



## 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.

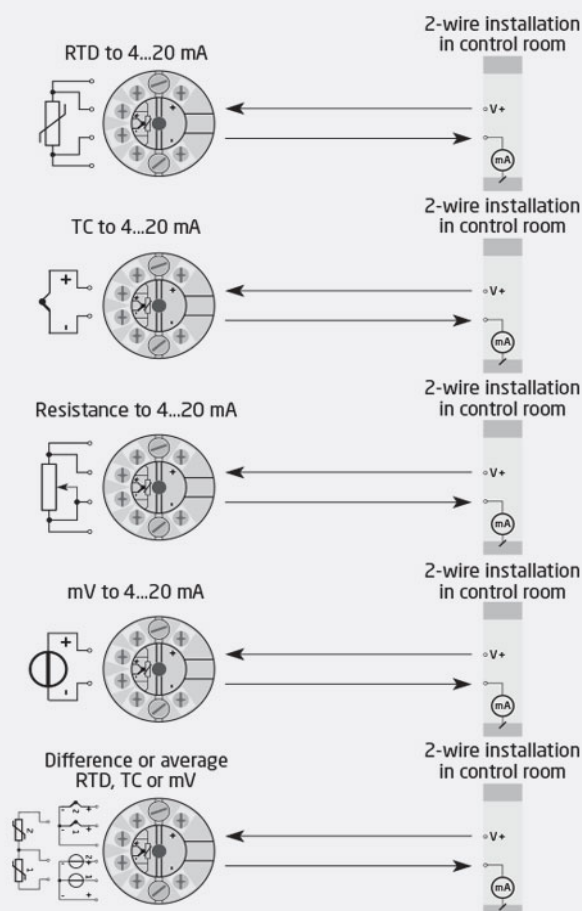
#### Technical characteristics

- 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 provides the required failure data (SFF and PFDAVG) for SIL 2 applications as per IEC 61508 / IEC 61511.
- 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



## Order

| Type | Version             |
|------|---------------------|
| 5335 | Zone 2 / Div. 2 : A |

### 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 <sup>2</sup> 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.....   | HART & PR 5909 Loop Link communications interface |
| Signal / noise ratio.....                                  | > 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 3 G Ex nA [ic] IIC T6...T4 Gc, II 3 G Ex ec [ic] IIC T6...T4 Gc, II 3 G Ex ic IIC T6...T4 Gc, II 3 D Ex ic IIIC Dc |
| IECEx.....   | Ex nA [ic] IIC T6...T4 Gc, Ex ec [ic] IIC T6...T4 Gc, Ex ic IIC T6...T4 Gc, Ex ic IIIC Dc                             |
| CSA.....     | Cl. I, Div. 2, Gp. A, B, C, D T6...T4, Ex nA[ic] IIC T6...T4 Gc   |
| INMETRO..... | Ex ec [ic] IIC T6...T4 Gc, Ex ic IIC T6...T4 Gc, Ex ic IIIC Dc  |

### 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 20ATEX0109X                                |
| IECEX.....      | DEK 20.0063X                                     |
| CSA.....        | 1125003  |
| INMETRO.....    | DEKRA 23.0011X                                   |
| DNV Marine..... | TAA0000101                                       |
| SIL.....        | Hardware assessed for use in<br>SIL applications |