PERFORMANCE MADE SMARTER

2-wire transmitter with HART protocol

5335D

– RTD, TC, Ohm, 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 a bipolar mV signal to a standard 4...20 mA current signal.
- Connection of up to 15 transmitters to a digital 2-wire signal with HART communication.

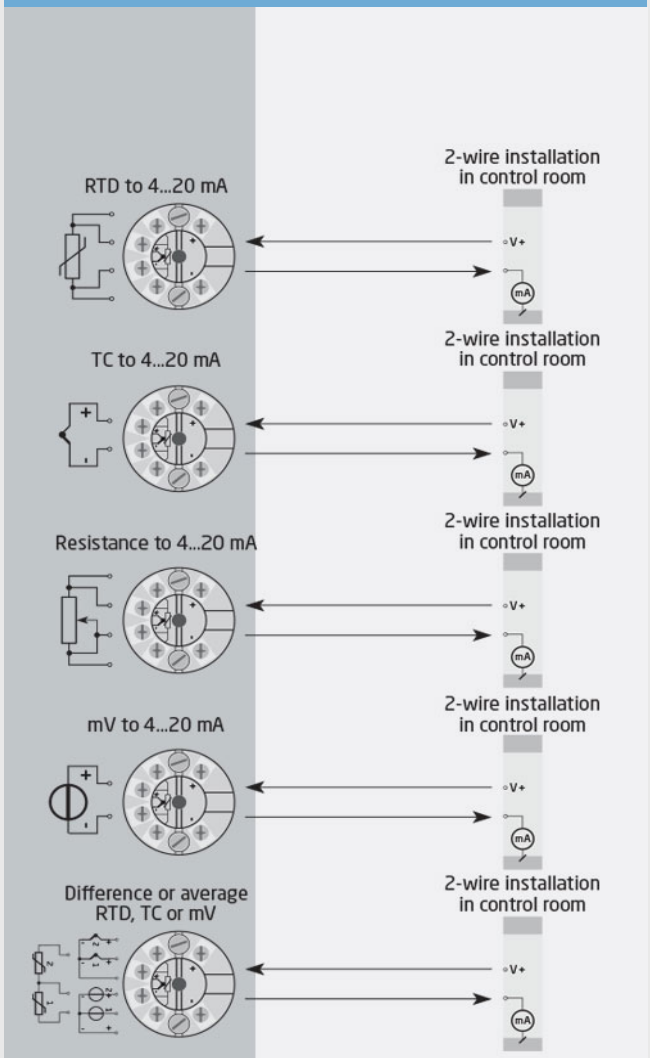
Technical characteristics

- Within a few seconds the user can program PR5335D 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 5335D has been designed according to strict safety requirements and is therefore suitable for application in SIL 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.

Applications



Order

Type	Version	
5335	Zone 0, 1, 2, 21, 22, M1 / DIV. 1, DIV. 2	: D

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...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 & 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..... < ±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

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

I.S. / Ex marking

ATEX..... II 1 G Ex ia IIC T6...T4 Ga, II 2 D Ex ia IIIC Db, I M1 Ex ia I Ma
IECEx..... Ex ia IIC T6...T4 Ga, Ex ia IIIC Db, Ex ia I Ma
FM, US..... Cl. I, Div. 1, Gp. A, B, C, D T4/T6; Cl. I Zone 0, AEx ia IIC T4/T6; Cl. 1, Div. 2, Gp. A, B, C, D, T4/T6
CSA..... Cl. I, Div. 1, Gp. A, B, C, D Ex ia IIC, Ga
INMETRO..... Ex ia IIC T6...T4 Ga, Ex ia IIIC Da, Ex ia I Ma

Observed authority requirements

EMC..... 2014/30/EU & UK SI 2016/1091
ATEX..... 2014/34/EU & UK SI 2016/1107
RoHS..... 2011/65/EU & UK SI 2012/3032
EAC..... TR-CU 020/2011
EAC Ex..... TR-CU 012/2011

Approvals

ATEX..... DEKRA 20ATEX0108X
IECEx..... DEK 20.0063X
FM..... FM17US0013X
CSA..... 1125003
INMETRO..... DEKRA 18.0002X
DNV Marine..... TAA0000101
EAC Ex..... RU C-DK.HA65.B.00355/19
SIL..... Hardware assessed for use in SIL applications