



TXMINI-M12-MP BUILT-IN TEMPERATURE TRANSMITTER

OPERATING MANUAL – V1.0x

INTRODUCTION

The **TxMini-M12 Transmitter** is a 4-20 mA 2-wires temperature transmitter for head mount, powered by the current loop.

Its configuration is accomplished by connecting the **TxConfig-M12** interface configuration. The configuration does not require that the transmitter be powered.

The output current is linearized according to the selected input sensor and adjusted to the configured range.

SPECIFICATIONS

Sensor Input:

Pt100: Tipo 3-wire, Excitation 0.8 mA, $\alpha = 0.00385$, according IEC 60751 (ITS-90).

Switch-on delay: < 2.5 s. The accuracy is only guaranteed after 15 minutes.

Terms of reference: ambient: 25 °C (77 °F); voltage: 24 Vdc, load: 250 Ω ; settling time: 15 minutes.

Temperature Effect: < $\pm 0.2\%$ / 25 °C

Response time: typical 1.6 s

Maximum voltage allowed at input terminals no sensor: 3 V.

RTD current: 800 μ A.

RTD cable resistance effect: 0.005 °C / Ω .

Maximum allowable cable resistance for RTD: 25 Ω .

Power supply influence: 0.006 % / V typical (percentage of the full measure range).

Output: 4-20 mA or 20-4 mA current, 2-wire; linear in relation to the temperature measurement by the selected sensor.

Output Resolution: 2 μ A.

Power supply: 8 to 35 Vdc, across the transmitter.

Maximum load (RL): $RL (max.) = (Vdc - 8) / 0.02 [\Omega]$
Where: Vdc= Power supply voltage (8-35 Vdc)

Operating Temperature: -40 to 85 °C (-40 to 185 °F)

Humidity: 0 to 90 % RH

No electrical isolation between input and output.

Internal protection against polarity inversion.

Connection Wire Cross Section: 0.14 a 1.5 mm²

Screw Tightening: 0.8 Nm.

Sensor Type	Maximum Measurement Range	Minimum Measurement Range
Pt100	-200 to 650 °C	40 °C

Table 1 – Measurement Range

CONFIGURATION

The factory setting of the transmitter is for Pt100 input with range 0 to 100 °C (32 to 212 °F) and output for maximum current in case of error. When the transmitter is used with this configuration, no further intervention is required. Its installation can be performed immediately. When it is necessary to change the configuration, it must be performed through the **TxConfig II** software.

The **TxConfig-M12** interface and **TxConfig II** software composes the Transmitter Configuration Kit, which can be purchased from the manufacturer or its authorized representatives.

The configuration software can be downloaded from the manufacturer's website. To install it, you must run the file **TxConfigIISetup.exe** and follow the installer instructions.



The communication interface **TxConfig-M12** is not electrically isolated from the transmitter's input.

SOFTWARE CONFIGURATION

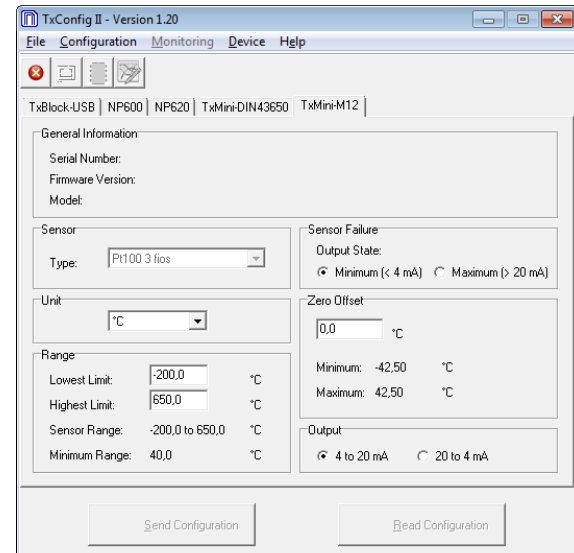


Fig. 1 – TxConfig II software main screen

The fields in the screen mean:

- General Information:** This field shows information that identifying the transmitter. This information should be sent to the manufacturer in an eventual request for technical assistance.
- Sensor:** Select the type of sensor to be used.
- Measuring Range:** Sets de measurement range of the transmitter.

Lower Range Limit: equivalent temperature for a current of 4 mA.

Upper Range Limit: equivalent temperature for a current of 20 mA.

Sensor Range

The values chosen cannot exceed the **range of sensor** shown in this field.

Minimum Range

Do not set a lower band (span) that the **Minimum Range** indicated below in this same field.

4. **Sensor Failure:** It establishes the output behavior, when the transmitter indicates a failure:
Minimum: output current goes to < 3.8 mA (down-scale), typically used for refrigeration.
Maximum: output current goes to > 20.5 mA (up-scale), typically used for heating.
5. **Zero Correction:** It corrects small deviations presented in the transmitter output, for example, when the sensor is replaced.
6. **Send Configuration:** It applies the new setup. Once sent, the setup will be immediately adopted by the transmitter.
7. **Read Configuration:** Reads the current setup in the transmitter connected. The screen now presents the current setup that may be changed by the user.

FACTORY SETTING:

- Sensor: Pt100 3-wire, range 0 to 100 °C;
- Sensor failure: upscale (maximum);
- 0 °C zero correction.
- Unit: °C;
- Output: 4 to 20 mA.

MECHANICAL INSTALLATION

TxMini-M12 Transmitter was designed to be installed in tubes and other small places. Vibrations, moisture and extreme temperatures, electro-magnetic interference, high voltage and other interferences can permanently damage the unit and could cause error in the measured value.

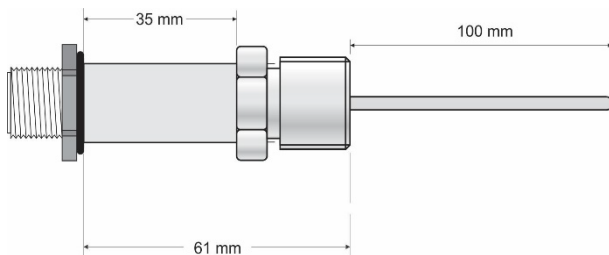


Fig. 2 – Dimensions of the TxMini-M12-MP transmitter

ELECTRICAL INSTALLATION

- Polyamide enclosure.
- Section of the cable used: 0.14 to 1.5 mm²

RECOMMENDATIONS FOR INSTALLATION

- Sensor signals conductors must go through the plant system separate from power leads (loop), if possible in grounded conduits.
- The instruments must be powered from the instrumentation power supply circuit.
- In control and monitoring applications is essential to consider what can happen when any part of the system fails.
- It is recommended the use of suppressors in contact coils, solenoids and any inductive load.

POWER AND COMMUNICATION CONNECTION

Terminal 2 is used to communicate with the transmitter (**TxConfig-M12** interface must be used).

Terminal 4 can be connected to cable shield, if needed.

2	1	1	LOOP +
3	4	2	COMM
		3	LOOP -
		4	SHIELD

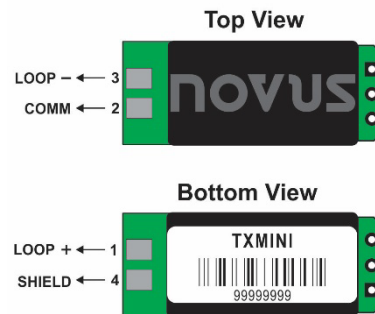


Fig. 3 – Output 4-20 mA (without M12)

Note: this model has no configuration interface and can **only** be configured during production.

OPERATION

The sensor offset can be adjusted through the **TxConfig II** software. The USB cable may be connected to the transmitter without causing any measurement errors.

Note: When Pt100 simulators are used with the transmitter, make sure the excitation current of the simulator is compatible with the Pt100 excitation current of the transmitter, which is 0.8 mA.

WARRANTY

Warranty conditions are on our web site
www.novusautomation.com/warranty.