

# FlexTop 2204 Temperature Transmitter

**4...20 mA transmitter for Pt500 sensors and Resistance input**

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

**Accuracy better than 0.25°C (Pt500)**

**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**

**Ex nA II T5, ATEX II 3G**



## Description

FlexTop 2204 is a 4...20 mA loop-powered transmitter for Pt500 sensors and resistance inputs.

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 2204 is embedded in silicone which makes it resistant to humid environments.

FlexTop 2204, 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.

## Technical Data

| Input                                   |                                     | Environmental conditions                             |   |
|---|-------------------------------------|--|---|
| Accuracy                                | < 0.25°C {2}                        | Operating temperature                                | -40...85°C  |
| Sample time                             | < 0.7 sec.                          | Storage temperature                                  | -55...90°C  |
| Pt500 Standard                          | IEC/DIN/EN 60 751-2                 | Humidity   | < 98% RH, cond. (IEC 68-2-38)   |
| RTD measuring current                   | 0.15 mA, continuously               | Vibrations   | GL, test 2 (IEC 68-2-6)   |
| Sensor type                             | 2-, 3- or 4-wires {1}               | Long-term test                                       | IEC 770 6.3.2   |
| Sensor short detection                  | < -108°C                            | EMC data   |   |
| Sensor break detection                  | > 211°C                             | Generic standards                                    | EN 61000-6-3, EN 61000-6-2  |
| Error detection delay                   | < 10 sec.                           | Product standards                                    | EN 61326  |
| Compensation for cable error            | < 0.02°C/Ohm (3-wire) {2}           | NAMUR  | NAMUR NE21  |
| Cable resistance                        | Max. 20 Ohm /wire {1}               | Approval Ex ia IIC T5/T6, ATEX II 1G                 |   |
| Measuring unit                          | °C or °F {1}                        | Supply range   | 8...28 VDC  |
| Protection                              | +/- 35 VDC                          | Internal inductivity                                 | $L_i \leq 10 \mu\text{H}$   |
| Suppression                             | 50 and 60 Hz                        | Internal capacity                                    | $C_i \leq 10 \text{ nF}$  |
| Resolution                              | 14 bit                              | Barrier data   | $U \leq 28 V_{dc}; I \leq 0.1 \text{ A}; P \leq 0.7 \text{ W}$                        |
| Repeatability                           | < 0.1°C {2}                         | Temperature class                                    | T1...T5: $-40 < T_{amb} < 85^\circ\text{C}$<br>T6: $-40 < T_{amb} < 50^\circ\text{C}$ |
| Ripple immunity                         | IEC 770 6.2.4.2                     | Mechanical data                                      |   |
| Offset Adjustment                       | Max. $\pm 10^\circ\text{C}$ {1} {2} | Dimensions   | $\varnothing 44 \times 19 \text{ mm}$   |
| Output                                  |                                     | Protection class                                     | Housing: IP 40  |
| Signal span                             | 4...20 mA, 2-wire                   | Other data   |   |
| Accuracy                                | < 0.1% of signal span               | Temperature drift                                    | Typ. 0.003% per °C<br>Max. 0.01% per °C   |
| Supply range                            | 8...35 VDC                          | Power-on time  | 10 sec.   |
| Ripple immunity                         | $3 V_{rms}$                         | Test conditions                                      |   |
| Load equation                           | $R_L \leq (V_{cc} - 8)/23$ [kOhm]   | Configuration  | 0...100°C   |
| Up/Down scaling limits                  | 23 mA/3.5 mA {1}                    | Amb. temperature                                     | 23°C +/- 2°C  |
| Damping                                 | 0...30 sec. {1}                     | Power supply   | 24 VDC  |
| Protection                              | Reversed polarity protection        | Disposal of product and packing                      |   |
| Resolution                              | 12 bit                              | According to national laws or by returning to Baumer |   |
| Effect of variations in supply voltage: |                                     | Notes  |   |
| Output current                          | 0.01% per volt                      | {1}  | Configurable  |
| TAG No.                                 | 15 characters {1}                   | {2}  | Pt500   |

## Measuring Ranges

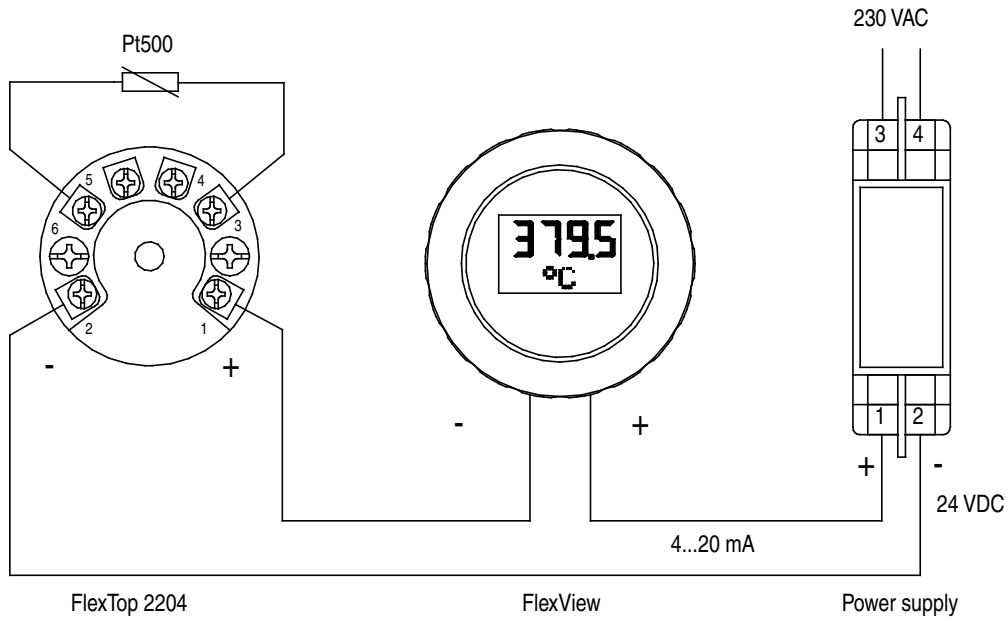
| Type            | Standard         | Range            | Min. span | Accuracy |
|-----------------|------------------|------------------|-----------|----------|
| Pt500           | DIN/EN/IEC 60751 | -100...160°C {2} | 25°C      | 0.25°C   |
| Lin. resistance |                  | 0...1000 Ohm     | 5 Ohm     | 1 Ohm    |

## Ordering details - FlexTop 2204

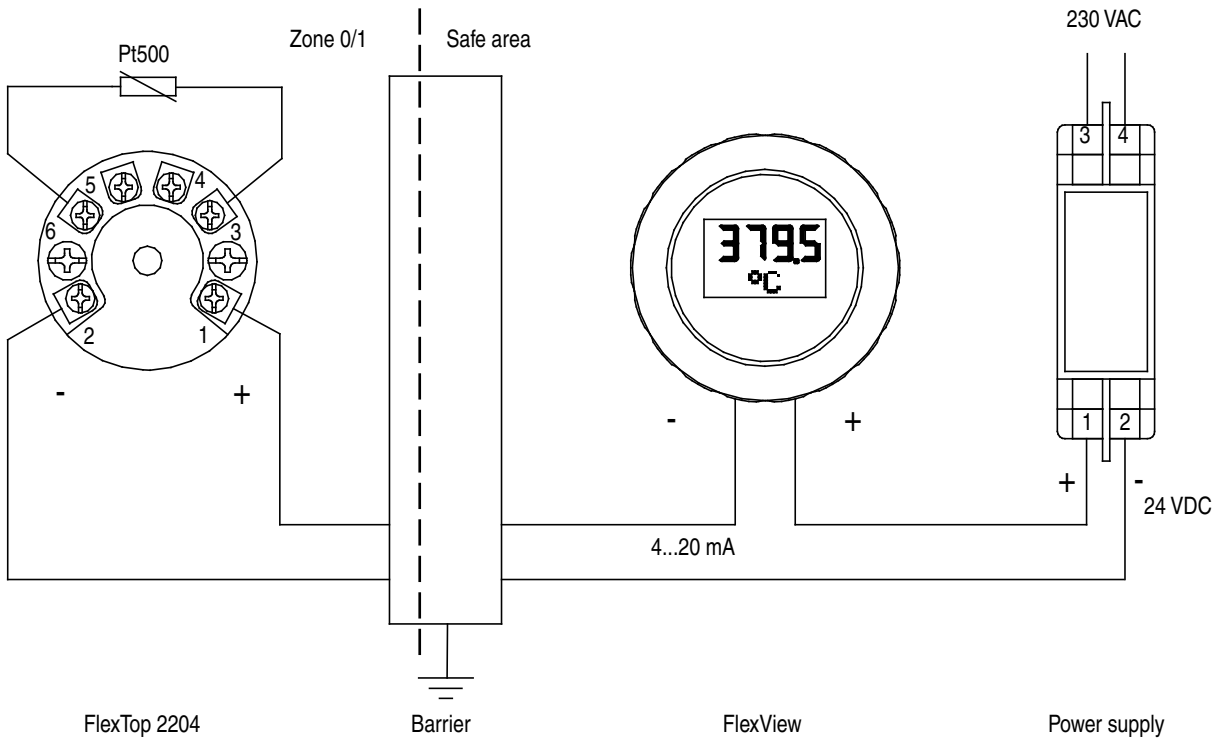
|   |  | 2204 000x (x) |  |
|---|--|---------------|--|
| Type  |  | 8' Digit      |  |
| Not configured, standard safety   |  | 1             |  |
| Not configured, Ex ia IIC T5/T6, ATEX II 1G                                       |  | 2             |  |
| Not configured, Ex nA II 3G   |  | 3             |  |
| Configuration   |  | 9' Digit      |  |
| Configuration according to customer specifications (default is 0...120°C, 3-wire) |  | C             |  |

Note: The FlexTop 2204 can be supplied in a 30 pcs. packing.  
Please contact Baumer for further information.

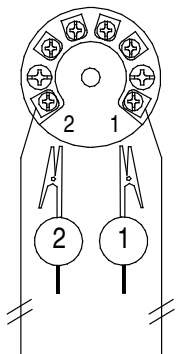
## Non-Ex Application



## Ex Application

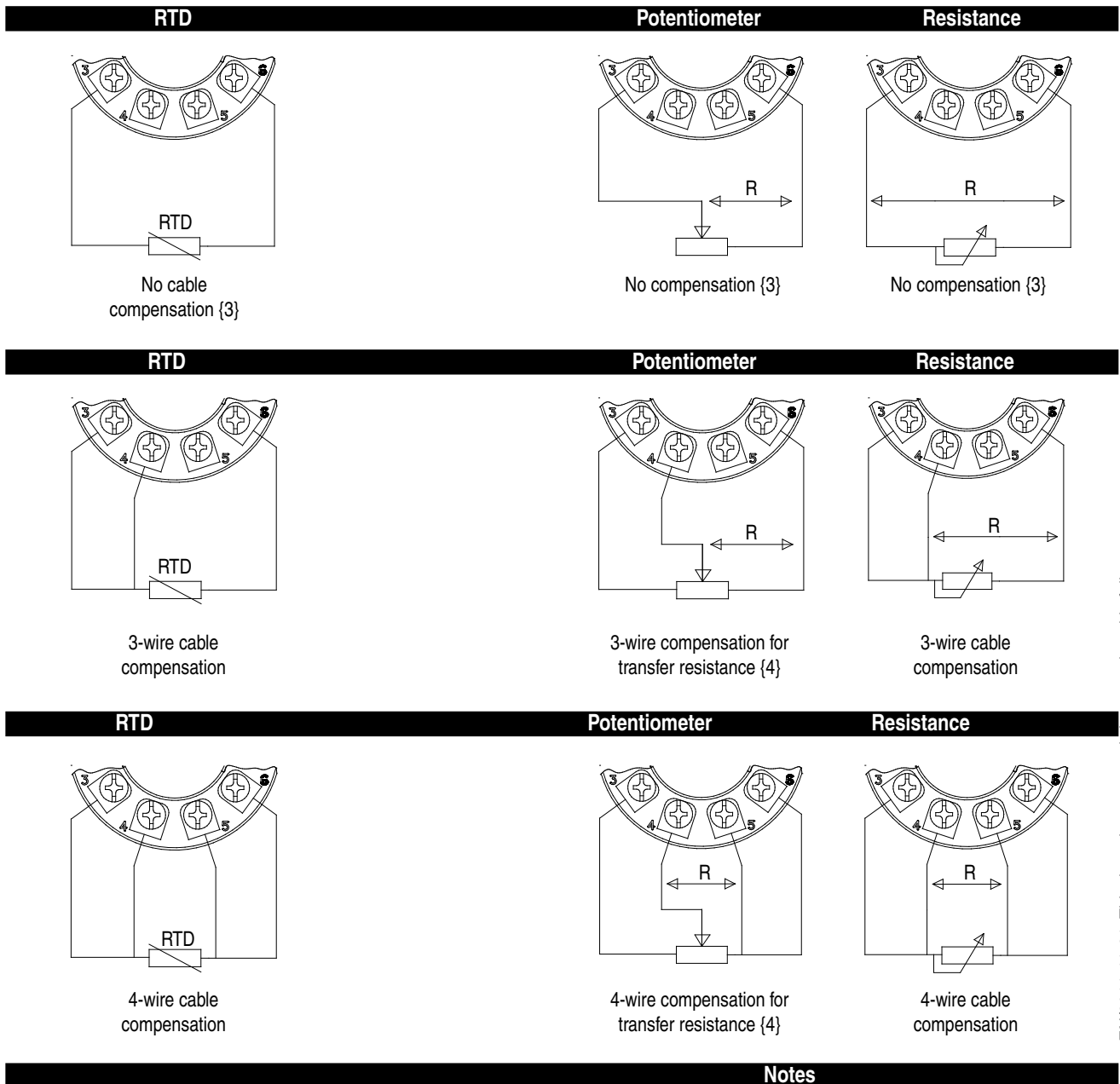


## Configuration



Note:  
Disconnect loop supply before connecting the FlexProgrammer to FlexTop 2204.

# Electrical Installation



EN2011-11-21 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
- Cable with 2 alligator clips
- Cable from FlexProgrammer to M12 plug for TE2
- Cable from FlexProgrammer to M12 Plug for LFFS, LBFS, CPX
- USB cable
- CD with the FlexProgram software

## Dimensional drawing

