

Analogue temperature transmitter

Model T91.10, head mounting version DIN form B

Model T91.20, head mounting version form J

WIKA data sheet TE 91.01



for further approvals
see page 4

Applications

- Plant construction
- Power engineering
- Heating, air-conditioning, ventilation, refrigeration

Special features

- Versions for Pt100 / Pt1000 or thermocouples
- Output 0 ... 10 V, 3-wire (T91.10) or 4 ... 20 mA, 2-wire (T91.20)
- Error signalling in the event of sensor break
- High accuracy
- Compact and value for money



Fig. left: Analogue temperature transmitter model T91.10
Fig. right: Analogue temperature transmitter model T91.20

Description

The analogue temperature transmitters of the T91 model series are matched to the specific requirements of industry. Depending on the output signal, they are particularly suitable for direct connection to evaluation instruments with voltage or current inputs such as PLC's or AD conversion cards in PC's.

The temperature transmitters convert the temperature-dependent change in resistance of resistance thermometers or the temperature-dependent voltage change in thermocouples into a 0 ... 10 V or 4 ... 20 mA output signal. With these standardised signals, the measured temperature values can be transmitted simply and safely.

The temperature transmitters of the T91 model series are fixed-range transmitters which are supplied with the required measuring ranges in line with the customer's requirements. A later fine adjustment of the zero point and the span can be made with potentiometers once fitted.

The T91.10 head-mounted transmitters can be located in any form B DIN connection head, while the T91.20 head-mounted transmitters also use form J connection heads.

Specifications

Specifications	Model T91.10			Model T91.20	
	102	104	424	141	143
Input	Thermocouples IEC 60751 K, J (L), T (U)	Pt100/Pt1000 IEC 60751 2-/3-wire	Pt100/Pt1000 IEC 60751 2-wire	Thermocouples IEC 60751 K, J (L), T (U)	Pt100/Pt1000 IEC 60751 2-wire
Minimum span	200 K	20 K	50 K	200 K	20 K
Maximum span	-	850 K	-	-	850 K
Measuring ranges	On request ("Possible measuring ranges" see page 3)			On request ("Possible measuring ranges" see page 3)	
Measuring current	-	0.8 ... 1 mA ¹⁾		-	0.8 ... 1 mA ¹⁾
Setting range ■ Zero point potentiometer (Z) ■ Span potentiometer (S)	±5 K ±5 K			±5 K ±5 K	
Cold junction compensation	yes	-	-	yes	-
Analogue output	0 ... 10 V, short-circuit proof, 3-wire ²⁾			4 ... 20 mA, protected against reverse polarity, 2-wire	
Linearisation	Linear to temperature per IEC 60751			Linear to voltage	
Measuring deviation	< 1 % FS	< 0.1 % FS	< 1 % FS	< 1 % FS	< 0.1 % FS
Temperature coefficient ■ Zero point ■ Span	< 100 ppm/°C < 100 ppm/°C			< 100 ppm/°C < 100 ppm/°C	
Error influence of the cold junction compensation	< 0.5 °C	-	-	< 0.5 °C	-
Rise time (response time)	< 0.1 s			< 0.1 s	
Signalling of sensor break	> 10 V			> 20 mA	
Sensor short circuit	Voltage value for ambient temperature	0 V		Current value for ambient temperature	< 4 mA
Minimal load resistance	3 kΩ			3 kΩ	
Maximum current supply	10 mA	40 mA	10 mA	-	
Power supply	DC 15 ... 35 V			DC 10 ... 35 V	
Input of power supply	Protected against reverse polarity			Protected against reverse polarity	
Maximum permissible residual ripple	< 10 %			< 10 %	
Electromagnetic compatibility	EN 61326 emission (group 1, class B) and interference immunity (industrial application)				
Storage temperature	-25 ... +85 °C			-25 ... +85 °C	
Operating temperature	-25 ... +85 °C			-25 ... +85 °C	
Maximum permissible humidity	< 95 %			< 95 %	
Vibration	5 g / 10 ... 200 Hz			5 g / 10 ... 200 Hz	
Case material	Polycarbonate			Polycarbonate	
Potting material	Polyurethane			-	
Ingress protection ■ Case ■ Connection terminals	IP30 per IEC/EN 60529 IP10 per IEC/EN 60529			IP30 per IEC/EN 60529 IP10 per IEC/EN 60529	
Connection terminals	Screw terminals			Screw terminals	
Connection cross-section of terminals	0.13 ... 1.5 mm ²			0.13 ... 0.75 mm ²	
Weight	approx. 30 g			approx. 10 g	
Dimensions	44 x 26.5 mm (D x H)			25 x 15 mm (D x H)	

1) Depending on sensor resistance

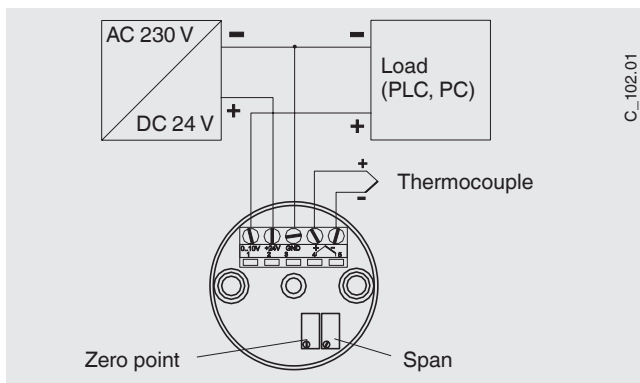
2) Output signal e.g. 0 ... 2.5 V, 0 ... 5 V or 1 ... 5 V on request

Possible measuring ranges

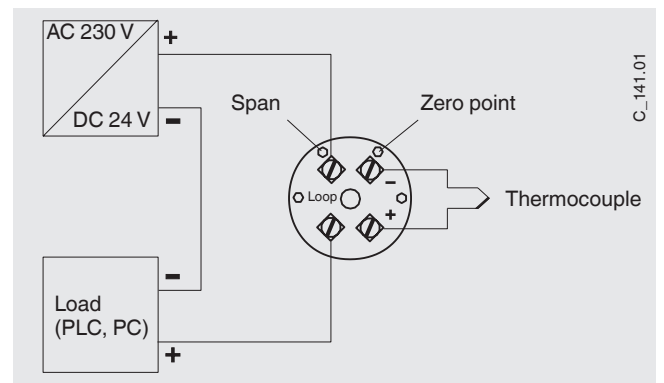
Input	Maximum range in °C		Span in K	
	Minimum beginning	Maximum end	Minimum	Maximum
Pt100	-200 °C	+850 °C	20 K	850 K
Pt1000	-200 °C	+380 °C	20 K	400 K
TC type T	-200 °C	+400 °C	200 K	600 K
TC type J	-100 °C	+1,200 °C	200 K	1,300 K
TC type L	-200 °C	+900 °C	200 K	1,100 K
TC type K	-200 °C	+1,320 °C	200 K	1,520 K
TC type U	-200 °C	+600 °C	200 K	600 K

Designation of connection terminals

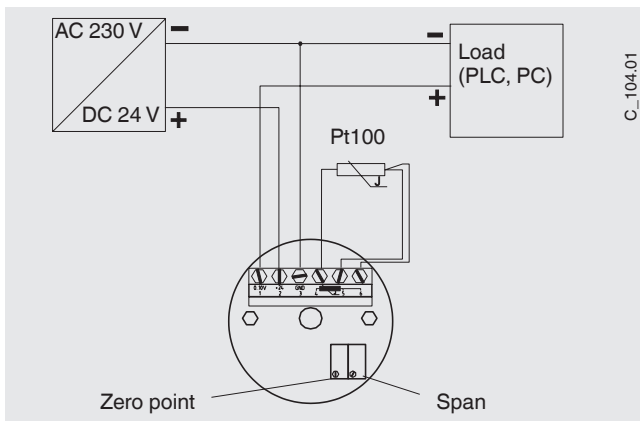
Model T91.10.102



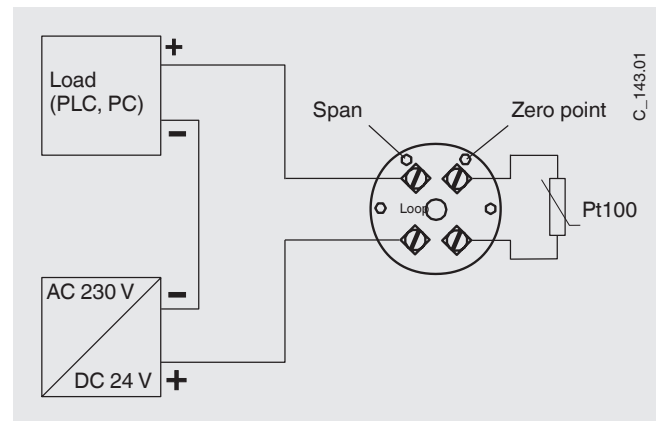
Model T91.20.141



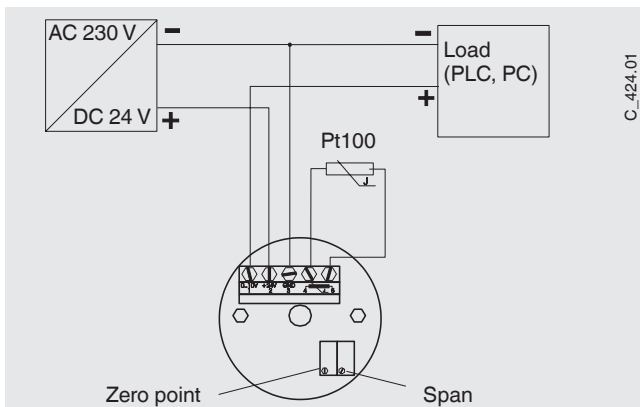
Model T91.10.104



Model T91.20.143

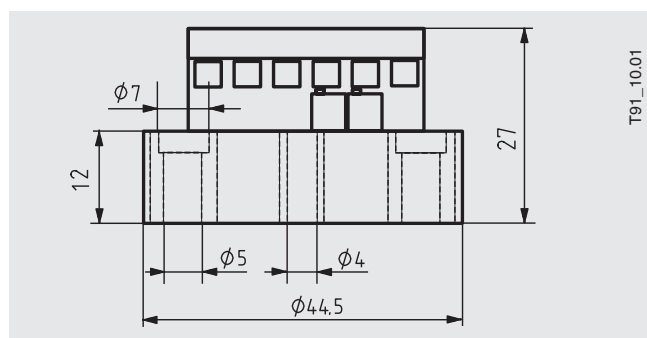


Model T91.10.424

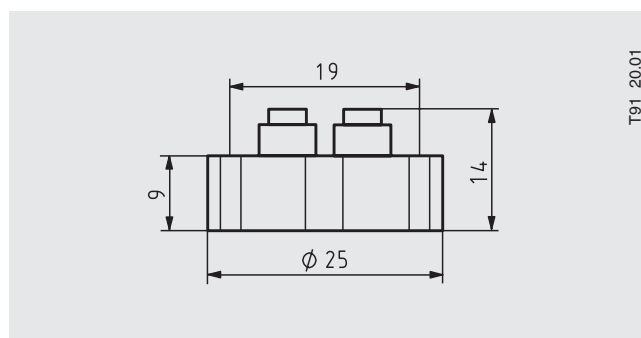


Dimensions in mm

Models T91.10.102, T91.10.104, T91.10.424



Models T91.20.141, T91.20.143



Accessories

Model	Version	Description	Dimensions	Order no.
Field case	Plastic (ABS)	<ul style="list-style-type: none"> For mounting of a head mounting transmitter Ingress protection: IP65 Permissible ambient temperature range: -40 ... +80 °C With two cable glands M16 x 1.5 	82 x 80 x 55 mm	3301732
Adapter	Plastic / stainless steel	Suitable for TS 35 per DIN EN 60715 (DIN EN 50022) or TS 32 per DIN EN 50035	60 x 20 x 41.6 mm	3593789
Adapter	Steel, tin-plated	Suitable for TS 35 per DIN EN 60715 (DIN EN 50022)	49 x 8 x 14 mm	3619851

Approvals

Logo	Description	Country
	EU declaration of conformity EMC directive	European Union
	EAC (option) Electromagnetic compatibility	Eurasian Economic Community
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	Uzstandard (option) Metrology, measurement technology	Uzbekistan

Certificates (option)

- 2.2 test report
- 3.1 inspection certificate

Approvals and certificates, see website

Ordering information

Model / Design / Input / Output signal / Measuring range / Options

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