



TxIsoLoop-1 / TxIsoLoop-2

LOOP-POWERED ISOLATORS – OPERATING MANUAL V1.0x G



INTRODUCTION

TxIsoLoop-1 and **TxIsoLoop-2** galvanic isolators are devices used in the electrical isolation of 0(4)-20 mA current signals in order to avoid measurement errors typically found in installations with problems of electrical potential difference and earth 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.

CHARACTERISTICS

- Input/output galvanic isolation.
- Models for 1 or 2 channels.
- Don't require power supply.
- High accuracy.

SPECIFICATIONS

- Input signal (INPUT): 0 to 20 mA; 4 to 20 mA (Check minimum current for proper operation)
- Voltage drop input/output without protection (V_{drop}): < 3 Vdc
- Voltage drop input/output with protection (V_{drop}): < 5 Vdc
- Output signal (OUTPUT): 0(4) to 20 mA
- Max. load (R_L): 1450 R
- Accuracy: 0.2 % FS @ 0 to 60 °C / $R_L = 250 R$
0.3 % FS @ -20 to 75 °C / $R_L = 250 R$
- Minimum operating current: > 0,1 mA
- Maximum input current: < 40 mA
- Response time: 2 ms @ $R_L = 250 R$
- Current limit: 31 mA
- Electrical isolation: 3000 Vac / 10 s
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: IP40
- Wire gauge for connections: 0.14 to 1.5 mm²
- Recommended torque: 0.8 Nm
- Terminal blocks injected in polyamide.

ELECTRICAL INSTALLATION

For a proper operation of the **TxIsoLoop** insulator, the circuit where the isolator input is connected must provide a minimum electrical voltage (V_1).

There are two possibilities to supply the necessary electrical voltage:

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

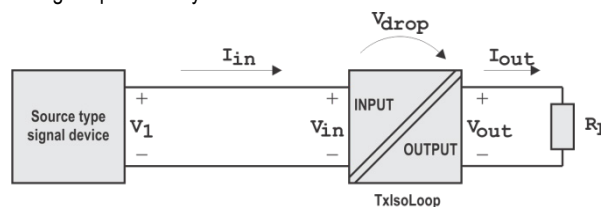


Fig. 1 – TxIsoLoop connections with source type device

In this possibility, the electrical voltage required to operate the insulator will be supplied by the generator of the current signal (generator, transmitter, controller, etc.).

The minimum operating voltage can be calculated by the equation 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 Fig. 2.

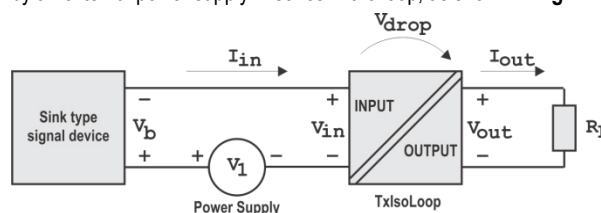


Fig. 2 – TxIsoLoop connections with sink type devices

In this arrangement, the inserted source should provide sufficient voltage to meet the needs of the current generating device (generator, transmitter, controller, etc.) and also the isolator.

The minimum voltage required to allow proper operation can be obtained from the equation below:

$$V_1 = V_b + V_{in} \quad \text{Where: } V_1 = \text{Power supply voltage}$$

$$V_b = \text{Voltage required by the 2-wire transmitter}$$

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

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

ELECTRICAL WIRING

The figures below, as shown on the label located in the equipment housing, show the electrical connections:

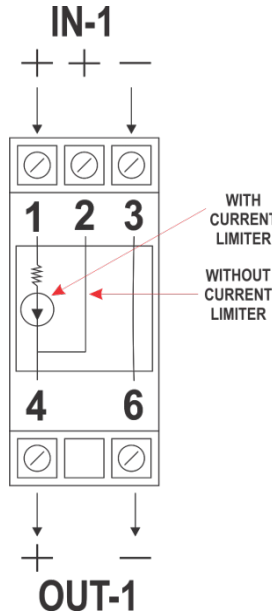


Fig. 3 – TxIsoLoop-1 connections

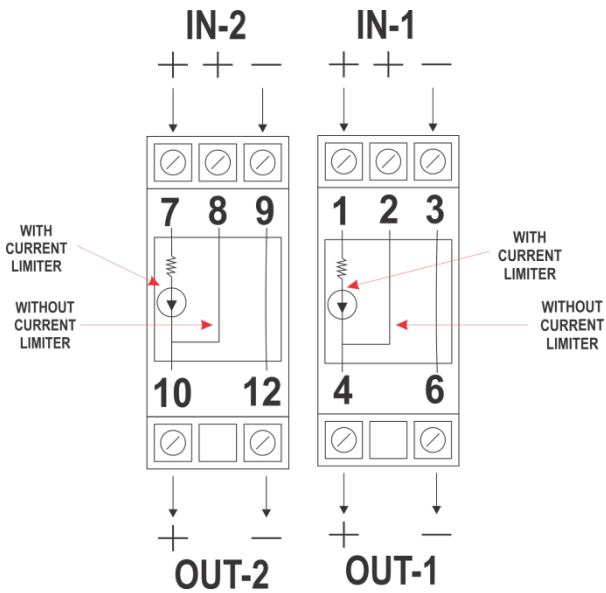


Fig. 4 – TxIsoLoop-2 connections

MECHANICAL INSTALLATION

The transmitter is intended for DIN rail mounting:

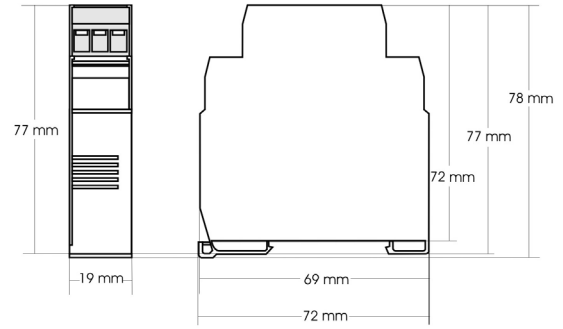


Fig. 5 – Isolator dimensions

WARRANTY

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

RECOMMENDATIONS FOR INSTALLATION

- Signal wires should be installed in grounded conduits and away from power or contactor wires.
- The instrument should have its own power supply wires, which should not be shared with electrical motors, coils, contactors, etc.
- Installing RC filters is strongly recommended at contactor coils or any other inductors.
- System failure should always be taken into account when designing a control panel to avoid irreversible damage to equipment or people.