

# FlexTop 2202 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**

**Configurable damping and status indication**

**Engineering unit °C or °F**

**PC datalogging**

**Excellent temperature stability**

**Ex ia IIC T5/T6, ATEX II 1G**



## Description

FlexTop 2202 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 Flex-Program and a FlexProgrammer configuring unit, the following parameters can be configured via the output connectors (2-way communication): TAG no., number of wires, cable resistance, error detection level, measuring range/unit, damping, offset and status indication.

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

FlexTop 2202 is embedded in silicone which makes it resistant to humid environments.

FlexTop 2202, fitting into the DIN B housing, has a 6 mm center hole for quick sensor replacement. The spring loaded mounting screws ensure a safe fastening even in vibrating environments.



**Baumer**

## Technical Data

### Input

|                                     |                        |
|-------------------------------------|------------------------|
| <b>Accuracy</b>                     |                        |
| Span ≤ 250°C:                       | < 0.25°C {2}           |
| Span > 250°C:                       | 0.1% 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>              | < 98% RH, cond. (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, EN 61000-6-2 |
| <b>Product standards</b> | EN 61326                   |
| <b>NAMUR</b>             | NAMUR NE21                 |

### Approval

### Ex ia IIC T5/T6, ATEX II 1G

|                             |   |
|-----------------------------|---|
| <b>Supply range</b>         | 8...28 V <sub>dc</sub>  |
| <b>Internal inductivity</b> | $L_i \leq 10 \mu\text{H}$   |
| <b>Internal capacity</b>    | $C_i \leq 10 \text{nF}$   |
| <b>Barrier data</b>         | $U \leq 28 \text{V}_{dc}$ ; $I \leq 0.1 \text{A}$ ; $P \leq 0.7 \text{W}$   |
| <b>Temperature class</b>    | T1...T5: -40 < T <sub>amb</sub> < 85°C<br>T6: -40 < T <sub>amb</sub> < 50°C |

### Mechanical data

|                         |                |
|-------------------------|----------------|
| <b>Dimensions</b>       | ø44 x 19 mm    |
| <b>Protection class</b> | Housing: IP 40 |

### Other data

|                          |   |
|--------------------------|---|
| <b>Temperature drift</b> | Typ. 0.003% per °C<br>Max. 0.01% per °C |
|--------------------------|---|

|                      |         |
|----------------------|---------|
| <b>Power-on time</b> | 10 sec. |
|----------------------|---------|

### Test conditions

|                         |              |
|-------------------------|--------------|
| <b>Configuration</b>    | 0...100°C    |
| <b>Amb. temperature</b> | 23°C +/- 2°C |
| <b>Power supply</b>     | 24 VDC       |

### Disposal of product and packing

According to national laws or by returning to Baumer

### Notes

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

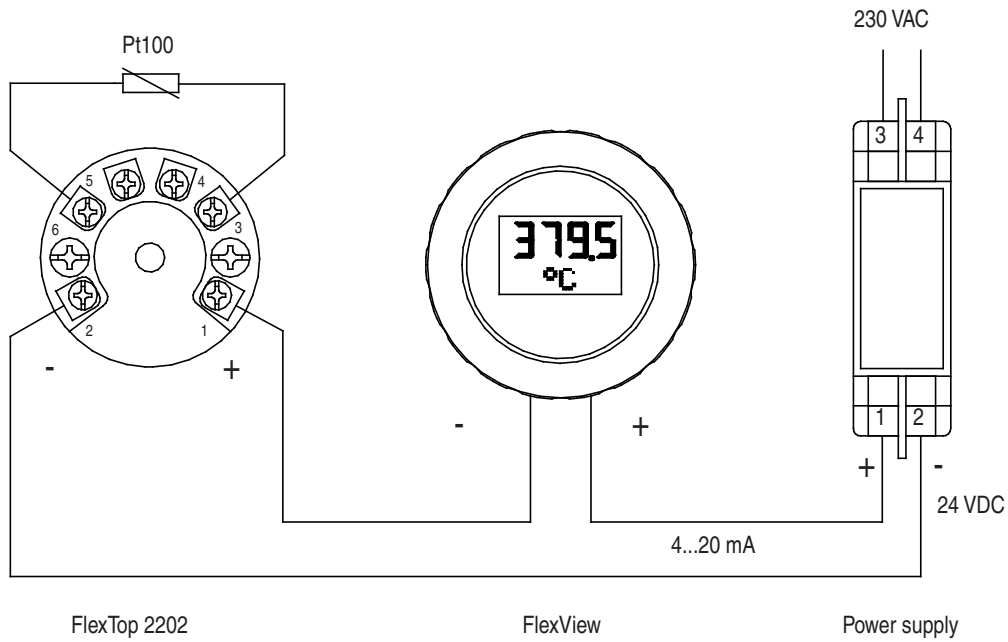
## Measuring Ranges

| Type            | Standard         | Range            | Min. span | Accuracy |
|-----------------|------------------|------------------|-----------|----------|
| Pt100           | DIN/EN/IEC 60751 | -200...850°C {2} | 25°C      | 0.25°C   |
| Lin. resistance |                  | 0...500 Ohm      | 5 Ohm     | 1 Ohm    |

## Ordering details - FlexTop 2202

|   |  | 2202 000x (x) |
|---|--|---------------|
| Type  |  | 8' Digit      |
| Not configured, standard safety   |  | 1             |
| Not configured, Ex ia IIC T5/T6, ATEX II 1G                                       |  | 2             |
| Not configured, Ex nA II T5, ATEX II 3G   |  | 3             |
| Configuration   |  | 9' Digit      |
| Configuration according to customer specifications (default is 0...120°C, 3-wire) |  | C             |

## Non-Ex Application

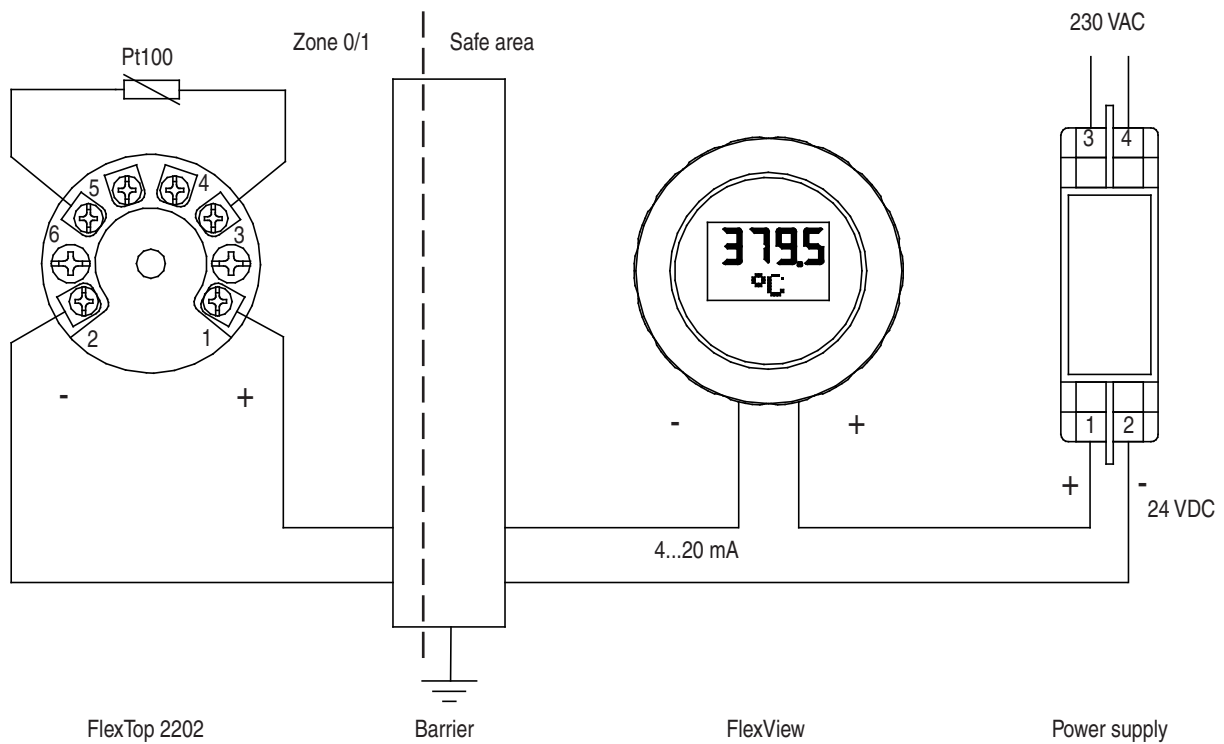


FlexTop 2202

FlexView

Power supply

## Ex Application



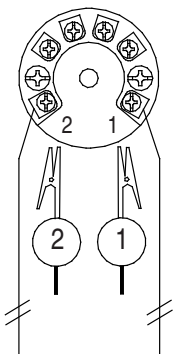
FlexTop 2202

Barrier

FlexView

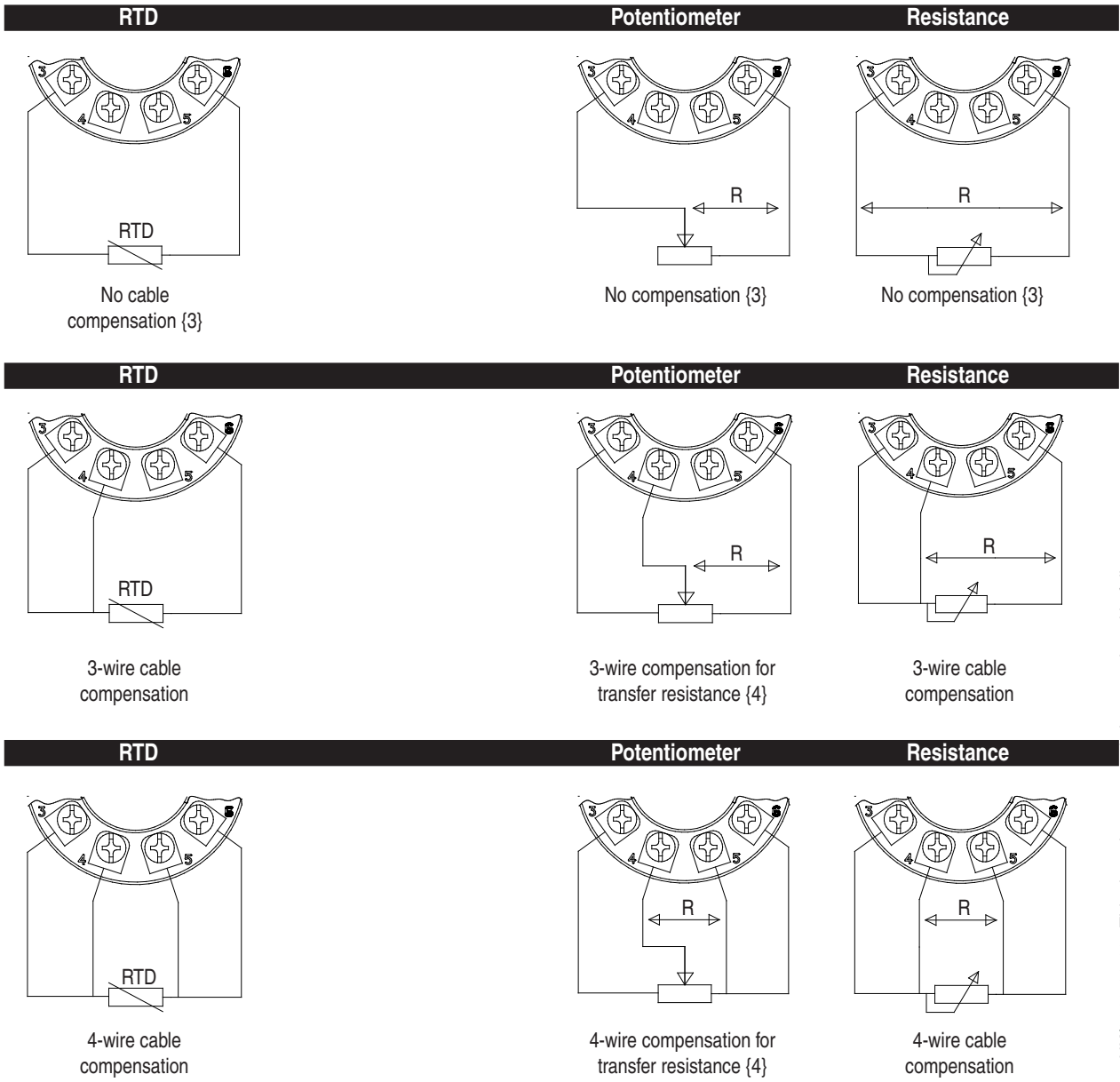
Power supply

## Configuration



Note:  
Disconnect loop supply before connecting the FlexProgrammer to FlexTop 2202.

# Electrical Installation



UK/2013-02-10 This data sheet may only be reproduced in full.

## Notes

- {3} Configurable compensation for cable resistance
- {4} Transfer resistance between element and wiper

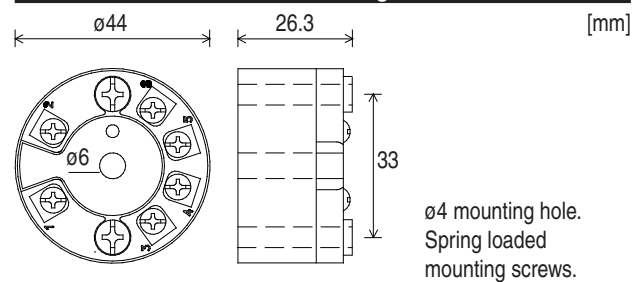
## Accessories



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

- Type No. 9701-0001 comprises:**
- FlexProgrammer interface unit
  - CD with the FlexProgram software and product drivers (DTM)
  - USB cable
  - Cable with 2 alligator clips

## Dimensional drawing



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