PERFORMANCE MADE SMARTER

2-wire programmable transmitter

5331A

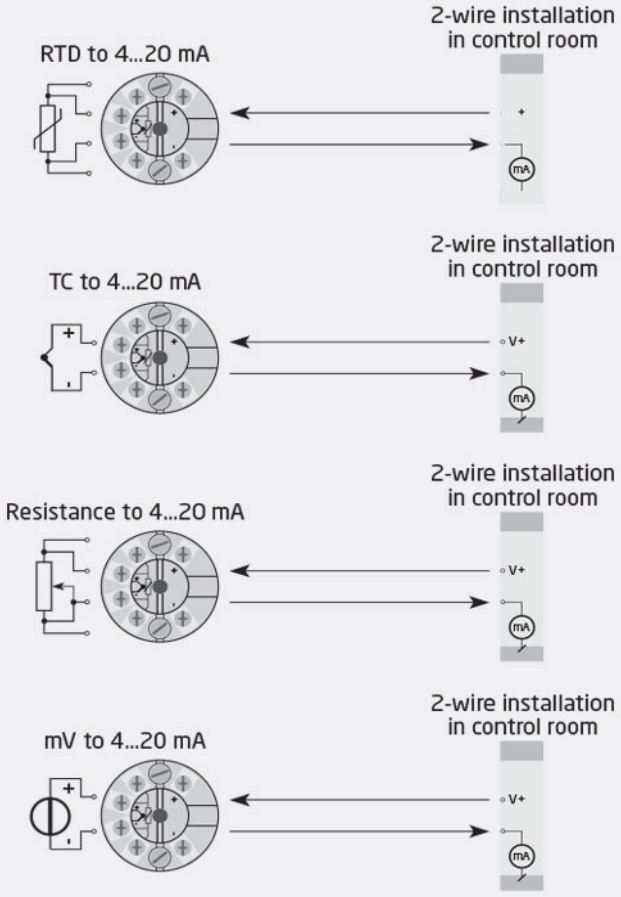
– RTD, TC, Ohm, or mV input
– Extremely high measurement accuracy
– 1.5 kVAC galvanic isolation
– Programmable sensor error value
– For DIN form B sensor head mounting

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



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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 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.
Power on to stable output	4.5 s
Programming	PR 5909 Loop Link communications interface
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 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 20ATEX0096X
IECEx	DEK 20.0059X
CSA	1125003
INMETRO	DEKRA 23.0009X
DNV Marine	TAA0000101
EAC Ex	EAEU KZ 7500361.01.01.08756