

5331A 2-wire programmable transmitter

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.

Specification

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

Isolation voltage

Isolation voltage, test / working	1.5 kVAC / 50 VAC
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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
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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
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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 μ A / 0 μ A

Voltage input

Measurement range -12...800 mV
Min. measurement range (span) 5 mV
Input resistance 10 M Ω

Output specifications

Current output

Signal range 4...20 mA
Min. signal range 16 mA
Load (@ current output) $\leq (V_{\text{supply}} - 7.2) / 0.023 [\Omega]$
Load stability $\leq 0.01\%$ 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, 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	1125003
INMETRO	DEKRA 16.0013 X
DNV Marine	TAA0000101
EAC Ex	RU C-DK.HA65.B.00355/19