

# FlexTemp 2301 Temperature Transmitter

**4...20 mA transmitter for Pt100 sensors**

**2-, 3- or 4-wire sensors**

**Accuracy better than 0.25°C**

**Sensor offset correction**

**Automatic/configurable cable resistance compensation (2-wire)**

**Sensor error detection**

**2-way configuration (Windows)**

**Configurable damping and status indication**

**Engineering unit °C or °F**

**PC datalogging**



## Description

FlexTemp 2301 is a 4...20 mA loop-powered transmitter for Pt100 sensors.

Either 2-, 3- or 4-wire sensors can be used. For 2-wire sensors an automatic balancing of the sensor cable resistance is possible with shorted sensor cable. The cable resistance can be manually configured as well.

Using a PC, the Windows-based FlexProgram software and a FlexProgrammer configuring unit, the following parameters can be configured via the output connectors: TAG no., number of wires, cable resistance, error detection level, measuring range/unit, damping, offset and status indication.

The FlexProgram has a datalogging facility enabling the user to monitor measuring results or calibrate the measuring setup.



**Baumer**

## Technical Data

### Input

<b>Accuracy</b>	
Span ≤ 250°C:	< 0.25°C {2}
Span > 250°C:	0.25% of span
<b>Sample time</b>	< 0.7 sec.
<b>Pt100 Standard</b>	IEC/DIN/EN 60 751-2
<b>RTD measuring current</b>	0.3 mA, continuously
<b>Sensor type</b>	2-, 3- or 4-wires {1}
<b>Sensor short detection</b>	< -225°C
<b>Sensor break detection</b>	> 875°C
<b>Error detection delay</b>	< 10 sec.
<b>Compensation for cable error</b>	< 0.02°C/Ohm (3-wire)
<b>Cable resistance</b>	Max. 20 Ohm /wire {1}
<b>Measuring range</b>	-200...850°C {1}
<b>Measuring unit</b>	°C or °F {1}
<b>Minimum span</b>	25°C
<b>Protection</b>	+/- 35 V <sub>dc</sub>
<b>Suppression</b>	50 and 60 Hz
<b>Resolution</b>	14 bit
<b>Repeatability</b>	< 0.1°C
<b>Ripple immunity</b>	IEC 770 6.2.4.2
<b>Offset Adjustment</b>	Max. ± 10°C {1}

### Output

<b>Signal span</b>	4...20 mA, 2-wire
<b>Accuracy</b>	< 0.1% of signal span
<b>Supply range</b>	8...35 V <sub>dc</sub>
<b>Ripple immunity</b>	3 V <sub>rms</sub>
<b>Load equation</b>	$R_L \leq (V_{cc} - 8)/23$ [kOhm]
<b>Up/Down scaling limits</b>	23 mA/3.5 mA {1}
<b>Damping</b>	0...30 sec. {1}
<b>Protection</b>	Reversed polarity protection
<b>Resolution</b>	12 bit
Effect of variations in supply voltage:	
<b>Output current</b>	0.01% per volt
<b>TAG No.</b>	15 characters {1}

### Environmental conditions

<b>Operating temperature</b>	-40...85°C
<b>Storage temperature</b>	-55...90°C
<b>Humidity</b>	< 90% RH (IEC 68-2-38)
<b>Vibrations</b>	GL, test 2 (IEC 68-2-6)
<b>Long-term test</b>	IEC 770 6.3.2

### EMC data

<b>Generic standards</b>	EN 61000-6-3, EN61000-6-2
<b>Product standards</b>	EN 61326
<b>Namur</b>	NE21

### Mechanical data

<b>Dimensions</b>	62 x 88 x 24 mm
<b>Protection class</b>	Housing: IP 30; Terminals: IP10

### Other data

<b>Temperature drift</b>	Typ. 0.003% per °C Max. 0.01% per °C
<b>Power-on time</b>	10 sec.
<b>Failure information</b>	Namur NE43

### Test conditions

<b>Configuration</b>	0...100°C
<b>Amb. temperature</b>	23°C +/- 2°C
<b>Power supply</b>	24 V <sub>dc</sub>

### Disposal of product and packing

According to national laws or by returning to Baumer

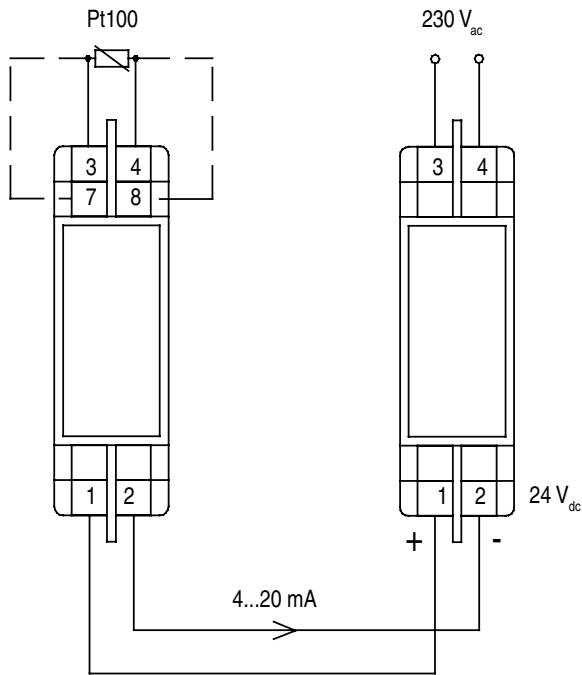
### Notes

{1}	Configurable
{2}	Lower range limit ≤ 100°C

## Ordering details - FlexTemp 2301

	<b>2301 000x (x)</b>
<b>Type</b>	<b>8' Digit</b>
Not configured, standard safety	1
<b>Configuration</b>	<b>9' Digit</b>
Configuration according to customer specifications (default is 0...120°C, 3-wire)	C

## Application Example



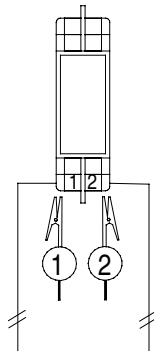
FlexTemp 2301

Power supply

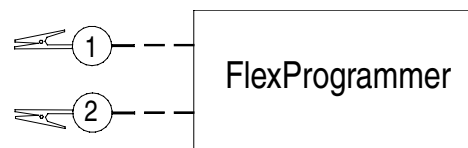
## Configuration

Note:

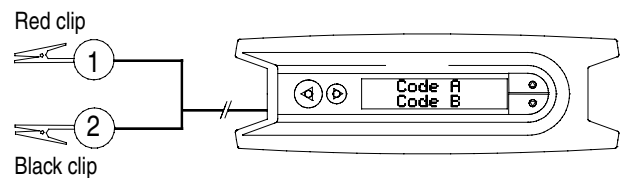
Disconnect loop supply before connecting the FlexProgrammer to FlexTemp 2301.



### FlexProgrammer



### FlexProgrammer 9701

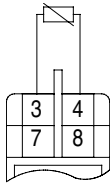


Note: Ambient temperature range 0...50°C

# Electrical Installation

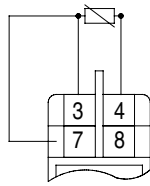
## RTD

Pt100



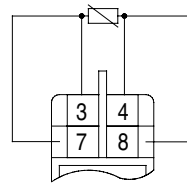
2-wire sensor

Pt100



3-wire sensor

Pt100



4-wire sensor

## Accessories

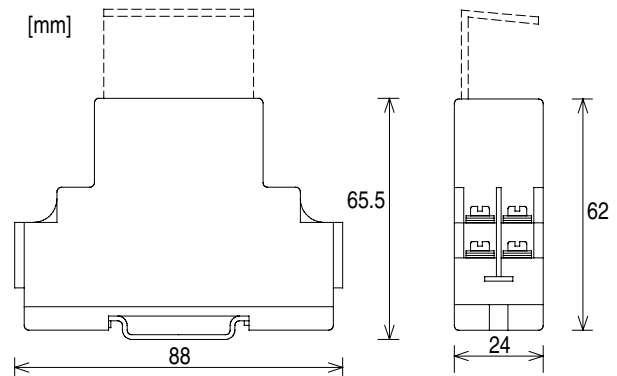


The FlexProgrammer 9701 is a dedicated tool to configure all Baumer configurable products.

**Type No. 9701-0001 complies:**

- FlexProgrammer interface unit
- CD with the FlexProgram software and product drivers (DTM)
- USB cable
- Cable with 2 alligator clips

## Dimensional drawings



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