2-wire Transmitter with HART Protocol

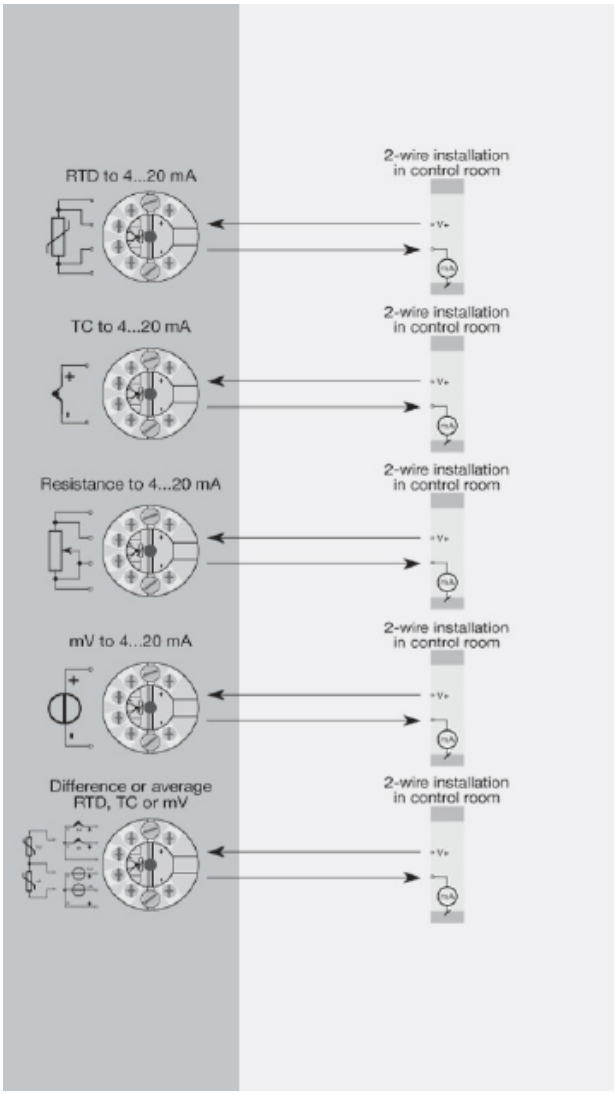
TT5335D

Features:

- RTD, TC, Ohm, and or mV input
- Extremely high measurement accuracy
- HART 5 protocol
- Galvanic isolation
- 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 signals
- 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 TT5335D 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 TT5335D 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 head mounting

Order:

Type
TT5335D

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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 kg
Wire size	1 x 1.5 mm² 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...30 VDC

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

Response time	
Response time (programmable)	1...60 s
Warm-up time	30 s
Programming	Loop link and HART
Signal / noise ratio	Min. 60 dB
Accuracy	Better than 0.05% of selected range

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Response time (continued)	
Signal dynamics, input	22 bit
Signal dynamics, output	16 bit
Effect of supply voltage change	< 0.005% of span / VDC
EMC immunity influence	< ±0.1% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst	< ±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	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

TC input	
Thermocouple type	B, E, J, K, L, N, R, S, T, U, W3, W5
Cold junction compensation (CJC)	< ±1.0 °C
Sensor error detection	Yes
Sensor error current: When detecting / else	Nom. 33 µA / 0 µA

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Input Specifications Continued

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

Output Specifications

Current output	
Signal range	4 ...20 mA
Min. signal range	16 mA
Load (@ current output)	≤ (Vsupply - 8) / 0.023 [Ω]
Load stability	≤ 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

Observed authority requirements

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

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Approvals

ATEX 2014/34/EU	KEMA 03ATEX1537
IECEx	KEM 10.0083X
FM	FM17US0013X
CSA	1125003
INMETRO	DEKRA 18.0002 X
EAC Ex TR-CU 012/2011	RU C-DK.GB08.V.00410
DNV-GL Marnie	Stand f. Certific. No. 2.4
SIL	Hardware assessed for use in SIL applications

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