TXLTC
2 WIRE - LOOP POWERED TRANSMITTER FOR THERMOCOUPLE.

GENERAL DESCRIPTION
The TXLTC instrument converts and transmits the input read into a normalized signal current for 4..20 mA loop. The signal input may come from thermocouple J, K, R, S, T, B, E, N (EN 60584) sensors.

GENERAL FEATURES
- High precision.
- 16 bit resolution.
- Compact size and fast connection with spring terminals.
- Configuration by PC with dedicated software.

THECNICAL FEATURES
Output/Power supply

Operating voltage :	7..30 V_{DC}
Current output :	4..20 mA
Load Resistance :	1 KΩ @ 26 V_{DC}, 21 mA (see on pag. 2: Load resistance vs minimum functioning voltage diagram)
Resolution :	2 µA (> 13 bit)
Output in case of over-range	102,5% of full scale (see the table on pag. 5)
Output in case of fault :	105% of full scale (see the table on pag. 5)
Current output protection :	~ 30 mA

TC input

Input impedance:	10 MΩ
Cold junction compensation:	-40..100 ± 1,5 °C; Settable.
Sensor fault detection :	YES, Settable

Other features

Network freq. Rejection :	50 Hz and 60 Hz (Minimum 60 dB)
Error caused by EMI (*) :	< 0,5 %
Sampling Time :	300 ms
Response time (10..90 %) :	<620 ms
Degree protection :	IP 20
Sensor fault detection :	YES
Environmental conditions :	Temperature -40..+85 °C Humidity 30 - 90 % at 40°C (non-condensing) Altitude: up to 2000 m.a.s.l
Storage Temperature:	-40..+105 °C
Connections :	Spring terminals
Conductor Section :	0,2..2,5 mm^2
Wire stripping :	8 mm
Box:	Nylon / glass, (black colour)
Dimensions :	20,0 mm x ϕ 40,0 mm

Standards : CE	EN61000-6-4/2002-10 (elettromagnetic emission, industrial environment) EN61000-6-2/2006-10 (eletromagnetic immunity, industrial environment)

Diagram: Load resistance vs minimum functioning voltage

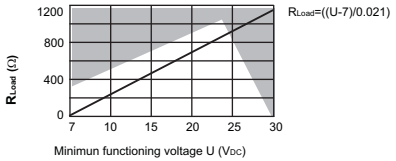


Table range of input

	Input	Range	Calibration error	EMI(*)	Span	Resolution	Standard
Thermocouple	J	-210..1200 °C	0,1 %	< 0,5 %	50 °C	5 µV	EN 60584
	K	-200..1372 °C	0,1 %	< 0,5 %	50 °C	5 µV	EN 60584
	R	-50..1768 °C	0,1 %	< 0,5 %	100 °C	5 µV	EN 60584
	S	-50..1768 °C	0,1 %	< 0,5 %	100 °C	5 µV	EN 60584
	T	-200..400 °C	0,1 %	< 0,5 %	50 °C	5 µV	EN 60584
	B(**)	0..1820 °C	0,1 %	< 0,5 %	100 °C	5 µV	EN 60584
	E	-200..1000 °C	0,1 %	< 0,5 %	50 °C	5 µV	EN 60584
	N	-200..1300 °C	0,1 %	< 0,5 %	50 °C	5 µV	EN 60584

Table of accurcy measure : The greater of the sun of (A+B) and C

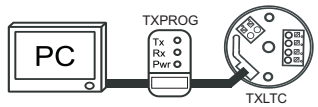
Type input	A : % of measure	B : % of Span	C : Minimum
Thermocouple J,K,T,N,E	0.05 %	0.05 %	0.5 °C
Thermocouple B, R, S	0.05 %	0.05 %	1 °C
Temperature Coefficient :	0.005 % / °C		

* EMI : Electtromagnetic interferences.
** TC B : between 0..250 °C the measure is null.

Factory settings
The instrument is set by the factory with the following configuration (except for other indications on the box):

TC wiring	→ @ 3+, 4-
Cold junction compensation	→ YES
Input filter	→ Disable
Reversed output	→ NO
TC type	→ K
Measurement Range Start	→ 0 °C
Measurement Full- Scale	→ 1000 °C
Output signal in case of fault	→ Towards the top of the output range.
Over-Range	→ YES: at 2,5 % over-range values is accetable; at 5% over-range value is considered a fault.

Custumized Setting by PC and accessories
The configuration by PC use (see the drawing below) is possible with the following accessories:



- ***TXPROG***: USB to RS232/TTL
- Connection cable between TXPROG and TXLTC
- Dedicated programming software.

The module may be programmed even if it is not supplied by the 4..20 mA loop, since the power supply is provided through the programmer by programming connector.
Once the user has at his disposal the above listed accessories, the following parameters may be set :
- Start and Full scale values of measure.
- Measurement filter: Disable.
- Output: Normal (4..20 mA) or reversed (20..4 mA).
- Type input.
- Output signal in case of fault: towards the bottom of the output range or towards the top of the output range.
- Over-Range (*): NO (the fault alone causes a 2,5% over-range value) or YES (a 2,5% over-range value is accettable a 5 % over-range value is considered a fault).
- Cold junction compensation : YES/NO

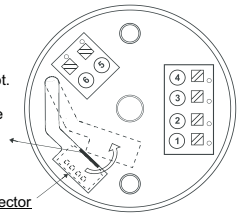
It is besides possible the calibration of the output scale. .

Output signal Limit	Over-range / Fault ± 2,5 %	Fault ± 5 %
20 mA	20,4 mA	21 mA
4 mA	3,6 mA	< 3,4 mA

(**) See the table above for the corresponding values

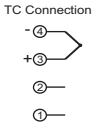
Frontal side: Terminals position and enumeration

1. Raising the plastic protection using the appropriate slot.
2. Move the plastic protective as in the drawing.

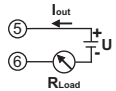


Electrical connection
Input
The module allows you to read the thermocouple : J, K, R, S, T, B, E, N.

The use of shield cables is recommended for the electronic connections.

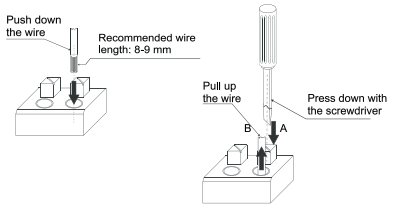


Output
Current Loop connection (regolated current).
The use of shield cables is recommended for the electronic connections.

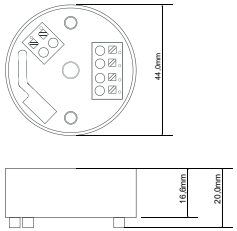


Note: in order to reduce the instrument's dissipation, we recommend guaranteeing a load of > 250 Ω to the current output.

Pattern of connecting terminal with push-wire connection



Size and dimensions



Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)
This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, waste disposal service or thè retail store where you purchased this product.