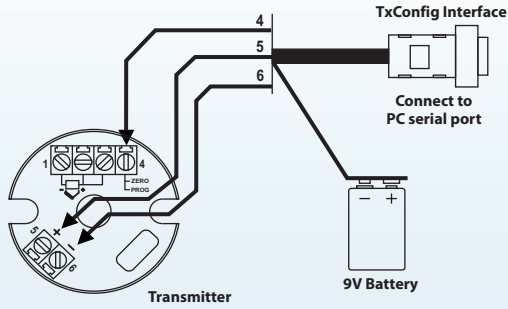
SPECIFICATIONS

- Programmable input: thermocouples type J, K, T, E, N, R, S, and Pt100 RTD with programmable working range
- 2-wire loop powered 4-20 mA output
- Linearized 4 to 20 mA or 20 to 4 mA output for t/c and Pt100
- Cold junction compensation for thermocouples
- Optional 0 to 10 Vdc for **TxRail** only
- 2 or 3-wire Pt100 with linearization
- Windows configurator (optional)
- Configuration with a PC via **TxConfig** interface
- Manual zero (offset) adjustment can be done by means of a wire jumper simulating a keyboard for the **TxBlock** or with 2 front keys in the **TxRail**
- Digital filter can be set for best 50 or 60 Hz performance
- Power supply: 12 to 30 Vdc
- Accuracy: Pt100 and 0 to 50 mV ±0.2% full scale. Thermocouples ± 0.3% max. of full scale
- Temperature effect: 0.003% SPAN/°C
- Working temperature: -40 to +85 °C (-40 to 185 °F)
- Sensor failure protection: programmable burnout upscale or downscale
- Dimensions: **TxBlock**: 44 mm (Diam.) x 25 mm (H including bornes). **TxRail**: 72 mm (H) x 78 mm (D) x 19 mm (W)
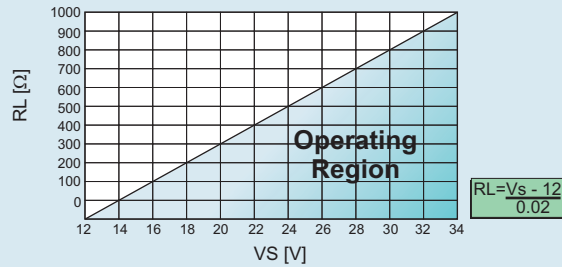
INPUT TYPES AND RANGES

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

INPUT	RANGE	MIN SPAN
Thermocouple K	0 to 1370 °C / 32 to 2500 °F	100 °C
Thermocouple J	0 to 760 °C / 32 to 1400 °F	100 °C
Thermocouple R	0 to 1760 °C / 32 to 3200 °F	400 °C
Thermocouple S	0 to 1760 °C / 32 to 3200 °F	400 °C
Thermocouple T	0 to 400 °C / 32 to 752 °F	100 °C
Thermocouple N	0 to 1300 °C / 32 to 2372 °F	100 °C
Thermocouple E	0 to 720 °C / 32 to 1328 °F	100 °C
Pt100	-200 to 650 °C / -328 to 1202 °F	40 °C
Voltage	0 to 50 mV	5 mV

CONFIGURATION from the PC

TxConfig CONNECTIONS

TxConfig Interface

Connect to
PC serial port

9V Battery

Transmitter

9V Battery

Transmitter

TxConfig Interface

Connect to
PC serial port

Transmitter

Transmitter

LOAD & POWER SUPPLY

RL [Ω]

Operating
Region

VS [V]

$$RL = \frac{Vs - 12}{0.02}$$

ELECTRICAL CONNECTIONS

Pt100

Thermocouple

Output

ZERO
PROG

ZERO
PROG

DIMENSIONS

TxBlock

Minimum center to center screw fix.

33 mm

Ø 7,0 mm

4,8 mm

ZERO
PROG

25 mm

44 mm

TxRail

77 mm

19 mm

78 mm

77 mm

72 mm

69 mm

72 mm

TEMPERATURE TRANSMITTER
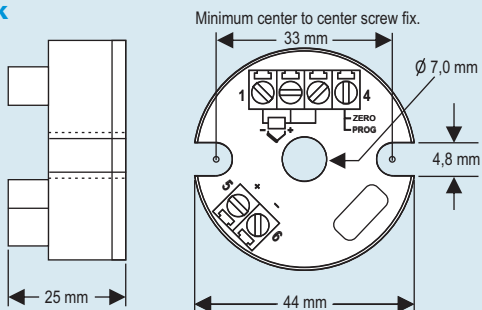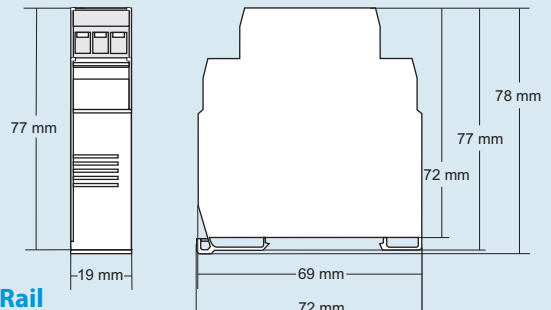
C
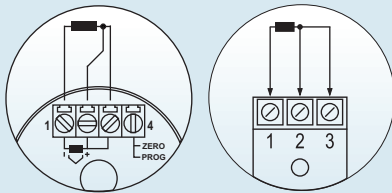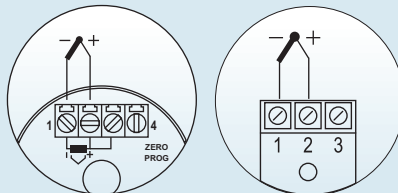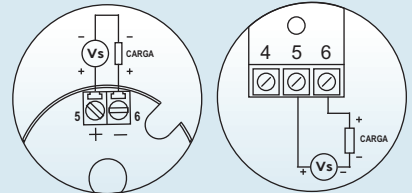
INTRODUCTION

TxIsoPack - USB is a fully isolated 4 to 20 mA two-wire loop powered temperature transmitter for in-head assembly.

Complete sensor type selection and range configuration is achieved by connecting the device directly to a PC USB port thus not requiring any other interface, special converter or any additional driver.

The isolated and linearized current output represents the sensor input signal according to the temperature sensor selected.


direct USB comm

CE

CONFIGURATION

This product can be supplied pre-configured from factory in large quantities or it can be easily configured by the end user by means of a simple USB cable connected to a regular USB port using the intuitive **NOVUS TxConfig** software.

The Configuration kit comprehends a USB cable and the **TxConfig** software which can be acquired from **NOVUS** or from any **NOVUS** authorized distributor. The **TxConfig** configuration software can be updated free of charge from **NOVUS** website.

Sensor type, operating range, sensor offset and upscale or downscale protection are some of the available parameters which can be configured by using the **TxConfig** software.


Powered Current Loop

Mini B Plug   USB CABLE   Plug A

TRANSMITTER

Connect to the USB port
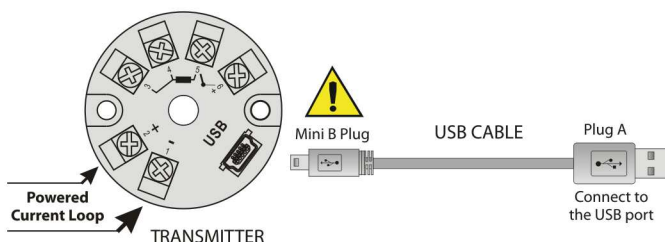
USB Cable Connection

During configuration the transmitter is powered by the USB cable connection thus not requiring any external power supply over the current loop.

SPECIFICATIONS

- INPUT SENSOR: configurable
- Pt100: 2, 3 or 4-wire, 0.170 mA excitation current, Alpha = 0.00385 according to IEC 751(NBR 13773)
- VOLTAGE: 0 to 50 mVdc. Impedance > 1 MΩ
- TOTAL ACCURACY: maximum error of 0.3 % of maximum range for thermocouples; 0.2 % of maximum range for Pt100 and voltage
- RESPONSE TIME: ⩽ 500 ms
- ISOLATION: 1000 Vac for 1 minute between input and output
- OUTPUT: 4-20 mA current or 20-4 mA, two-wire type; linear in respect to the measured temperature
- OUTPUT RESOLUTION: 0.004 mA (12 bits)
- POWER: 12 to 35 Vdc, voltage over the transmitter
- MAXIMUM LOAD in series: $RL= (Vdc – 12) / 0.02\,\Omega$ where Vdc is the power voltage
- OPERATING TEMPERATURE: -20 to 75 °C
- RELATIVE HUMIDITY: 0 to 90 % RH
- ELETROMAGNETIC COMPATIBILITY : EN 50081-2, EN 50082-2
- Internal protection against reversed power voltage polarity
- Internal cold junction compensation for thermocouples
- ABS enclosure, 44 mm diameter and 24 mm maximum height
- Communication cable: mini-B USB cable, 5 pins
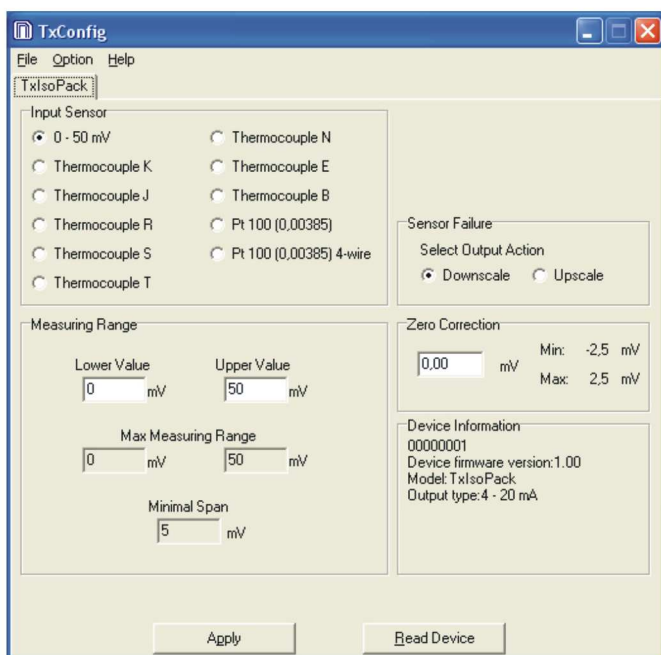
TxConfig Software Main Screen

INPUT TYPES AND MAXIMUM RANGES

SENSOR TYPE	MAXIMUM RANGE	MINIMUM RANGE
T/C type K	-150 to 1370 °C	100 °C
T/C type J	-100 to 760 °C	100 °C
T/C type R	-50 to 1760 °C	400 °C
T/C type S	-50 to 1760 °C	400 °C
T/C type T	-160 to 400 °C	100 °C
T/C type N	-270 to 1300 °C	100 °C
T/C type E	-90 to 720 °C	100 °C
T/C type B	500 to 1820 °C	400 °C
Pt100	-200 to 650 °C	40 °C
Voltage	0 to 50mV	5 mV

**Maximum measuring ranges**

C

TEMPERATURE TRANSMITTERS

INTRODUCTION

TxIsoRail is fully programmable isolated temperature transmitters dedicted 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.

DIN Rail mount

$C \epsilon$
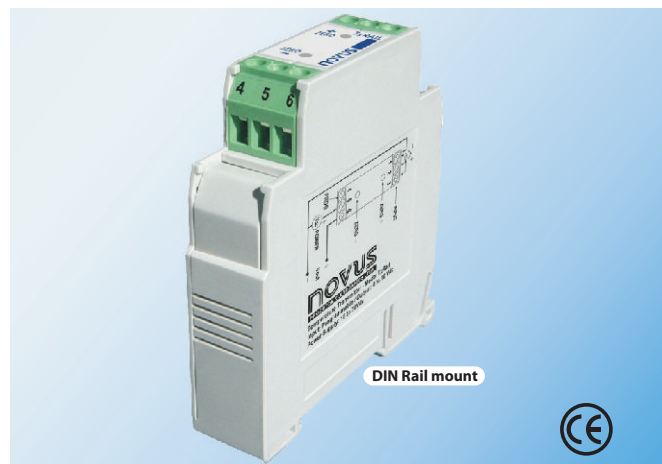
FEATURES

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.

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.
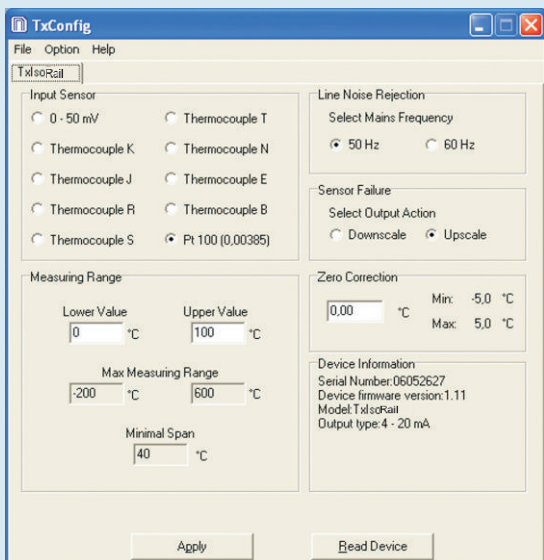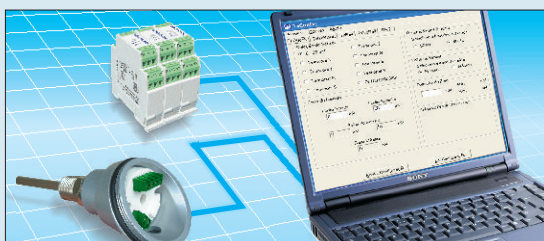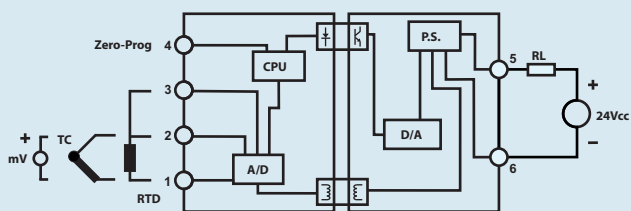
PC CONFIGURATOR

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 10Vdc
- 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 and 0 to 50 mV ±0.15% of full scale Thermocouples ± 0.25% of full scale ± 1 °C
- Temperature effect: 0.003% of maximum SPAN/°C
- Working temperature: -40 to +85 °C (-40 to 185 °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
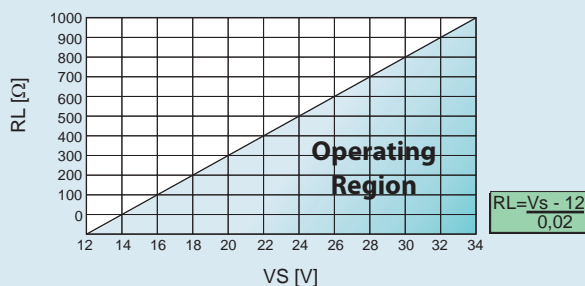
INPUT TYPES AND RANGES

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	1 V
Current	0 to 20 mA	2 mA
Current	4 to 20 mA	2 mA

BLOCK DIAGRAM

LOAD & POWER SUPPLY

$$RL = \frac{Vs - 12}{0.02}$$

TxConfig CONNECTIONS

Transmissor

9V Battery

TxConfig Interface

Conect to
PC serial port

Transmitter

Conect
to USB

ELECTRICAL CONNECTIONS

Pt100

Thermocouple

Output

CARGA

4-20 mA

DIMENSIONS

77 mm

19 mm

78 mm

77 mm

72 mm

69 mm

72 mm

TEMPERATURE TRANSMITTER

C
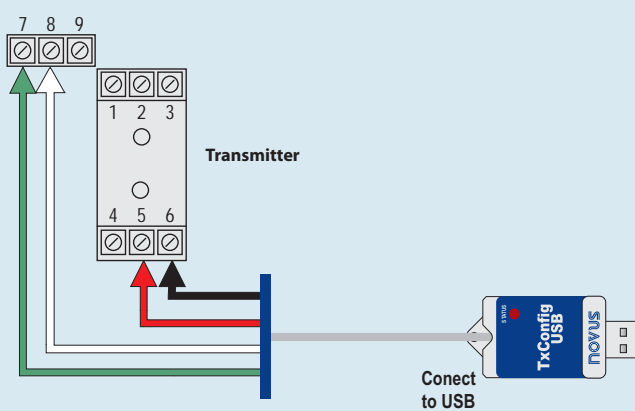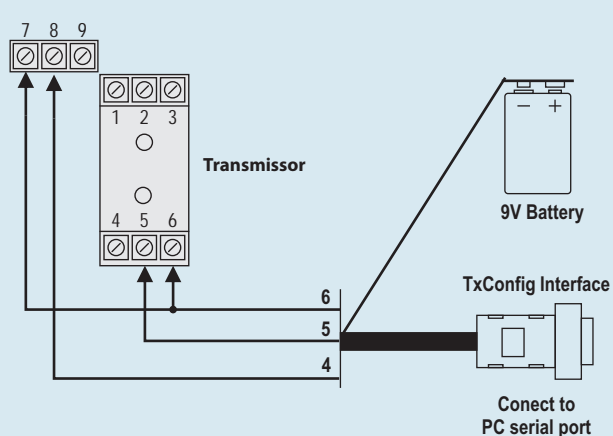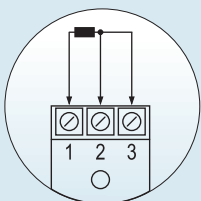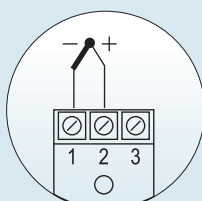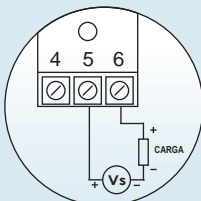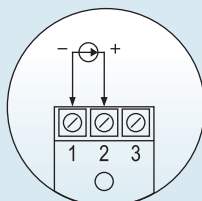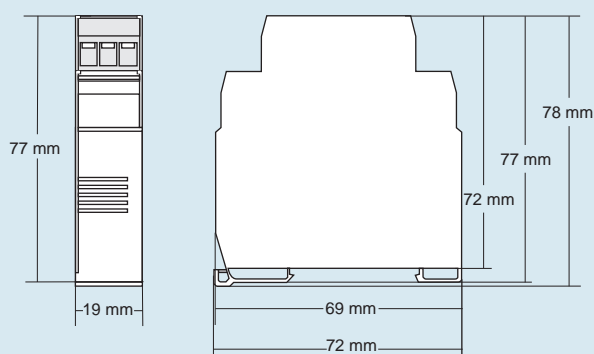
INTRODUCTION

The **TxIsoPack-HART** and **TxIsoRail-HART** are high performance temperature transmitters which convert RTDs, Thermocouples and voltage signals into a 4-20 mA current along with a superimposed HART protocol digital communication.

Complete configuration, calibration and parameters monitoring can be fully achieved through the two-wire current loop by means of a convenient PC software and USB interface called **TxConfig-HART**.

Sensor type input is fully programmable for most relevant RTDs, thermocouples, variable resistors, and voltage in mV.

High Isolation between input and output drastically improves stability and reliability with greater immunity to electromagnetic noises in extremely harsh industrial environments.

Head Mount ▼

DIN Rail Mount ▲

FEATURES

The **TxIsoPack-HART** (for head mounting) and **TxIsoRail-HART** (for DIN rail mounting) are easily programmable devices for the most demanding industrial applications. One single model can be configured to accept RTDs, most thermocouple types, variable resistors and voltage up to 2000 mV.

CONFIGURATION

Configuration is achieved by means of the configurator software with the **TxConfig-HART** interface connected to a USB port.
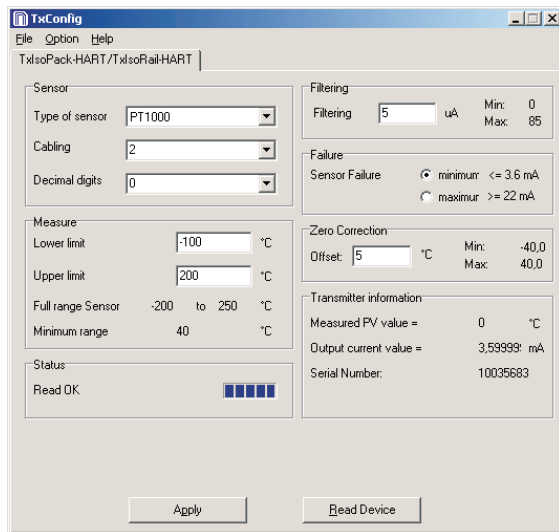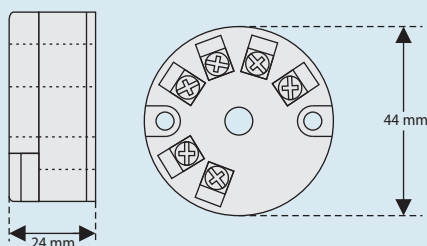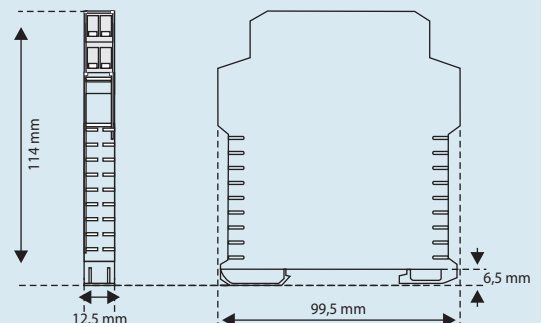
PC CONFIGURATOR

SPECIFICATIONS

- Programmable Input:
  - Thermocouples B, E, J, K, R, S, T, N
  - Pt100, Pt500, Pt1000
  - Cu50, Cu100
  - Ni100, Ni500, Ni1000 (5000 ppm / K)
  - Ni100, Ni500, Ni1000 (6180 ppm / K)
  - 0 to 400 Ω, 0 to 2000 Ω, 0 to 10 KΩ
  - 10 to 75 mV, -100 to 100 mV, -100 to 500 mV, -100 to 2000 mV
- User programmable working range
- 2-wire loop powered 4-20 mA output
- 2, 3 or 4-wire RTD and thermocouples with linear output
- Cold junction compensation for thermocouples
- Configurator software Windows® (optional)
- Configuration on a PC with the **TxConfig-HART** interface
- Selectable digital filter for input signal
- Power: 10 to 35 Vdc
- Accuracy: Pt100 and 0 to 50 mV ±0.2% full scale. Thermocouples ± 0.3% max. of full scale
- Working temperature: -40 to +85 °C (-40 to 185°F)
- Programmable sensor failure detection for upscale or downscale
- Resolution: 0.3 µA
- Maximum load: (V_{Power} - 10.5 V) / 0.022A
- Galvanic isolation: 1.5 KV

TxIsoPack-HART

44 mm

24 mm

TxIsoRail-HART

114 mm

12,5 mm

99,5 mm

6,5 mm

INTRODUCTION

TxMiniBlock is a cost-effective programmable RTD temperature transmitter for head mounting.

With a unique microprocessor based technology it features full PC configuration of range and calibration which is achieved by means of a convenient interface cable connected to a USB port from a PC.

Working range, output calibration and protection can be easily set by using the **TxConfig** Windows configurator software.

This transmitter is specially convenient for being mounted in small inexpensive heads.

*Control... And beyond*

RTD 4-20mA Transmitter

CE

FEATURES

TxMiniBlock for RTD is part of a family of head mount and DIN rail mount 4-20mA temperature transmitters for the most common temperature applications.
One single model can be configured to accept several measuring ranges.

CONFIGURATION

TxMiniBlock configuration is performed by using the **TxConfig** software and **TxConfig USB** interface connected to the PC.
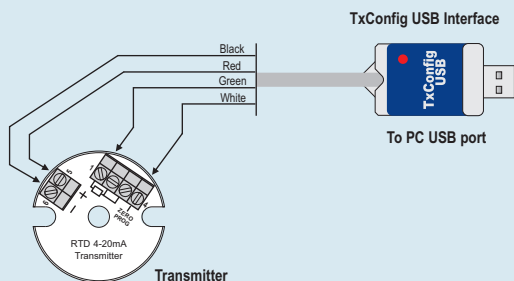

SPECIFICATIONS
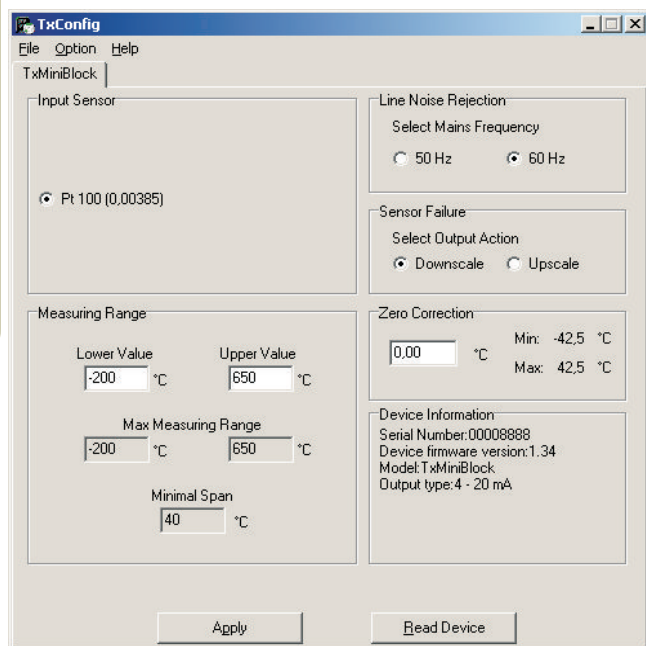
- Input: Pt100 RTD
- Maximun range: -200 to 650 °C / -328 to 1202 °F
- Minimun span: 40 °C
- Two-wire loop powered 4-20 mA output
- Linearized 4 to 20 mA or 20 to 4 mA output
- 2 or 3-wire Pt100 with linearization
- Windows configurator (optional). Configuration with a PC via **TxConfig** interface
- Manual zero (offset) adjustment can be done by means of a wire jumper simulating a keyboard
- Digital filter can be set for best 50 or 60 Hz performance
- Power supply: 12 to 30 Vdc
- Max. Load [ohms]: (Vdc - 12) / 0.02
- Accuracy: ±0.2% of span
- Output resolution: 4 µA
- Temperature effect: 0.003% SPAN/°C
- Operating temperature: -40 to +85 °C (-40 to 185 °F)
- Sensor failure protection: programmable burnout upscale or downscale
- Dimensions: 34 mm (Diam.) x 18 mm (H, including bornes)

ELECTRICAL CONNECTIONS

Pt100   Output
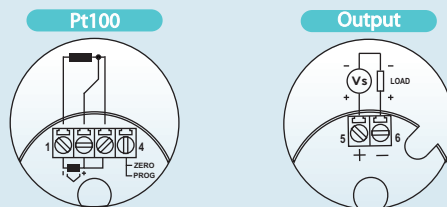
TxConfig CONNECTIONS

DIMENSIONS