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.
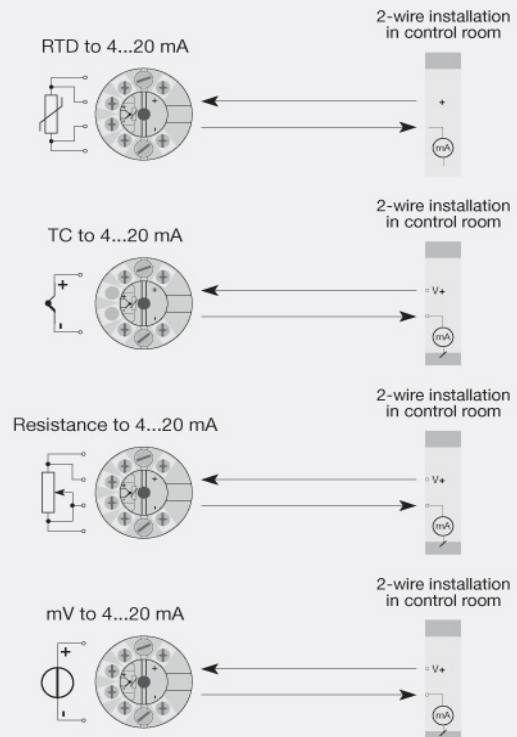• Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

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

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

Type	Ambient temperature		Galvanic isolation	
5331A	-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^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

Response time

Response time (programmable)....................	1...60 s
Voltage drop..	7.2 VDC
Warm-up time...	5 min.
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)................................	≤ (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...	440 ms
of span..	= of the presently selected range

I.S. / Ex marking

ATEX..	II 3 G Ex nA [ic] IIC T4...T6 Gc, II 3 G Ex ic IIC T4...T6 Gc, II 3 D Ex ic IIIC Dc
IECEx...	Ex nA [ic] IIC T4...T6 Gc, Ex ic IIC T4...T6 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
ATEX..	2014/34/EU
RoHS..	2011/65/EU
EAC...	TR-CU 020/2011
EAC Ex..	TR-CU 012/2011

Approvals

DNV Marine...	TAA0000101
ATEX..	KEMA 10ATEX0002 X
IECEx...	DEK 13.0035X
CSA...	1125003
INMETRO...	DEKRA 16.0013 X
EAC Ex..	RU C-DK.GB08.V.00410