

# **EQUIPMENT CATALOG**

**INSULATED TRANSDUCER - TI**





## Insulated Transducer - TI



The Insulated Transducer (TI) is used in monitoring and protection systems for power transformers and reactors. Its function is to convert analog signals from temperature sensors (RTD), position of taps (potentiometric transmitters of on-lap tap changers), or current loop (signals in mA) into output values proportional to the input values. In the case of a RTD input, the TI performs the linearization of the sensor curve to obtain increased accuracy.

The TI was designed with a universal power input (85 to 265 Vdc/Vac, 50/60 Hz), in order to comply with all types of power supply commonly used in auxiliary systems of substations. It is provided with galvanic insulation between the input, output, and power supply circuits.

In addition to the current loop output, the TI has also a normally open (N.O). contact to signal any input sensor loss of signal (for temperature and tap position versions only). Two LED's provide local visualization. A green light to signal transducer on, and a red light to signal an alarm contact actuation due to a sensor loss.



## Technical Data

<b>Power supply</b>	85 to 265 Vdc/Vac – 50/60 Hz
<b>Consumption</b>	≤ 3 W
<b>Operation temperature</b>	- 10 to + 85 °C
<b>Inputs</b>	Pt 100Ω to 0 °C , Cu 10Ω to 25 °C, Potentiometric transmitter or mAdc current
<b>Outputs</b>	1 contact NO: Loss of sensor
<b>Maximum switching power</b>	60 W / 62,5 VA
<b>Maximum switching voltage</b>	220Vdc/250Vac
<b>Maximum conduction current</b>	2 A
<b>Current loop</b>	
<b>Output current (ma):</b>	1, 5, 10, 20
<b>Maximum load (Ω):</b>	10.000, 2.000, 1.000, 500
<b>Class of accuracy:</b>	0.5% of full scale
<b>Measuring range:</b>	0~150 °C <sup>a</sup>
<b>Response time:</b>	< 50 ms
<b>Voltage drop at inputs<sup>b</sup>:</b>	1V
<b>LEDs:</b>	<b>GREEN:</b> ON <b>RED:</b> Sensor fail
<b>Mounting:</b>	DIN Rail 35 mm
<b>Wire size:</b>	0,3 to 2,5mm <sup>2</sup> , 22 to 12 AWG

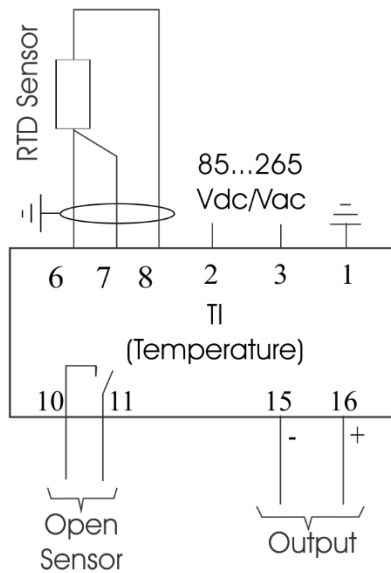
a) In case of Temperature Transducer

b) In case of Signal Transducers (input mA)



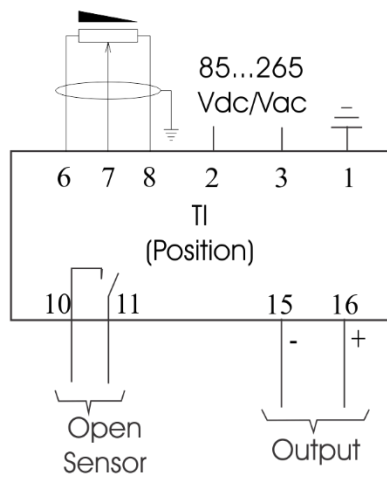
## Connection Diagrams

### Temperature

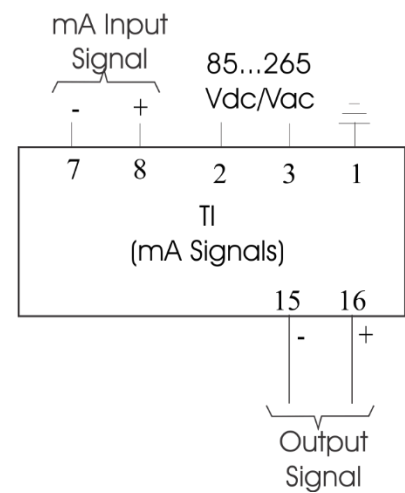


### Position

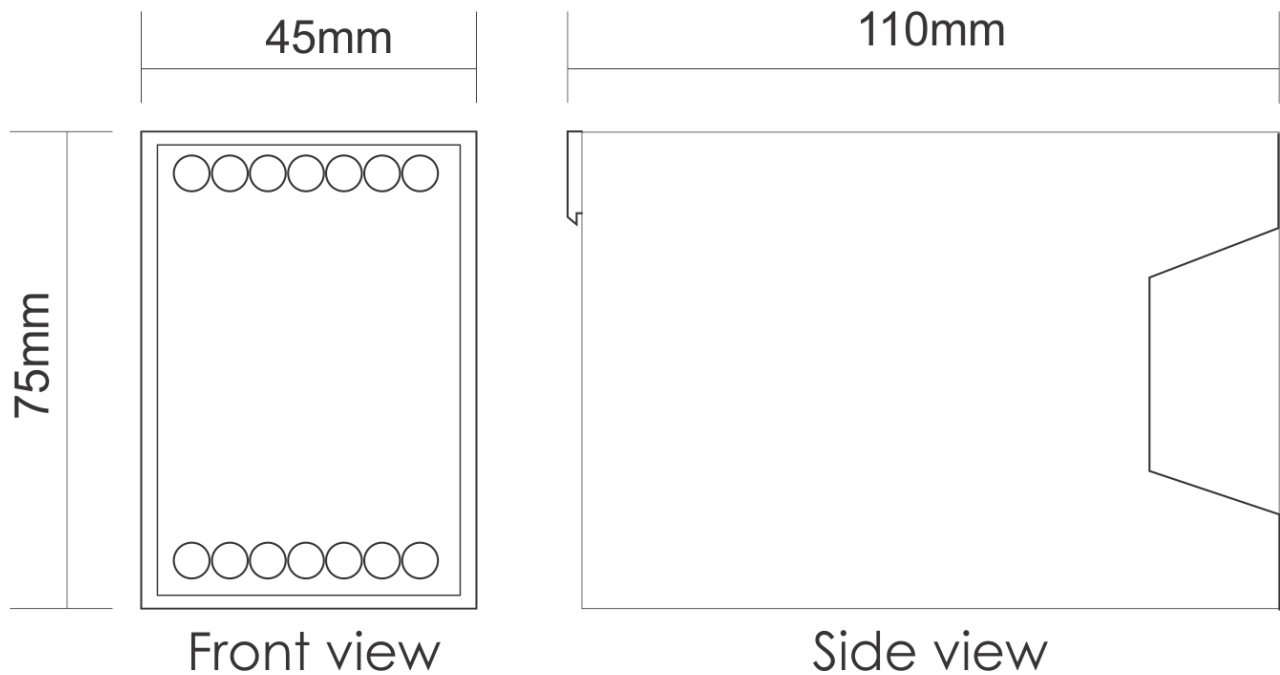
Potentiometric Sensor



### Signal



## Dimensions





## Order Specification

TYPE	INPUT	OUTPUT CURRENT	TOTAL RESISTANCE OF POTENTIOMETRIC SENSOR ( $\Omega$ )	
1 - Temperature	See table below	1 – 0...1 mA	<b>120</b>	<b>240</b>
2 – Tap position		2 – 0...5 mA	<b>130</b>	<b>260</b>
3 – mA Signal		3 – 0...10 mA	<b>160</b>	<b>320</b>
		4 – 0...20 mA	<b>180</b>	<b>1280</b>
		5 – 4...20 mA	<b>200</b>	<b>6400</b>
			<b>220</b>	Note 2

INPUT		
TEMPERATURE TRANSDUCER	POSITION TRANSDUCER	SIGNAL TRANSDUCER (mA)
1 – Pt100 $\Omega$ @0°C	0 – Not applicable	1 – 0...1 mA
2 – Cu10 $\Omega$ @25°C		2 – 0...5 mA
		3 – 0...10 mA
		4 – 0...20 mA
		5 – 4...20 mA

Use the codes highlighted in bold in the table above to place the order, as shown in note 2:

<b>TI</b>				
	TYPE	INPUT	OUTPUT CURRENT	TOTAL RESISTANCE OF POTENTIOMETRIC SENSOR ( $\Omega$ )

### Notes:

1) Applicable only to the Position Transducer,

Total resistance of potentiometric sensor = (N-1) \* R , where:

N = number of tap positions and R = step resistance of potentiometric sensor.

2) Other values of potentiometric position sensor are possible under request.

Example:

TI – 205 - 320

Position Transducer for total resistance of potentiometric sensor 320 $\Omega$ , with 4-20 mA output.



## Type Testing

<b>Immunity to electrical transients (IEC 60255-22-1)</b>	
1st cycle peak value:	2,5 kV
Frequency:	1,1 MHz
Repeat time and rate:	2s, 400 surges/sec.
Decay at 50%:	5 cycles
<b>Voltage impulse (IEC 60255-5)</b>	
Wave shape:	1,2 / 50 ms
Amplitude and energy:	5 kV
Number of pulses:	3 negative and 3 positive, 5 s interval
<b>Voltage applied (IEC 60255-5)</b>	
Voltage supportable at industrial frequency:	2 kV 60 Hz 1 min against ground



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