

Fieldbus Temperature Transmitter Model T53.10, for FOUNDATION™ Fieldbus and PROFIBUS® PA

WIKA Data Sheet TE 53.01



Applications

- Process industry
- Machinery, plant construction

Special Features

- FOUNDATION™ Fieldbus ITK version 4.61
- PROFIBUS® PA Profile 3
- Automatic switch between protocols
- Explosion protection, EEx i, intrinsically safe / FISCO
- Explosion protection, EEx n



Fieldbus Temperature Transmitter Model T53.10.01S

Description

Fieldbus Transmitter with FOUNDATION™ and PROFIBUS® PA Fieldbus Communication for temperature measurement with resistance thermometers and thermocouples.

Difference, average or redundancy temperature measurement. Resistance and mV-measurements with or without customer specific linearisation of functions.

FOUNDATION Fieldbus with LAS-Functionality (Link Active Scheduler) and PID-Regulation. This functionality allows for Master-independent regulations in the field device.

Polarity-independent bus connection.

Small dimensions, suitable for DIN form B sensor head mounting.

Delivered with a basic configuration (according to the ordering options) or customer specific configuration in line with the configuration options.

Specifications
Model T53.10

Input	configurable	Sensor	Measuring range	Standard			
Resistance thermometer		Pt25 ... Pt1000 ($\alpha = 0,00385$)	-200 °C ... +850 °C	IEC 60 751			
		Pt25 ... Pt1000 ($\alpha = 0,003916$)	-200 °C ... +850 °C	JIS C1604			
Thermocouples		Ni25 ... Ni1000	-60 °C ... +250 °C	DIN 43 710			
		Cu10 ... Cu1000	-50 °C ... +200 °C	$\alpha = 0,00427$			
		B	+400 °C ... +1820 °C	IEC 584			
		E	-100 °C ... +1000 °C	IEC 584			
		J	-100 °C ... +1200 °C	IEC 584			
		K	-180 °C ... +1372 °C	IEC 584			
		L	-200 °C ... +900 °C	DIN 43 710			
		N	-180 °C ... +1300 °C	IEC 584			
		R	-50 °C ... +1760 °C	IEC 584			
		S	-50 °C ... +1760 °C	IEC 584			
External CJC (cold junction compensation)		T	-200 °C ... +400 °C	IEC 584			
		U	-200 °C ... +600 °C	DIN 43 710			
		W3	0 °C ... +2300 °C	ASTM E988-90			
		W5	0 °C ... +2300 °C	ASTM E988-90			
			-40 °C ... +135 °C				
Resistance sensor		0 ... 10 k Ω					
Potentiometric resistance sensor		0 ... 100 k Ω					
mV - sensor		-800 ... +800 mV					
Basic configuration		Pt100, 3 wire 0 °C ... 100 °C					
Sensor current		typically 0.2 mA					
Max. cable resistance		50 Ω per wire					
Accuracy, at 24 °C \pm 4 K		Sensor	Base accuracy	Temperature coefficient			
		Pt100 und Pt1000	$\leq \pm 0.1$ °C	$\leq \pm 0.002$ °C / °C			
		Ni100	$\leq \pm 0.15$ °C	$\leq \pm 0.002$ °C / °C			
		Cu10	$\leq \pm 1.3$ °C	$\leq \pm 0.02$ °C / °C			
		Lin. R.	$\leq \pm 0.05$ Ω	$\leq \pm 0.002$ Ω / °C			
		Volt	$\leq \pm 10$ μ V	$\leq \pm 0.2$ μ V / °C			
		TE-Typ: E, J, K, L, N, T, U	$\leq \pm 0.5$ °C	$\leq \pm 0.01$ °C / °C			
Error cold junction compensation (CJC)		TE-Typ: B, R, S, W3, W5	$\leq \pm 1$ °C	$\leq \pm 0.025$ °C / °C			
			$\leq \pm 0.5$ °C				
Output		FOUNDATION™ Fieldbus		PROFIBUS ® PA			
Version		ITK version 4.61		EN 50 170 vol. 2 / profile 3			
Functionality		Basic or LAS					
Fieldbus function blocks		2 analogue and 1 PID		2 analogue			
Execution time, PID-controller		< 200 ms					
Power supply		9 ... 32 VDC (maximum values specified in the type-examination certificate are to be observed)					
Supply voltage		< 11 mA					
Current consumption							
Explosion protection		Model T53.10.OIS		Model T53.10.ONI			
Ex-protection (ATEX)		Zone 0/1/2, category 1G, 2G, 3G	Zone 1, category 2G	Zone 2, category 3G			
Ignition protection type		EEx ia IIC T4/T5/T6	EEx ib IIC T4/T5/T6	EEx nA[L] IIC T4/T5/T6			
EC- type-examination certificate		KEMA 06 ATEX 0148X		KEMA 06 ATEX 0148X			
FM		IS, Class I, Division 1, Group A, B, C, D Non-Incendive, Class I, Division 2, Group A, B, C, D		Non-Incendive, Class I, Div. 2, Group A, B, C, D			
Installation Drawing		11175631.01		11175631.01			
CSA		IS, Class I, Division 1, Groups A, B, C, D	IS, Class I, Div.2, Groups A, B, C, D	Non-Incendive, Class I, Div.2, Group A, B, C, D			
Certificate No.		1807316		1807316			
Maximum values for connection of the current loop circuit		Po < 0.84 W	Po < 1.3 W	FISCO FISCO	Po < 5.32 W	FISCO FISCO	
Supply voltage Ui		30 VDC	30 VDC	17,5	15 VDC	30 VDC	17.5
Ampacity Ii		120 mA	300 mA	250 mA	900 mA	250 mA	
Power rating Pi		0.84 W	1.3 W	2.0 W	5.32 W	5.32 W	
Internal capacitance Ci		2 nF	2 nF	2 nF	2 nF	2 nF	---
Internal inductance Li		1 μ H	1 μ H	1 μ H	1 μ H	1 μ H	---
Medium temperature/ ambient temperature		T4: <85°C T5: <75°C T6: <60°C	T4: <75°C T5: <65°C T6: <45°C	T4: < 85 °C T5: < 60 °C T6: < 45 °C	T4: < 85 °C T5: < 75 °C T6: < 60 °C	T4: < 85 °C T5: < 75 °C T6: < 60 °C	
Maximum values for connection of the sensor circuit							
Supply voltage Uo		5.7 V					
Ampacity Io		8.4 mA					
Power rating Po		12 mW					
Capacitance Co		40 μ F					
Inductance Lo		200 mH					

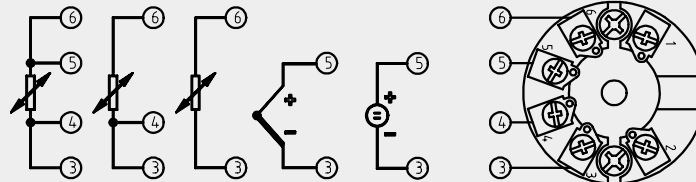
Further specifications

Model T53.10

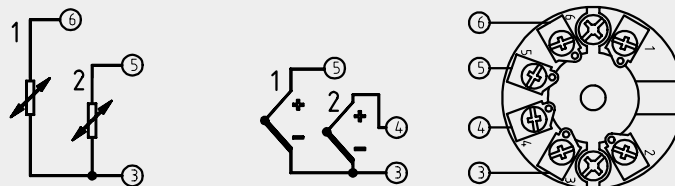
Electromagnetic compatibility (EMC)	per EMC Directive 89/336/EWG DIN EN 61 326:2002 and NAMUR NE 21
Ambient conditions	
Ambient and storage temperature	-40 ... +85 °C
Maximum permissible humidity	95 % relative humidity, without moisture condensation
Vibration	2 ... 100 Hz 4 g DIN EN 60 068-2-6
Special features	
Isulation voltage, test / operation	1.5 kVAC / 50 VAC
Response time (programmable)	1 ... 60 s
Updating time	< 400 ms
Case	Head mounting design, incl. spring-loaded mounting screws
Material	Plastic, PBT, glass fibre reinforced
Ingress protection case	IP 68 IEC 529 / EN 60 529
terminal	IP 00 IEC 529 / EN 60 529
Cross section of terminal connectors	0.14 ... 1.5 mm ²
Weight	Approx. 0.05 kg

Designation of terminal connectors

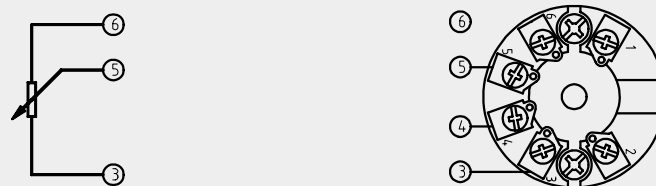
1 Sensor



2 Sensors



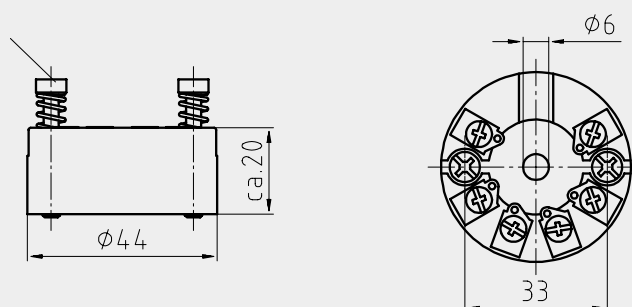
Potentiometric sensor



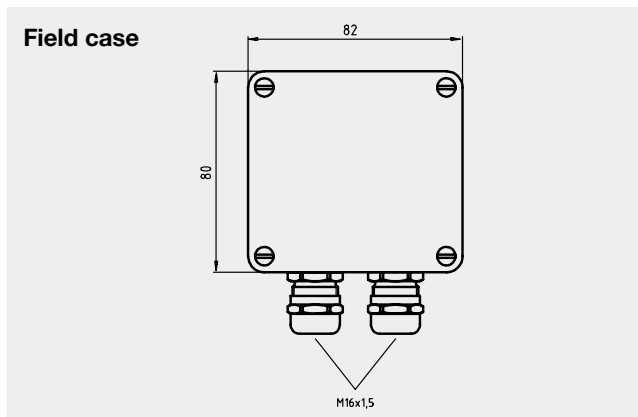
Clamp 1 and 2: Connection FOUNDATION™ Fieldbus or PROFIBUS® PA (protected against reverse polarity)

Dimensions in mm

Screw M4
approx. 30 mm
spring-loaded



Accessory



Accessory (please order separately)	Order No.
Field Communicator FC375 English for HART® and FOUNDATION™ fieldbus, ATEX II 2G (1GD) EEX IA IIC T4, FM CLASS I, DIVISION1, GROUPS A,B,C AND D T4, CSA EX IA IIC NiMH battery, with power supply 90 - 240 VAC, with EASY UPGRADE OPTION	2133702
Field case, plastic (ABS), IP 65, for mounting of a head mounting transmitter, permissible ambient temperature: -40 °C ... +80 °C, 82x80x55 mm (WxLxH), with two cable glands M16 x 1.5	33 01732
Adapter for mounting on a DIN rail, plastic/stainless steel	35 93789
Adapter for mounting on a DIN rail, steel tin galvanized	36 19851

Ordering information

Field No.	Code	Features	
1	NI	II 3G EEx nA[nL] / NI CSA / NI FM for Zone 2 / Div 2	
		IS	II 1GD EEx ia / IS CSA / IS FM for Zone 0 / Div 1
2	GK	basic configuration (Pt 100, 3-wire, limits for 0 ... 100 °C, busaddress 126)	
		KK	customer specific configuration <i>please state as additional text</i>
3	Additional order info		
	YES	NO	
	T	Z	additional text <i>Please state as clearly understandable text!</i>

Order code:

T53.10 . 0 1 - 2 - 3

Additional text: _____

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.



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