



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.

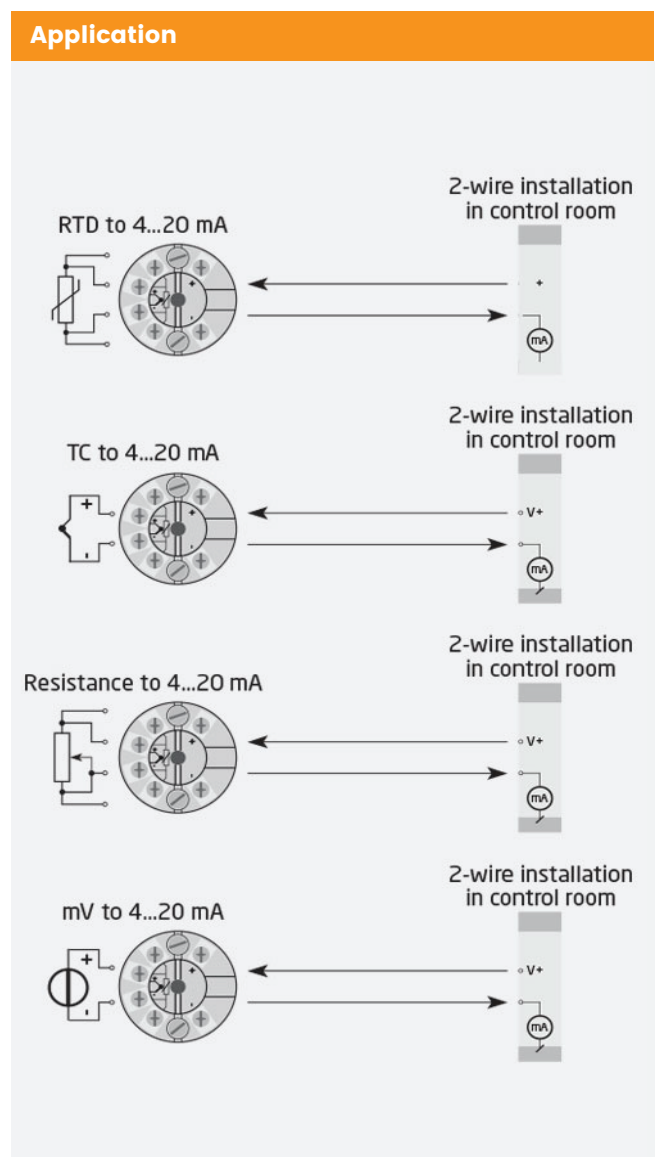
Technical characteristics

- 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.

Application



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

Isolation voltage

Isolation voltage, test / workin : 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 : 0.2 mA, < 0.4 mA
 Effect of sensor cable resistance (3-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 detecting / else. : When : 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) : ≤ (Vsupply - 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 of span : 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, Gp. A, B, C, D T6...T4, Ex nA [ic] IIC T6...T4 Gc
 INMETRO : Ex nA [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 : I125003
 INMETRO : DEKRA 16.0013 X
 DNV Marine : TAA0000101
 EAC Ex : RU C-DK.HA65.B.00355/19