

Fieldbus temperature transmitters Model T53.10, for FOUNDATION™ Fieldbus and PROFIBUS® PA

WIKA data sheet TE 53.01



Applications

- Process industry
- Machine building and plant construction

Special features

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



Fieldbus Temperature Transmitter, Model T53.10.0IS

Description

The Fieldbus temperature transmitter model T53.10 with FOUNDATION™ and PROFIBUS® PA Fieldbus Communication is suitable for temperature measurement with resistance thermometers and thermocouples. Furthermore resistance and mV measurements with or without customer specific linearisation are possible. Difference, average or redundancy temperature measurements can be realised.

The T53 is available at FOUNDATION™ Fieldbus with LAS-Functionality (Link Active Scheduler) and PID-Regulation. These functionalities allows for master-independent regulations in the field housing.

The Fieldbus temperature transmitter model T53.10 has a polarity-independent bus connection. Due to its small dimensions the temperature transmitter is suitable for all DIN Form B connection heads.

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

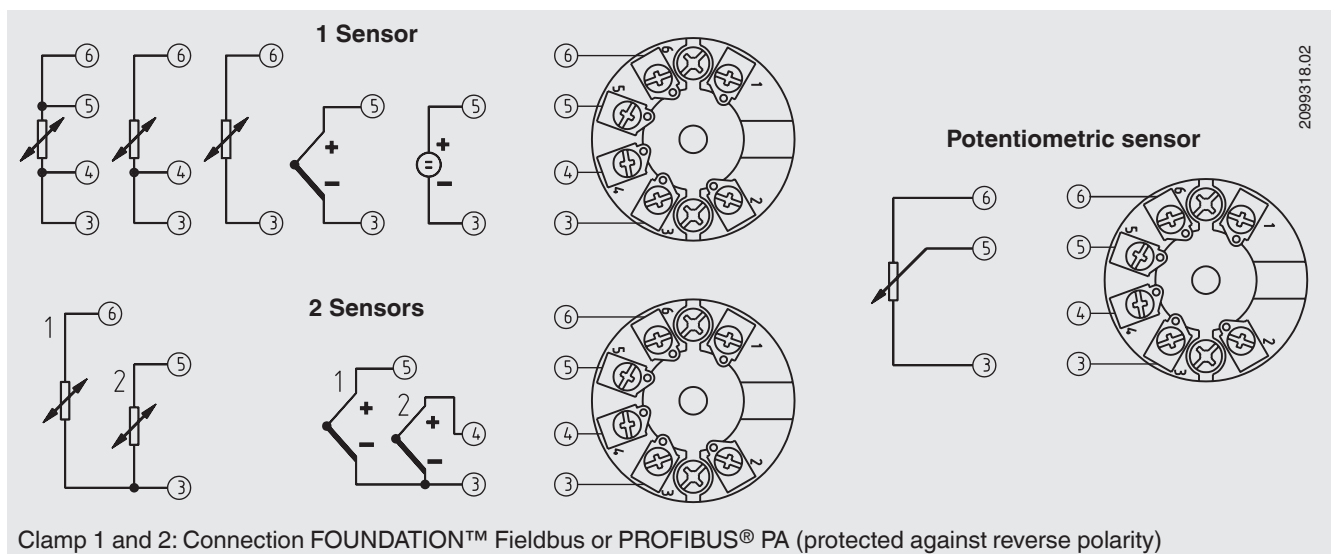
Specifications		Model T53.10	
Input	configurable	Sensor	Measuring range
Resistance thermometers		Pt25 ... Pt1000 ($\alpha = 0.00385$)	-200 ... +850 °C
		Pt25 ... Pt1000 ($\alpha = 0.003916$)	-200 ... +850 °C
		Ni25 ... Cu1000	-60 ... +250 °C
		Cu10 ... Cu1000	-50 ... +200 °C
Thermocouples		B	+400 ... +1820 °C
		E	-100 ... +1000 °C
		J	-100 ... +1200 °C
		K	-180 ... +1372 °C
		L	-200 ... +900 °C
		N	-180 ... +1300 °C
		R	-50 ... +1760 °C
		S	-50 ... +1760 °C
		T	-200 ... +400 °C
		U	-200 ... +600 °C
		W3	0 ... +2300 °C
		W5	0 ... +2300 °C
External CJC (cold junction compensation)		-40 ... +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 ... 100 °C	
Sensor current		typically 0.2 mA	
Max. cable resistance		50 Ω per wire	
Measuring accuracy, at 24 °C \pm 4 K		Sensor	Base accuracy
		Pt100 and Pt1000	$\leq \pm 0.1$ °C
		Ni100	$\leq \pm 0.15$ °C
		Cu10	$\leq \pm 1.3$ °C
		Lin. R.	$\leq \pm 0.05$ Ω
		Volt	$\leq \pm 10$ μ V
		TE type: E, J, K, L, N, T, U	$\leq \pm 0.5$ °C
		TE type: B, R, S, W3, W5	$\leq \pm 1$ °C
Temperature coefficient			$\leq \pm 0.002$ °C / °C
			$\leq \pm 0.002$ °C / °C
			$\leq \pm 0.02$ °C / °C
			$\leq \pm 0.002$ Ω / °C
			$\leq \pm 0.2$ μ V / °C
			$\leq \pm 0.01$ °C / °C
			$\leq \pm 0.025$ °C / °C
Error cold junction compensation (CJC)		$\leq \pm 0.5$ °C	
Output		FOUNDATION™ Fieldbus	PROFIBUS® PA
Version		ITK version 4.61	EN 50170 vol. 2 / profile 3
Functionality		Basic or LAS	
Function blocks		2 analogue and 1 PID	2 analogue
Execution time, PID-controller		< 200 ms	
Electromagnetic compatibility (EMC)		EMC directive 2004/108/EC, EN 61326 Emission (Group 1, Class B) and immunity (industrial application) and NAMUR NE 21	
Ambient conditions			
Ambient and storage temperature		-40 ... +85 °C	
Maximum permissible humidity		95 % relative humidity, without condensation	
Vibration		2 ... 100 Hz 4 g DIN EN 60068-2-6	
Special features			
Insulation voltage, test / operation		AC 1.5 kV / AC 50 V	
Response time (programmable)		1 ... 60 s	
Updating time		< 400 ms	
Execution time, analogue input block		< 50 ms	
Case		for head mounting design, incl. spring-loaded mounting screws	
Material		Plastic, PBT, glass fibre reinforced	
Ingress protection	case	IP 68 per IEC 529 / EN 60529	
	terminal	IP 00 per IEC 529 / EN 60529	
Cross section of terminal connectors		0.14 ... 1.5 mm ²	
Weight		approx. 0.05 kg	

Explosion protection / power supply

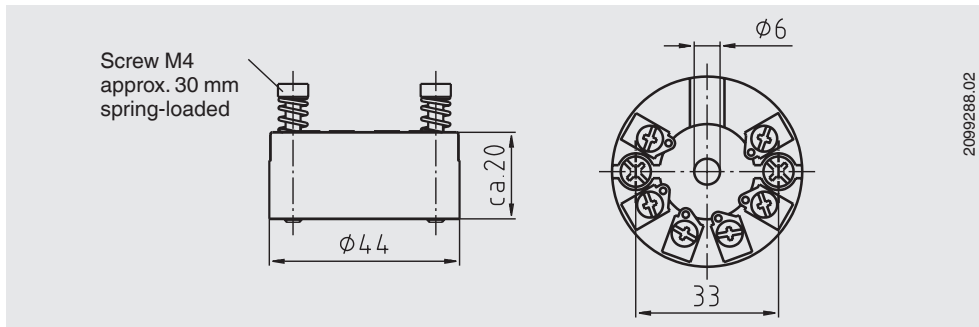
Model	Approvals	Permissible ambient/ storage temperature (per temperature codes and classes)	Safety-related maximum vales for Current loop (connections 1 and 2)		Sensor (connections 3 up to 6)	Power supply $U_B^{1)}$ / current consumption
T53.10.0IS	EC-type examination certificate: KEMA 06ATEX0148X Zone 0,1: II 1G Ex ia IIC T4/T5/T6 Zone 0,1: II 1D Ex iaD CSA Approval 1807316 IS, Class I, Division 1, Group A, B, C, D FM Approval: 3027564 (Inst. Drg: 11175631) IS, Class I, Division 1, Group A, B, C, D Non-Incendive, Class I, Division 2, Group A, B, C, D	-40 ... +85 °C (T4)	$U_i = DC 30 V$	$C_i = 2 nF$	$U_o = 5.7 V$ $I_o = 8.4 mA$ $P_o = 12 mW$ $C_o = 40 \mu F$ $L_o = 200 mH$	DC 9 ... 32 V/ < 11 mA
		-40 ... +75 °C (T5)	$I_i = 120 mA$	$L_i = 1 \mu H$		
		-40 ... +60 °C (T6)	$P_i = 0.84 W$			
		-40 ... +75 °C (T4)	$U_i = DC 30 V$	$C_i = 2 nF$		
T53.10.0IS	EC-type examination certificate: KEMA 06ATEX0148X Zone 0,1: II 2G (1) G Ex ib [ia] IIC T4/T5/T6 CSA Approval 1807316 IS, Class I, Division 1, Group A, B, C, D FM Approval: 3027564 (Inst. Drg: 11175631) IS, Class I, Division 1, Group A, B, C, D Non-Incendive, Class I, Division 2, Group A, B, C, D	-40 ... +85 °C (T4)	$U_i = DC 30 V$	$C_i = 2 nF$		
		-40 ... +75 °C (T5)	$I_i = 250 mA$	$L_i = 1 \mu H$		
		-40 ... +60 °C (T6)	$P_i = 5.32 W$			
		-40 ... +85 °C (T4)	$U_i = DC 17.5 V$	$C_i = 2 nF$		
T53.10.0NI	EC-type examination certificate: KEMA 06ATEX0148X Zone 2: II 3GD Ex nA [nL] IIC T4/T5/T6 Zone 2: II 3GD Ex nL IIC T4/T5/T6 Zone 2: II 3GD Ex nA [ic] IIC T4/T5/T6 Zone 2: II 3GD Ex ic IIC T4/T5/T6 CSA Approval 1807316 FM Approval: 3027564 (Inst. Drg: 11175631) Non-Incendive, Class I, Division 2, Group A, B, C, D	-40 ... +85 °C (T4)	$U_i = DC 32 V$	$C_i = 2 nF$		
		-40 ... +75 °C (T5)	FNICO (FISCO)	$L_i = 1 \mu H$		
		-40 ... +60 °C (T6)	$U_i = DC 17.5 V$			

1) Depending on the safety-relevant upper limit values for the circle of current loop. (for this see also the type examination certificate).

Designation of terminal connectors



Dimensions in mm

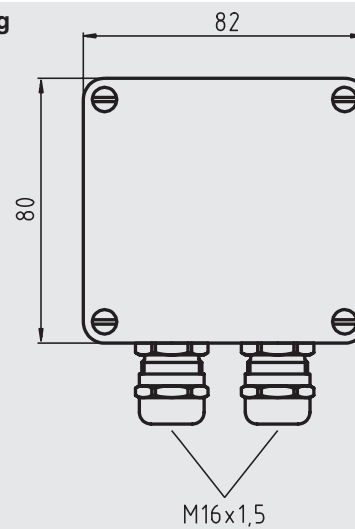


Accessory

Field Communicator FC375



Field housing



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, Division 1, Groups A, B, C, D T4, CSA Ex ia IIC	
NiMH battery, with power supply AC 90 ... 240 V, with EASY UPGRADE OPTION	2133702
Field housing, plastic (ABS), IP 65, for mounting of a head mounting transmitter, permissible ambient temperature: -40 ... +80 °C, 82 x 80 x 55 mm (W x L x H), with two cable glands M16 x 1.5	3301732
Adapter, plastic/stainless steel, for mounting on a DIN rail	3593789
Adapter, steel tin galvanized, for mounting on a DIN rail	3619851

The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.



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