2-wire transmitter with HART protocol

5335A

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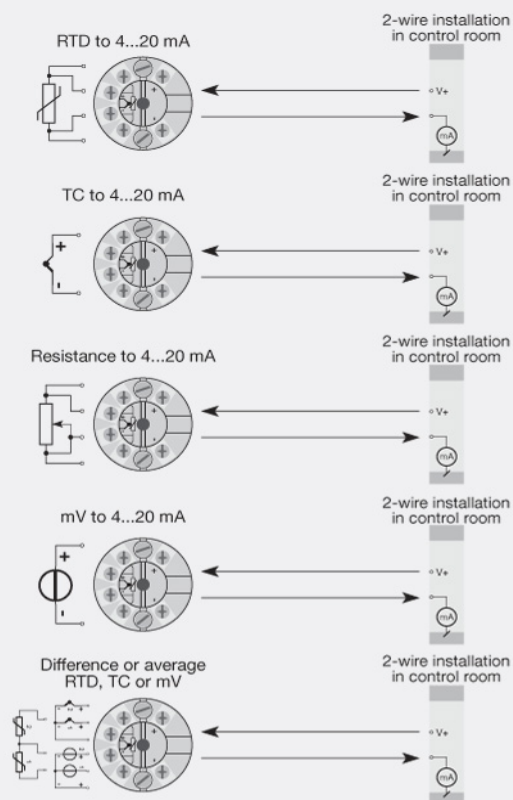• Connection of up to 15 transmitters to a digital 2-wire signal with HART communication.

Technical characteristics

• Within a few seconds the user can program PR5335A 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 5335A 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 or DIN rail mounting with the PR fitting type 8421.

Applications

RTD to 4...20 mA — 2-wire installation in control room

TC to 4...20 mA — 2-wire installation in control room

Resistance to 4...20 mA — 2-wire installation in control room

mV to 4...20 mA — 2-wire installation in control room

Difference or average RTD, TC or mV — 2-wire installation in control room

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

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

Observed authority requirements

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

Approvals

ATEX 2014/34/EU... KEMA 03ATEX1508 X
IECEx... KEM 10.0083X
INMETRO.. DEKRA 18.0002X
DNV-GL Marine... Stand. f. Certific. No. 2.4
SIL.. Hardware assessed for use in SIL applications