



TxIsoLoop-1 / TxIsoLoop-2

LOOP-POWERED ISOLATORS – USER GUIDE V1.0x



1. INTRODUCTION

TxIsoLoop-1 and **TxIsoLoop-2** galvanic isolators are devices used for electrical isolation of 0(4)-20 mA current signals. Its purpose is to avoid measurement errors typically found in installations that have problems with electrical potential difference and ground loops.

These isolators do NOT require an electrical power supply. The energy obtained by passing the electric current through the insulator input actively generates the output current.

2. FEATURES

- Galvanic isolation between input and output.
- Models with one or two input/output channels.
- The device does not require a power supply.
- High accuracy.

3. SPECIFICATIONS

- Input signal: 0(4) to 20 mA (Check minimum current for proper operation)
- Voltage drop – Input/output without protection (Vdrop): < 3 Vdc
- Voltage drop – Input/output with protection (Vdrop): < 5 Vdc
- Output signal: 0(4) to 20 mA
- Max. load (RL): 1450 R
- Total accuracy: 0.2 % @ 0 to 60 °C / RL = 250 R
0,3 % @ -20 to 75 °C / RL = 250 R
- Minimum operating current: > 0.1 mA
- Maximum input current: < 40 mA
- Response time: 2 ms @ RL= 250 R
- Current limit: 31 mA
- Electrical isolation: 3000 Vac / 10 seconds
240 Vac continuous
- EMC: EN 61326-1 (without performance degradation)
- Work environment: Temperature: -20 to 75 °C
Relative humidity: 20 to 90 %
- Housing: ABS (60 %) + PC (40 %)
- Protection index: IP40
- Wire gauge for connections: 0.14 to 1.5 mm²
- Recommended torque: 0.8 Nm
- Polyamide terminal enclosure.

4. ELECTRICAL INSTALLATION

To ensure perfect operation of the **TxIsoLoop** isolator, the circuit where the isolator input is connected must provide a minimum electrical voltage (V1).

You can supply the electrical voltage in two ways:

1. The device that generates the current signal is of the active type (source), where it provides the necessary electrical voltage itself.

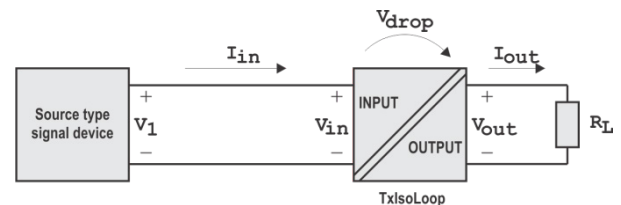


Figure 1 – TxIsoLoop connections with source type device

With type source devices (transmitters, controllers, etc.), this voltage is provided by the device itself.

The minimum voltage value to be supplied by the generator can be calculated using the formula below:

$$V_1 = V_{in} \quad \text{Where: } V_{in} = V_{drop} + (I_{out(max)} \times R_L)$$

$$I_{in} = I_{out}$$

2. With sink type devices (2-wire transmitters), the energy is provided by an external power supply in series in the loop, as shown in **Figure 2**.

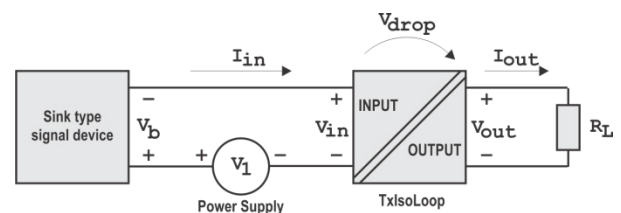


Figure 2 – Connections on the TxIsoLoop with sink type devices

In this option, the inserted source must provide enough voltage to meet the needs of the current generating device (generator, transmitter, controller, etc.) and the isolator.

The minimum voltage value to be supplied by the power supply can be calculated using the formula below:

$$V_1 = V_b + V_{in} \quad \text{Where: } V_1 = \text{Voltage from the source inserted into the circuit}$$

$$V_b = \text{Minimum voltage of the generator}$$

$$V_{in} = V_{drop} + (I_{out(max)} \times R_L)$$

$$I_{in} = I_{out}$$

4.1 ELECTRICAL CONNECTIONS

To configure TxIsoLoop-1, use the following wiring diagram:

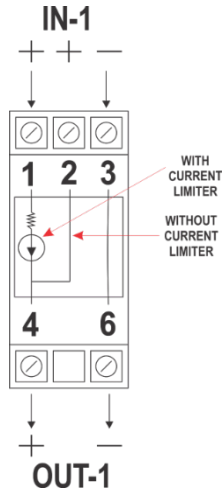


Figure 3 – TxIsoLoop-1 Connections

To configure TxIsoLoop-2, use the following wiring diagram:

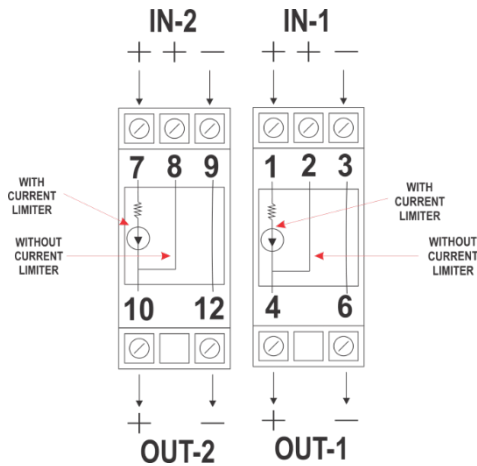


Figure 4 – TxIsoLoop-2 Connections

4.2 TXISOLOOP-2 – SIGNAL SPLITTER FUNCTION

If needed, TxIsoLoop-2 can be used as a 4-20 mA signal splitter, as shown in the figures below:

ACTIVE CURRENT SIGNAL

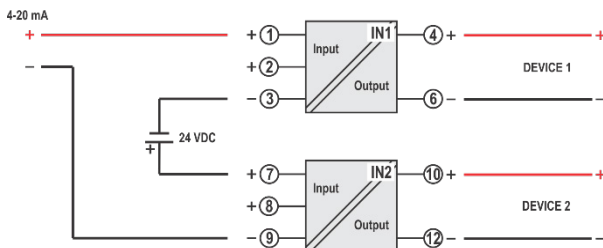


Figure 5 – Active current signal

PASSIVE CURRENT SIGNAL

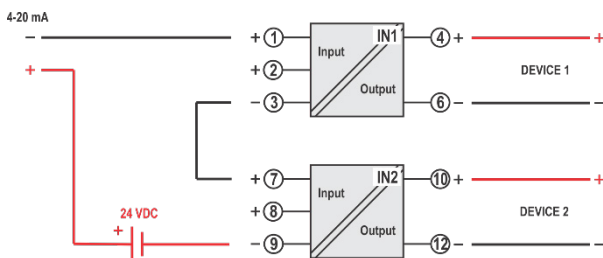


Figure 6 – Passive current signal

4.3 INSTALLATION RECOMMENDATIONS

- Input signal conductors must run through the plant separately from the supply and output conductors. If possible, in grounded conduits.
- The power supply for the electronic instruments must come from a proper instrumentation network.
- In control applications, it is essential to consider what can happen when any part of the system fails.
- It is recommended to use RC FILTERS (noise suppressors) at contactor coils, solenoids, etc.

5. MECHANICAL INSTALLATION

The transmitter is intended for a 35 mm DIN rail mounting.

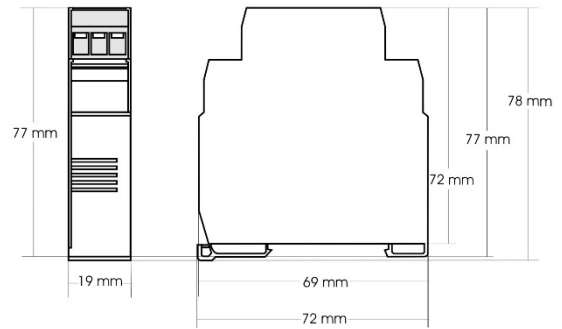


Figure 7 – Isolator dimensions

6. WARRANTY

Warranty conditions are available on our website www.novusautomation.com/warranty.