



## 2-wire programmable transmitter

### 5331A

- RTD, TC, Ohm, or mV input
- Extremely high measurement accuracy
- 1.5 kVAC galvanic isolation
- Programmable sensor error value
- For DIN form B sensor head mounting



#### Application

- Linearized temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- 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.

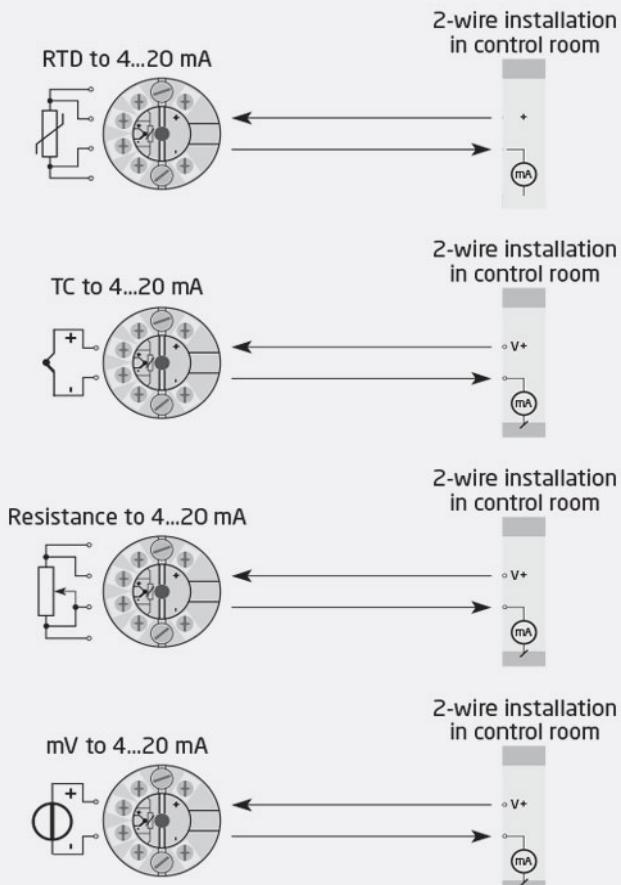
#### Technical characteristics

- Within a few seconds the user can program PR5331A 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.
- Continuous check of vital stored data for safety reasons.

#### Mounting / installation

- For DIN form B sensor head or DIN rail mounting with the PR fitting type 8421.

#### Applications



## Order

Type	Version	Ambient temperature	Galvanic isolation
5331	Zone 2 / Div. 2	: A -40°C...+85°C : 3	1500 VAC : B

## 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..... 7.2...35 VDC  
 Internal power dissipation..... 25 mW...0.8 W

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

**Response time**  
 Response time (programmable)..... 1...60 s  
 Voltage drop..... 7.2 VDC  
 Warm-up time..... 5 min.  
 Power on to stable output..... 4.5 s  
 Programming..... Loop Link  
 Signal / noise ratio..... Min. 60 dB  
 EEPROM error check..... < 3.5 s  
 Accuracy..... Better than 0.05% of selected range  
 Signal dynamics, input..... 20 bit  
 Signal dynamics, output..... 16 bit  
 Effect of supply voltage change..... < 0.005% of span / VDC  
 EMC immunity influence..... < ±0.5% 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 (max.)  
 Sensor current..... Nom. 0.2 mA  
 Effect of sensor cable resistance (3-/4-wire)..... < 0.002 Ω / Ω  
 Sensor error detection..... Yes

### Linear resistance input

Linear resistance min...max..... 0 Ω...5000 Ω

### TC input

Thermocouple type..... B, E, J, K, L, N, R, S, T, U, W3, W5, LR

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..... -12...800 mV  
 Min. measurement range (span)..... 5 mV  
 Input resistance..... 10 MΩ

## Output specifications

### Current output

Signal range..... 4...20 mA  
 Min. signal range..... 16 mA  
 Load (@ current output)..... ≤ (V<sub>supply</sub> - 7.2) / 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

### Common output specifications

Updating time..... 440 ms  
 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, Grp. 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 20ATEX0096X
IECEx.....	DEK 20.0059X
CSA.....	1125003
INMETRO.....	DEKRA 23.0009X
DNV Marine.....	TAA0000101
EAC Ex.....	RU C-DK.HA65.B.00355/19