

## TRANSDUCER OF TEMPERATURE AND STANDARD SIGNALS P20 TYPE



### APPLICATION

The P20 programmable transducer is destined to convert the temperature, resistance, voltage from shunt and standard signals into a constant-current or constant-voltage standard signal. The output signal is galvanically isolated from the input signal and the supply.

The transducer compensates automatically the resistance of wires in case of the resistance value measurement in a three-wire system and automatically compensates the temperature of terminals in case of measurements from thermocouples.

The transducer is fully configurable through the PD14 programmer. By means of this programmer one can change the input type, the averaging time of the measurement and rescale the analog output acc. to the individual output characteristic, and also read out the measured value.

### TECHNICAL DATA

#### Basic parameters:

- analog output galvanically isolated:
  - current 0/4... 20 mA
  - voltage 0...10 V
  - load resistance of the current output  $\leq 500 \Omega$
  - load resistance of the voltage output  $\geq 500 \Omega$
- accuracy class<sup>1)</sup> 0.2
- averaging time of the transducer:
  - range: d.c. current [mA], d.c. voltage [V]  $\geq 0.1$  s
  - other ranges  $\geq 0.3$  s
- power consumption  $< 3$  VA

- preheating time of the transducer 10 min
- response time of the transducer:
  - range: d.c. current [mA], d.c. voltage [V]  $\geq 0.2$  s
  - other ranges  $\geq 0.4$  s
- current flowing through RTD  $< 0.2$  mA
- resistance of wires connecting RTD with the transducer  $\leq 10 \Omega$

#### Rated operating conditions:

- supply depending on the execution code 85... 253 V a.c./d.c.  
20... 40 V a.c./d.c.
- frequency of the supply a.c. voltage 45... 65 Hz
- ambient temperature - 20...23...55°C
- storage temperature - 25...85°C
- related air humidity  $< 95\%$  (condensation inadmissible)
- working position any

#### Input parameters:

- resistance of voltage input [V]  $> 1$  M $\Omega$
- resistance of current input [mA]  $12 \Omega \pm 1\%$

#### Sustained overload:

- TC and RTD 1.1 X<sub>n</sub>
- voltage, current and resistance 1.3 X<sub>n</sub>

#### Short duration overload:

- input voltage 5 U<sub>n</sub>
- current input 10 I<sub>n</sub>

#### Ensured protection level

##### acc. to EN 60529:

- housing IP 40
- electrical connections IP 20

#### Weight

0.125 kg

#### Dimensions

22.5 × 120 × 100 mm

#### Fitting

on a 35 mm rail holder

#### Electromagnetic compatibility:

- noise immunity acc. to EN 61000-6-2
- noise emission acc. to EN 61000-6-4

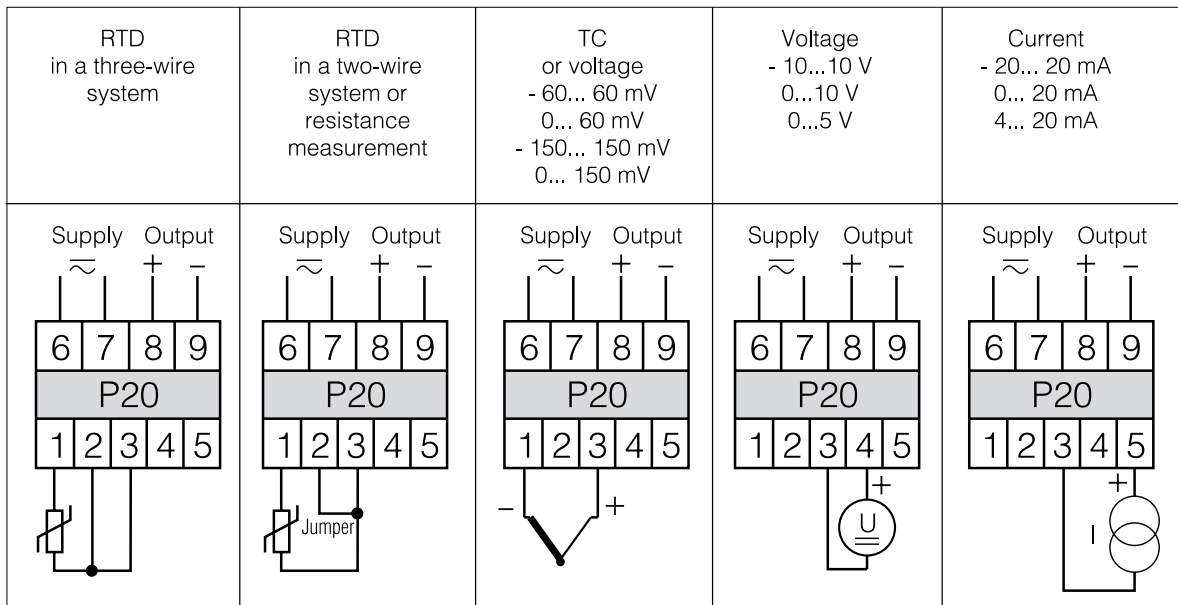
#### Safety requirements acc. to EN 61010-1:

- installation category III,
- level of pollution 2,
- phase-to-earth working voltage:
  - supply 300 V<sup>2)</sup>
  - input 50 V
  - output 50 V
- altitude above sea level  $< 2000$  m

<sup>1)</sup> A part of sub-ranges for thermocouples and RTD has a specified individual class (see table 1)

<sup>2)</sup> Execution for supply voltage 230 V

## DIAGRAMS OF EXTERNAL CONNECTIONS



Coding of the P20 transducer input kind

Table 1

| Type of sensor/input | Range [°C]  | Code | TC of K type | TC of S type | TC of N type | d.c. voltage | d.c. current | Resistance | Custom-made |
|----------------------|-------------|------|--------------|--------------|--------------|--------------|--------------|------------|-------------|
| Pt 100 RTD           | -200...850  | 01   | -200...1370  | 0...1760     | -200...1200  | 0...10 V     | 0...20 mA    | 0...400 Ω  | XX          |
|                      | 0...850     | 02   | 0...1200     | 0...1600     | 0...1200     | 0...5 V      | 4...20 mA    | XX         |             |
|                      | 0...600     | 03   | 0...1000     | 0...1400*    | 0...1000     | -10...10 V   | 0...5 mA     |            | XX          |
|                      | 0...400     | 04   | 0...800      | 0...1200*    | 0...1000     | -5...5 V     | -20...20 mA  | XX         |             |
|                      | 0...200     | 05   | 0...600      | 0...1000*    | 0...800      | 0...60 mV    |              |            | XX          |
|                      | 0...200     | 06   | 0...400*     | -200...200*  | 0...600*     | -60...60 mV  |              | XX         |             |
|                      | -200...200  | 07   | -200...200*  |              | -200...200*  | 0...150 mV   |              |            | XX          |
| Pt 250 RTD           | -200...850  | 08   |              |              |              |              |              |            |             |
|                      | 0...850     | 09   |              |              |              |              |              |            |             |
|                      | 0...600     | 10   |              |              |              |              |              |            |             |
|                      | 0...400     | 11   |              |              |              |              |              |            |             |
|                      | 0...200     | 12   |              |              |              |              |              |            |             |
|                      | -200...200  | 13   |              |              |              |              |              |            |             |
|                      | -100...100* | 14   |              |              |              |              |              |            |             |
| Pt 500 RTD           | -200...850  | 15   |              |              |              |              |              |            |             |
|                      | 0...850     | 16   |              |              |              |              |              |            |             |
|                      | 0...600     | 17   |              |              |              |              |              |            |             |
|                      | 0...400     | 18   |              |              |              |              |              |            |             |
|                      | 0...200     | 19   |              |              |              |              |              |            |             |
|                      | -200...200  | 20   |              |              |              |              |              |            |             |
|                      | -100...100  | 21   |              |              |              |              |              |            |             |
| Pt 1000 RTD          | -200...850  | 22   |              |              |              |              |              |            |             |
|                      | 0...850     | 23   |              |              |              |              |              |            |             |
|                      | 0...600     | 24   |              |              |              |              |              |            |             |
|                      | 0...400     | 25   |              |              |              |              |              |            |             |
|                      | 0...200     | 26   |              |              |              |              |              |            |             |
|                      | -200...200  | 27   |              |              |              |              |              |            |             |
|                      | -100...100  | 28   |              |              |              |              |              |            |             |
| TC of J type         | -200...1200 | 29   |              |              |              |              |              |            |             |
|                      | 0...1200    | 30   |              |              |              |              |              |            |             |
|                      | 0...1000    | 31   |              |              |              |              |              |            |             |
|                      | 0...800     | 32   |              |              |              |              |              |            |             |
|                      | 0...600     | 33   |              |              |              |              |              |            |             |
|                      | 0...400*    | 34   |              |              |              |              |              |            |             |
|                      | -200...200* | 35   |              |              |              |              |              |            |             |

\* accuracy class 0,5

## EXECUTION CODES

| TRANSDUCER   | P20 - | X | X | XX | XX | X         |
|--|-------|---|---|----|----|-----------|
| <b>Analog outputs:</b>                             |       |   |   |    |    |           |
| current 0... 20 mA.....                            |       |   |   |    |    | <b>1</b>  |
| current 4... 20 mA.....                            |       |   |   |    |    | <b>2</b>  |
| voltage 0... 10 V.....                             |       |   |   |    |    | <b>3</b>  |
| <b>Supply:</b>                                     |       |   |   |    |    |           |
| 85...253 V a.c./d.c. ....                          |       |   |   |    |    | <b>1</b>  |
| 20...40 V a.c./d.c. ....                           |       |   |   |    |    | <b>2</b>  |
| <b>Kind of input:</b>                              |       |   |   |    |    |           |
| write the code from table 1.....                   |       |   |   |    |    | <b>XX</b> |
| <b>Execution:</b>                                  |       |   |   |    |    |           |
| standard .....                                     |       |   |   |    |    | <b>00</b> |
| custom-made*.....                                  |       |   |   |    |    | <b>XX</b> |
| <b>Acceptance tests:</b>                           |       |   |   |    |    |           |
| without additional requirements .....              |       |   |   |    |    | <b>8</b>  |
| with an extra quality inspection certificate ..... |       |   |   |    |    | <b>7</b>  |
| acc. to customer's requirements*.....              |       |   |   |    |    | <b>X</b>  |

\* after agreeing with the producer

## EXAMPLE OF ORDER:

When ordering, please respect successive code numbers.

The code **P20 - 1 1 04 00 7** means:

**P20** - transducer of temperature and standard signals

**1** - with current analog output: 0... 20 mA

**1** - voltage supply 85... 253 V a.c./d.c.

**04** - Pt 100 output signal on the 0...400°C range

**00** - standard execution

**7** - with an extra quality inspection certificate