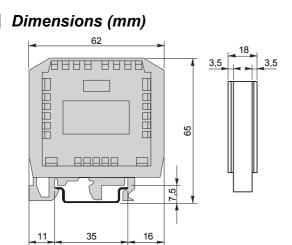CE

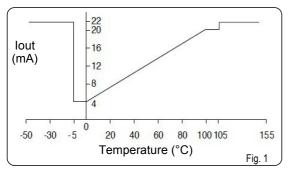## *DIN rail Pt100 temperature transmitter*
CORD-P

■ *Description*

CORD-P transmitter is a **Pt100** temperature transmitter into a **4-20 mA (or 20-4 mA)** electrical signal at adjustable microprocessor.

It allows to convert variations of temperature reported by a standard Pt100 sensor (**100 Ω at 0 °C**) for a measuring range going from **-200 to +850 °C** into an electrical linear signal at 2 wires in the **4-20 mA** range.

Configuration of the transmitter is simply made through a configuration button. It is also possible to use the **LCC101** configuration software to configure the transmitter. A led warms when an alarm situation appears (out of range or short-circuit).
The transmitter is protected against inversions of polarity.

■ *Dimensions (mm)*

■ *Output current with relation to temperature (on range from 0 to +100 °C)*

Fig. 1

■ *Technical features of the transmitter*
(at 20 °C and for a power supply voltage of 24 Vdc)

• **Input**

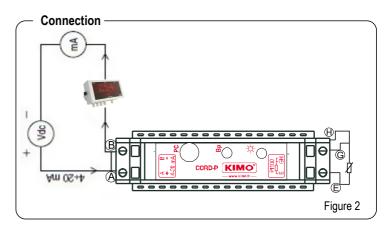|	
Sensor	Pt100 (100Ω at 0 °C)
Mounting of the element	2 or 3 wires
Linearization	EN60751, IEC 751
Current in the sensor	<1 mA
Measuring range	from -200 to +850 °C
Range by default	from 0 to +100 °C
Minimum measuring range	25 °C
Influence of connection wires	negligible with coupled wires
Speed conversion	2 measurements per second
Accuracy	from -100 to +500 °C : ±0.1 °C ±0.1% of reading. Beyond : ±0.2 °C ±0.2% of reading
Sensitivity to variations of ambient temperature	0.01 °C/°C
Sensitivity to variations of voltage supply	0.005% FC / Vdc (FC : full scale)
Storage temperature	from -40 to +80 °C
Working temperature	from 0 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	7-30 VDC (protection against inversions of polarity)
Load resistance	$R_{Lmax} = \dfrac{Vdc - 7}{0,022}$ $\Rightarrow R_{Lmax} = 770 \ \Omega$ @ Vdc = 24 Vdc
Red led	lights up during the programming phase and when the measured temperature is outside the set range.

* If the measured temperature T is outside the set range T1...T2 (T1<T2), the transmitter maintains 4 mA for T<T1 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. To get a better accuracy, use 3 wires with the same section to plug to the Pt100, this allows to guarantee the same impedance to each branch. A device can be introduced in the current loop such as a display, a controller or a data logger.

Connection

Figure 2

■ *Configuration*

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

① Continuous power source 7-30 Vdc
② Precision ammeter with minimum range of 0 to 25 mA
③ Pt100 calibrator

Procedure :

• Connect the converter to set to the power supply, to the ammeter and to the Pt100 calibrator (see figure 2). then make a long press on the configuration button. The led blinks twice during the push. When the blinks become faster, release the button : programming mode is active.
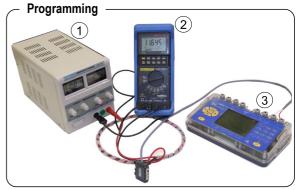
a – Configuration of T1 point
• Led blinks one time at regular intevals : set the required temperature for the 4 mA output.
• Validate instructions with a brief press on the programming key. Led stays on then blinks 4 times quickly : temperature for 4 mA output is recorded.

b – Configuration of T2 point
• Led blinks 2 times faster at regular intervals : set the required temperature for 20 mA output.
• Validate instructions with a brief press on the programming key. Led stays on then blinks 4 times quickly : temperature for 20 mA output is recorded.
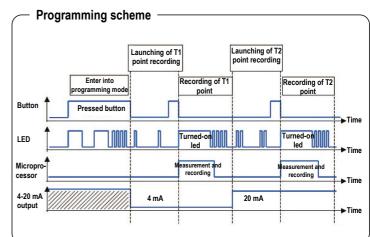
In case of error whilst programming, if temperature is out of range or in alarm situation, led blinks 6 times quickly.

Programming

NOTE Programming of the temperature range can be made using resistances of precision with a fixed value which simulates values of Pt100 sensor (see table below of Pt100 values).

Programming scheme

■ *Pt100 values in ohms compared to measured temperature*

Temp °C	Valeur Pt100 (Ω)	Temp °C	Valeur Pt100 (Ω)	Temp °C	Valeur Pt100 (Ω)
-200	18.52	200	175.86	600	313.71
-150	39.72	250	194.10	650	329.64
-100	60.26	300	212.05	700	345.28
-50	80.31	350	229.72	750	360.64
0	100.00	400	247.09	800	375.70
50	119.40	450	264.18	850	390.48
100	138.51	500	280.98		
150	175.86	550	297.49		