PROGRAMMABLE TRANSDUCER OF TEMPERATURE AND STANDARD SIGNALS

P11T

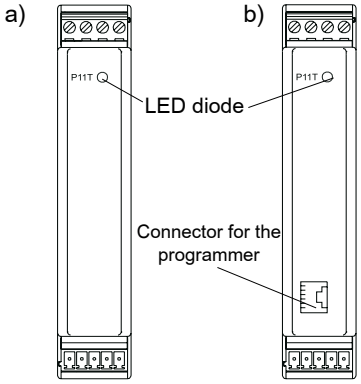

Fig.1 View of the P11T transducer

a) P11T-1
b) P11T-2

APPLICATION

The P11T transducer is destined to the conversion of temperature, resistance, voltage from the shunt and standard signals into a d.c. current and voltage standard signal.

The output signal is galvanically isolated from the input signal and the supply.

The P11T transducer is offered in two basic versions:

- P11T-1, with programmed parameters by the producer acc. the ordered version.
- P11T-2, with programmed parameters by the producer acc. the ordered version and with the possibility to change the parameters by the user by means of a computer through the PD14 programmer.

The PD14 programmer is a universal device serving to programme all the P11 and P12 series.

The P11T-2 transducer realises also following functions:

– conversion of the measured value into an optional output signal on the base of the individual linear characteristic.
– switching on or off the automatic compensation. Possibility to introduce a manual correction.
– storage of maximal and minimal values.
– programming of the measurement averaging time.
– blocking of the parameter introduction by means of a password.

Using the PD14 programmer, one can read out in any time from the P11T-2 transducer:

– the measured value,
– the maximal and minimal value,
– the signal on the analogue output in percentage of the range

INSTALLATION

The P11T transducer is designed to be installed on a 35 mm DIN rail acc. EN 60715. On the external side of the transducer there are screw or self-locking terminal strips enabling the connection of 2.5 mm^2 external leads (supply and output) and up to 1.5 mm^2 leads (input). The lighted diode situated on the upper front of the transducer signals the connection of this transducer to the mains.

EXTERNAL AND ASSEMBLY DIMENSIONS

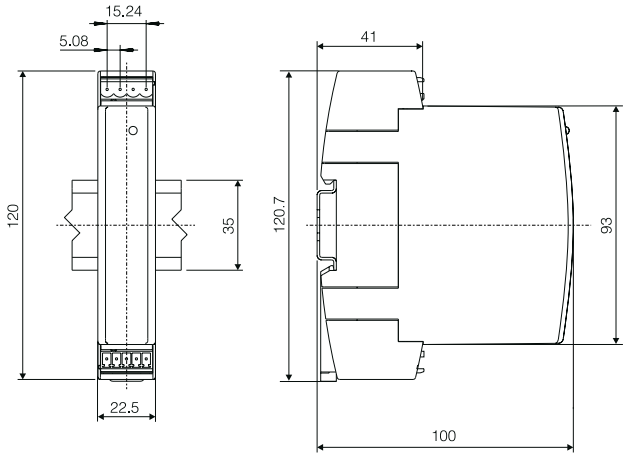

Fig.2 Overall dimensions and fixing way of the P11T transducer

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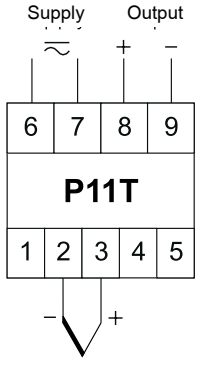
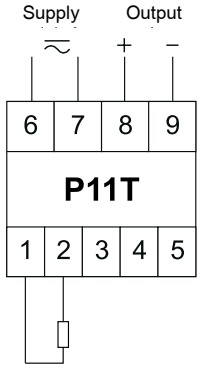
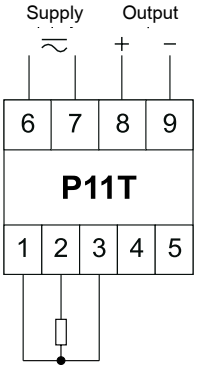
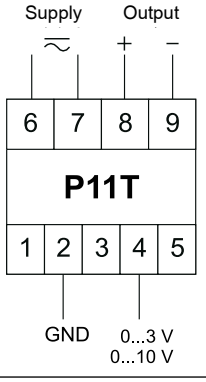
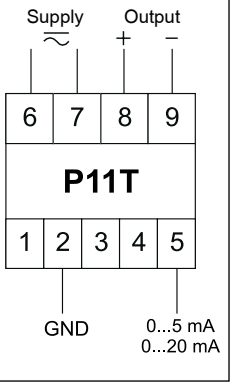
Measured signal	Thermocouple or voltage -10...+70 mV	Resistance thermometer in a 2-wire system or resistance measurement	Resistance thermometer in a 3-wire system	Voltage 0... 3 V 0... 10 V	Current 0... 5 mA 0... 20 mA
Connection way					

Fig.4 Description of terminal strips of the P11T transducers.

TECHNICAL DATA

Basic parameters:

- input signals:

Input type	Full range	Minimal sub-range with preservation of class		
		automatic compensation switched off	automatic compensation switched on	
Pt100	(-200...+850)°C	260°C	530°C	
Pt500	(-200...+850)°C	260°C		
Pt1000	(-200...+850)°C	260°C		
Cu100	(-50...+180)°C	120°C	(-50...+180)°C	
Ni100	(-60...+180)°C	120°C	(-60...+180)°C	
J (Fe-CuNi)	(-100...+1200)°C	330°C	650°C	
K (NiCr-NiAl)	(-100...+1370)°C	370°C	740°C	
N (NiCrSi-NiSi)	(-100...+1300)°C	350°C	700°C	
E (NiCr-CuNi)	(-100...+900)°C	250°C	500°C	
R (PtRh13-Pt)	(0...+1760)°C	880°C	(0...+1760)°C	
S (PtRh10-Pt)	(0...+1760)°C	880°C	(0...+1760)°C	
T (Cu-CuNi)	(-50...+400)°C	250°C	(-50...+400)°C	
resistance	(0... 400) Ω	100 Ω	200 Ω	
resistance	(0... 4000) Ω	1000 Ω		
voltage	(-10... 70) mV	20 mV		input resistance >9 MΩ
voltage	(0...3) V	0.75 V		input resistance >1 MΩ
voltage	(0...10) V	2.5 V		input resistance >1 MΩ
current	(0...5) mA	1.25 mA		input resistance < 4 Ω
current	(0...20) mA	5 mA		input resistance < 4 Ω

thermocouple characteristics acc. EN-60584-1
resistance thermometer characteristics acc. EN 60751

- analogue output galvanically isolated with a resolution 0.01% of the range
  - current programmable 0/4...20 mA — load resistance ≤ 500 Ω
  - voltage programmable 0...10 V — load resistance ≥ 500 Ω
  - current programmable 0...5 mA — load resistance ≤ 2000 Ω
- accuracy class — 0.2
  0.3 for Cu100 and Ni100;
  minimal subrange in P11T-2:
  4 times smaller than the full range
- additional error from the ambient temperature change — ± (0.1% of the range/10 K)
  ± (0.2% of the range/10 K) for resistance thermometers and thermocouples of T type.
- conversion time:
  - P11T-1 — < 200 ms
  - P11T-2 — min 200 ms (averaging time min 100 ms + output response time 100 ms)
- power input — ≤ 3 VA
- current intensity flowing through the resistance thermometer — < 0.17 mA

- resistance of leads connecting the resistance thermometer with the transducer < 20 Ω /1 lead
- preheating time of the transducer 10 min.

Nominal operating conditions:

- supply voltage depending on the execution code 85...230...253 V a.c./d.c.
  20...24...50 V a.c./d.c.
- frequency of the supply a.c. voltage 40...50...440 Hz
- ambient temperature -25...23...55°C
- storage temperature -25°C ...+85°C
- relative humidity < 95% (condensation inadmissible)
- working position assembling on a 35 mm DIN rail

Sustained overload:

- thermocouples, resistance thermometers 1%
- measurement of voltage, current and resistance 20%

Short duration overload (3 sec):

- inputs of sensors and voltage 30 V
- current input 10 In

Ensured protection degree:

- by the housing IP 40
- from the terminal side IP 20

Dimensions 22.5 x 120 x 100 mm

Weight 125 g

Fixing on a 35 mm DIN rail

Electromagnetic compatibility:

- immunity EN 61000-6-2
- emission EN 61000-6-4

Security requirements acc. EN 61010-1

- installation category III
- pollution level 2
- maximal working voltage in relation to earth:
  - supply 300 V a.c.
  - input 50 V a.c.
  - output 50 V a.c.

ORDERING CODES

Ordering codes of the P11T transducer

TRANSDSUCER	P11T-	X	XX	X	X	X	XX	X

Kind of transducer:
programmed by the producer* **1**
programmable **2**

Input signal

Pt100	(-200...+850)°C	**00**
Pt500	(-200...+850)°C	**01**
Pt1000	(-200...+850)°C	**02**
Cu100	(-50...+180)°C	**03**
Ni100	(-60...+180)°C	**04**
Thermocouple J - (Fe-CuNi)	(-100...+1200)°C	**05**
Thermocouple K - (NiCr-NiAl)	(-100...+1370)°C	**06**
Thermocouple N - (NiCrSi-NiSi)	(-100...+1300)°C	**07**
Thermocouple E - (NiCr-CuNi)	(-100...+900)°C	**08**
Thermocouple R - (PtRh13-Pt)	(0...+1760)°C	**09**
Thermocouple S - (PtRh10-Pt)	(0...+1760)°C	**10**
Thermocouple T - (CuCu-Ni)	(-50...+400)°C	**11**
Measurement of resistance up to 400 Ω	(0...+400) Ω	**12**
Measurement of resistance up to 4 kΩ	(0...+4000) Ω	**13**
Measurement of voltage -10...70 mV	(-10...+70) mV	**14**
Measurement of voltage 0...3 V	(0...3) V	**15**
Measurement of voltage 0...10 V	(0...10) V	**16**
Measurement of current 0...5 mA	(0...5) mA	**17**
Measurement of current 0...20 mA	(0...20) mA	**18**

Custom-made version:
A list of custom-made versions available to be ordered is added in a special book at the end of this catalog (19...26)
on order** ..... **XX**

Output signal:
voltage, 0... 10 V **1**
current, 0... 20 mA **2**
current, 4... 20 mA **3**
current, 0... 5 mA **4**
on order** **9**

Supply:
85... 253 V a.c./d.c. **1**
20... 50 V a.c./ d.c. **2**

Kind of terminals:
socket - screw plug **0**
socket - self-locking plug **1**

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

Acceptance tests:
without a quality inspection certificate **8**
with a quality inspection certificate **7**
acc. user's agreement** ..... **X**

* For the version P11T-1 (programmed by the producer), one must give the code of the input signal which has to be programmed.
** After agreeing by the producer.

Coding example:

The **P11T-1-00-1-1-0-00-8** code means: the version of a P11T transducer programmed by the producer without the possibility to re-programme it by the user, with an input signal: Pt100 resistance thermometer, voltage output signal: 0 -10 V, supply voltage: 85...253 V a.c./d.c., with a socket-screw plug, standard version, without a quality inspection certificate.