

2-Wire Transmitter with HART Protocol

TT5335A



Features:

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- HART 5 protocol
- Programmable sensor error value
- For DIN form B sensor head mounting



Application:

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor
- Difference or average temperature measurement of 2 resistance or TC sensors
- Conversion of linear resistance variation to a standard analog current signal, for instance from valves or Ohmic level sensors
- Amplification of bipolar mV signals to standard 4...20 mA current signal
- Connection of up to 15 transmitters to a digital 2-wire signal with HART communication

Technical characteristics

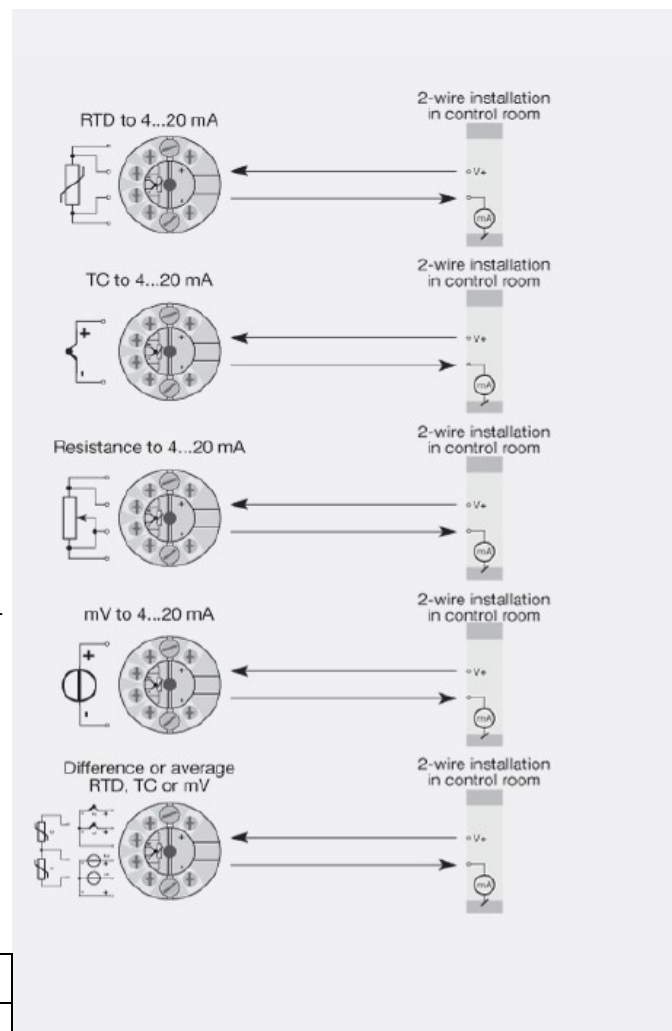
- Within a few seconds the user can program TT5335A to measure temperatures within all ranges defined by the norms
- The RTD and resistance inputs have cable compensation for 2-, 3- and 4-wire connection
- The TT5335A has been designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations
- Continuous check of vital stored data for safety reasons
- Sensor error detection according to the guidelines in NAMUR NE89

Mounting / Installation

- For DIN form B sensor heads or DIN rail mounting with the fitting type 8421

Order:

Type
TT5335A



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Environmental Conditions

Operating temperature	-40°C to +85°C
Calibration temperature	20....28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree (encl./terminal)	IP68 / IP00

Mechanical Specifications

Dimensions	Ø 44 x 20.2 mm
Weight approx	50 g
Wire size	1 x 1.5 mm ² stranded wire
Screw terminal torque	0.4 Nm
Vibration	IEC 60068-2-6
2... 25 Hz	±1.6 mm
25... 100 Hz	±4 g

Common Specifications

Supply	
Supply voltage	8.0 ...35 VDC

Isolation voltage	
Isolation voltage, test / working	1.5 kVAC / 50 VAC

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Common Specifications Continued

Response time	
Response time (programmable)	1 ...60 s
Warm-up time	30 s
Programming	Loop Link & HART
Signal / noise ratio	Min. 60 dB
Accuracy	Better than 0.05% of selected range
Signal dynamics, input	22 bit
Signal dynamics, output	16 bit
Effect of supply voltage change	< 0.005% of span / VDC
EMC immunity influence	< $\pm 0.1\%$ of span
Extended EMC immunity: NAMUR NE21, A criterion, burst	< $\pm 1\%$ of span

Input Specifications

Common input specifications	
Max. offset	50% of selected max. value

RTD input	
RTD type	Pt100, Ni100, lin. R
Cable resistance per wire (max.)	5 Ω (up to 50 Ω per wire is possible with reduced measurement accuracy)
Sensor current	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire)	< 0.002 Ω / Ω
Sensor error detection	Yes

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Input Specifications Continued

TC input	
Thermocouple type	B, E, J, K, L, N, R, S, T, U, W3, W5
Cold junction compensation (CJC)	< $\pm 1.0^{\circ}\text{C}$
Sensor error detection	Yes
Sensor error current: When detecting / else	Nom. $33\mu\text{A}$ / $0\mu\text{A}$

Voltage input	
Measurement range	-800... +800 mV
Min. measurement range (span)	2.5 mV
Input resistance	10 M Ω

Output Specifications

Current output	
Signal range	4 ...20 mA
Min. signal range	16 mA
Load (@ current output)	$\leq (V_{\text{supply}} - 8) / 0.023 [\Omega]$
Load stability	$\leq 0.01\%$ of span / 100 Ω
Sensor error indication	Programmable 3.5 ...23 mA
NAMUR NE43 Upscale/Downscale	23 mA / 3.5 mA
*of span	= of the presently selected range

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Observed authority requirements

EMC	2014/30/EU
EAC	TR-CU 020/2011

Approvals

ATEX 2014/34/EU	KEMA 03ATEX1508X
IECEX	KEM 10.0083X
INMETRO	DEKRA 18.0002 X
DNV-GL Marine	Stand. f. Certific. No. 2.4
SIL	Hardware assessed for use in SIL applications

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