KIMO INSTRUMENTS

Technical Data Sheet

Pressure / Temperature / Humidity / Air Velocity / Airflow / Sound level

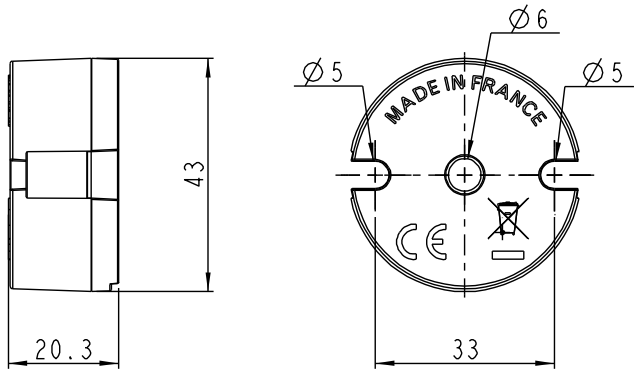
CE

CO-T
Thermocouple temperature transmitter

DESCRIPTION

CO-T transmitter is a **thermocouple** temperature transmitter into a **4-20 mA (or 20-4 mA)** electrical signal at adjustable microprocessor for K, J, T and N thermocouples temperature.
It allows to convert variations of temperature reported by a thermocouple sensor for a measuring range going from **-200 to +1300 °C** in electric linear signal at 2 wires in the **4-20 mA** range**.**
The configuration of the transmitter is simply made through a configuration button. It is also possible to use the **LCC101** software configuration to configure the transmitter. A led warns when an alarm situation appears (out of range or short-circuit).
The transmitter is protected against inversions of polarity and has been designed to be placed in **DIN B** head probe.

DIMENSIONS (mm)



OUTPUT CURRENT WITH RELATION TO TEMPERATURE

(on the range from 0 to +100 °C)

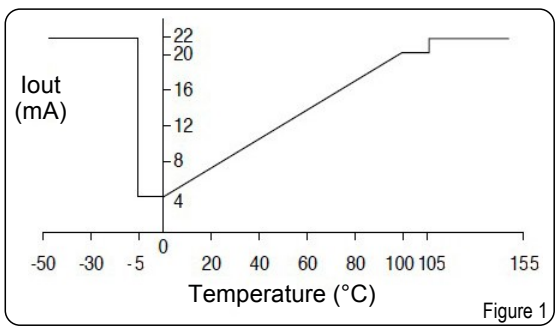


Figure 1

TECHNICAL FEATURES OF THE TRANSMITTER

(at 20 °C and for a power supply voltage of 24 Vdc)

• Intput

Sensor	K, J, T and N thermocouples
Linearisation	EN 60584-1-2
Measuring range	From -200 to +1300 °C
Default range	From 0 to +1000 °C
Minimum measuring range	25 °C
Speed conversion	2 measurements per second
Accuracy	±0,5 °C or 0,04 % FS + 0,04 % of reading
Sensitivity to variations of ambient temperature	0,025 °C / °C
Sensitivity to variations of voltage supply	2 µA / V
Storage temperature	From -40 to +80 °C
Operating temperature	From -30 to +70 °C

• Output

Output	**4-20 mA (or 20-4 mA), 22 mA in case** of programming error or temperature out of range* (fig1)
Resolution	2 µA
Power supply voltage	9-30 VDC (protection against inversions of polarity)
Load resistance	$R_{Lmax} = \frac{Vdc-3}{0,022}$ $=>R_{Lmax}$ = 680 Ω @ Vdc = 24 Vdc
Red led	Lights up during the programming phase and when the measured temperature is outside the set range or in case of short-circuit

* if the measured temperature T is outside the set range T1...T2 (T1<T2), the transmitter maintains 4 mA for T<T1 for a dead band of 5 °C and 20 mA for T>T2 for a dead band of 5 °C before going into error status at 22 mA.

CONNECTION

Figure 2 shows the wiring diagram of the transmitter in the current loop. A device can be introduced in the current loop such as a display, a controller or a data logger.

Connection

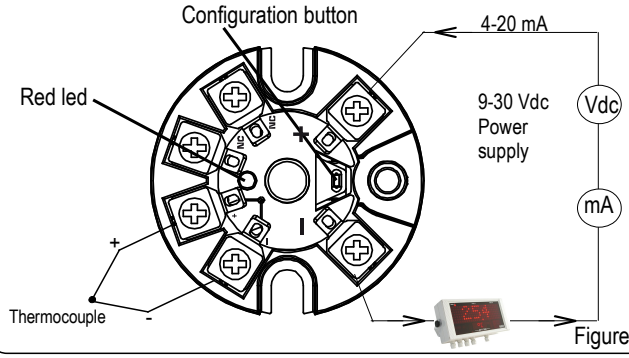


Figure 2

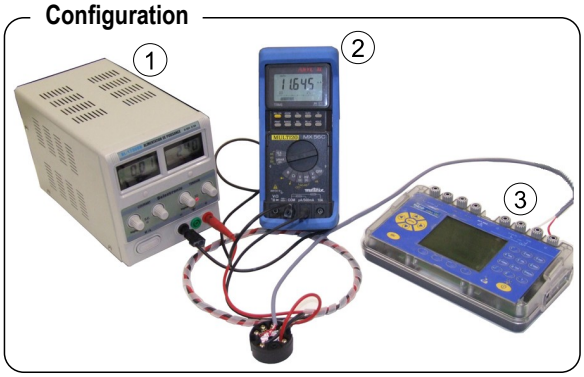
CONFIGURATION

• Select the thermocouple type: this action is only possible with **LCC101** software.
→ The default configuration is the following: thermocouple type K with a temperature range from 0 to 1000 °C.

It is possible to set a different measuring range using the following accessories:

① Continuous power source 9-30 Vdc
② Precision ammeter with minimum range from 0 to 20 mA.
③ Voltage generator from 0 to 50 mV

Configuration



Procedure:

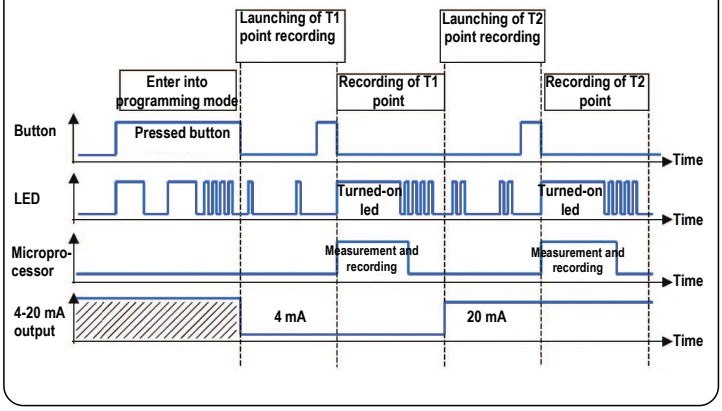
• Connect the transmitter to configure to the power supply, to the ammeter and to the voltage generator then make a long press on the configuration button. The led blinks twice during the push. When the blink becomes faster, release the button: programming mode is active.

a – Configuration of T1 point
• Led blinks one time at regular intervals: set the equivalent voltage to the required temperature for 4 mA output.
• Validate the instruction with a brief press on the programming button. Led stays on then blinks 4 times quickly: temperature for 4 mA output is recorded.

b – Configuration T2 point
• Led blinks two times faster at regular interval: set the equivalent voltage to the required temperature for 20 mA output.
• Validate the instruction with a brief press on the programming button. Led stays on then blinks 4 times quickly: temperature for 20 mA output is recorded.

In case of error whilst programming, if temperature is out of range or in alarm situation, led blinks 6 times quickly.

Programming scheme



TEMPERATURE / VOLTAGE CORRESPONDENCES FOR K AND J THERMOCOUPLES AS PER NF EN 60584-1 STANDARD

°C	mV
-200	-5.891
-150	-4.913
-100	-3.554
-50	-1.889
0	0.000
50	2.023
100	4.096
150	6.138

°C	mV
200	8.138
250	10.153
300	12.209
350	14.293
400	16.397
450	18.516
500	20.644
550	22.776

°C	mV
600	24.905
650	27.025
700	29.129
750	31.213
800	33.275
850	35.313
900	37.326
950	39.314

°C	mV	
1000	41.276	
1050	43.211	
1100	45.119	
1150	46.995	
1200	48.838	
1250	50.644	} Only for K thermocouple
1300	52.410	

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