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: ≤ 500 Ω
  - load resistance of the voltage output: ≥ 500 Ω
- accuracy class[1)]: 0.2
- averaging time of the transducer:
  - range: d.c. current [mA], d.c. voltage [V]: ≥ 0.1 s
  - other ranges: ≥ 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]: ≥ 0.2 s
  - other ranges: ≥ 0.4 s
- current flowing through RTD: < 0.2 mA
- resistance of wires connecting RTD with the transducer: ≤ 10 Ω

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 MΩ
- resistance of current input [mA]: 12 Ω ±1%

Sustained overload:

- TC and RTD: 1.1 X_n
- voltage, current and resistance: 1.3 X_n

Short duration overload:

- input voltage: 5 U_n
- current input: 10 I_n

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[2)]
  - input: 50 V
  - output: 50 V
- altitude above sea level: < 2000 m

[1)] A part of sub-ranges for thermocouples and RTD has a specified individual class (see table 1)

[2)] Execution for supply voltage 230 V

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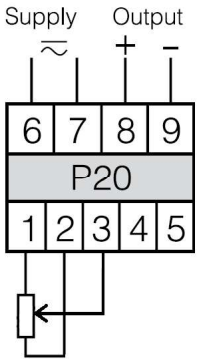
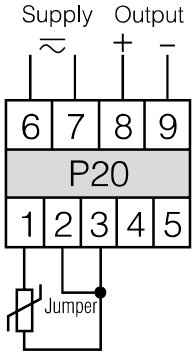
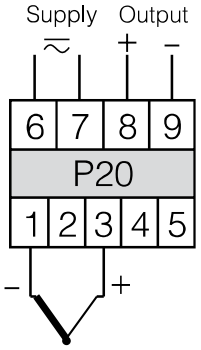
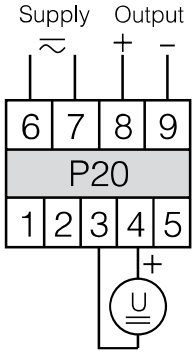
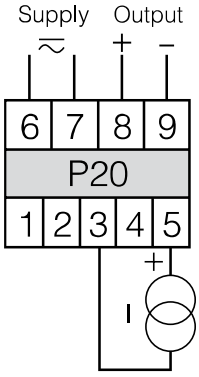
DIAGRAMS OF EXTERNAL CONNECTIONS

RTD in a three-wire system	RTD in a two-wire system or resistance measurement	TC or voltage - 60... 60 mV 0... 60 mV - 150... 150 mV 0... 150 mV	Voltage - 10...10 V 0...10 V 0...5 V	Current - 20... 20 mA 0... 20 mA 4... 20 mA
				

Coding of the P20 transducer input kind *Table 1*

Type of sensor/input	Range [°C]	Code
Pt100 RTD	-200...850	01
	0...850	02
	0...600	03
	0...400	04
	0...200	05
	-200...200	06
	-100...100*	07
Pt250 RTD	-200...850	08
	0...850	09
	0...600	10
	0...400	11
	0...200	12
	-200...200	13
	-100...100	14
Pt500 RTD	-200...850	15
	0...850	16
	0...600	17
	0...400	18
	0...200	19
	-200...200	20
	-100...100	21
Pt1000 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
TC of K type	-200...1370	36
	0...1200	37
	0...1000	38
	0...800	39
	0...600	40
	0...400*	41
	-200...200*	42
TC of S type	0...1760	43
	0...1600	44
	0...1400*	45
	0...1200*	46
	0...1000*	47
TC of N type	-200...1200	48
	0...1200	49
	0...1000	50
	0...800	51
	0...600*	52
	0...400*	53
	-200...200*	54
d.c. voltage	0...10 V	55
	0...5 V	56
	-10...10 V	57
	-5...5 V	58
	0...60 mV	59
	-60...60 mV	60
	0...150 mV	61
	-150...150 mV	62
d.c. current	0...20 mA	63
	4...20 mA	64
	0...5 mA	65
	-20...20 mA	66
Resistance	0...400 Ω	67
	0...4000 Ω	68
Custom-made		XX

* *accuracy class 0,5*

EXECUTION CODES

TRANSDUCER	P20 -	X	X	XX	XX	X

Analog outputs:
current 0... 20 mA **1**
current 4... 20 mA **2**
voltage 0... 10 V **3**

Supply:
85...253 V a.c./d.c. **1**
20...85 V d.c., 20...65 V a.c. **2**

Kind of input:
write the code from table 1 ..... **XX**

Execution:
standard **00**
custom-made* ..... **XX**

Acceptance tests:
without additional requirements **8**
with an extra quality inspection certificate **7**
acc. to customer's requirements* ..... **X**

* 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 - Pt100 output signal on the 0...400°C range
00 - standard execution
7 - with an extra quality inspection certificate

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