2-wire programmable transmitter

5331D

– 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

CSA · FM APPROVED · ATEX · Ex · IECEx · CCOE · EHC · CE

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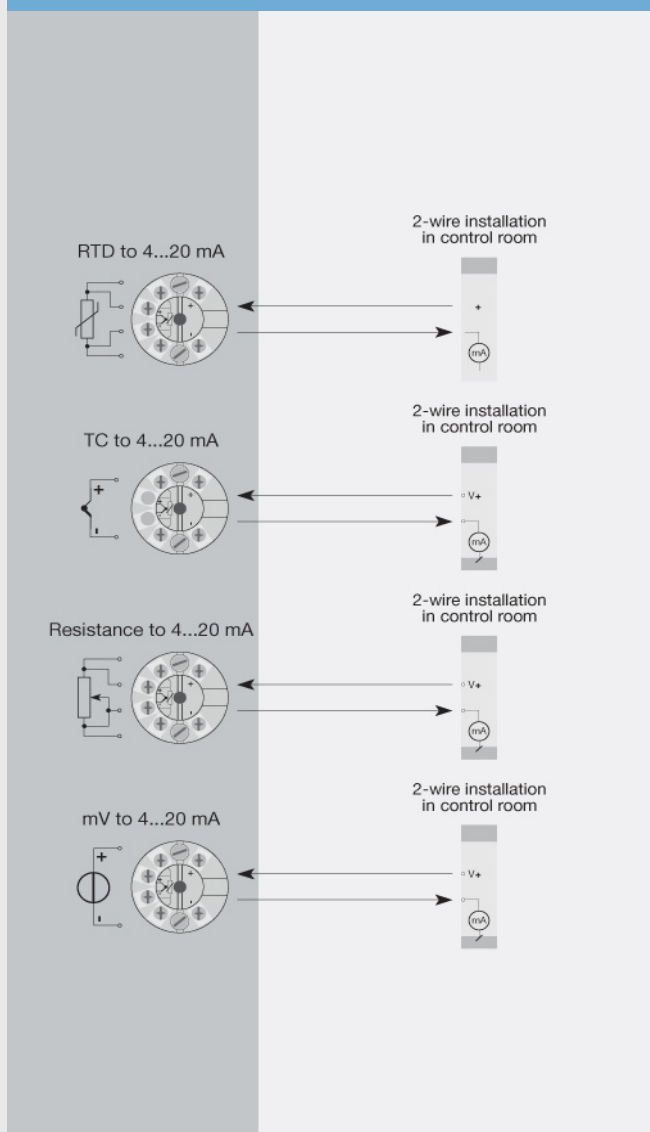- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

Technical characteristics
- Within a few seconds the user can program PR5331D 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 mounting.

Connections

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	
5331D	-40°C…+85°C	: 3	1500 VAC	: B

Environmental Conditions

Specifications range... -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 : 2007
Vibration: 2...25 Hz.. ±1.6 mm
Vibration: 25...100 Hz.................................... ±4 g

Common specifications

Supply
Supply voltage... 7.2...30 VDC

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

Response time
Response time (programmable).................... 1...60 s

Internal consumption...................................... 25 mW…0.8 W
Voltage drop... 7.2 VDC
Warm-up time... 5 min.
Communications interface.............................. 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
NE 21, 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
(max.)... 5 Ω
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 resistance... ≤ (Vsupply - 7.2) / 0.023 [Ω]
Load stability... ≤0.01% of span / 100 Ω
Sensor error indication.................................. Programmable 3.5…23 mA
NAMUR NE 43 Upscale/Downscale.............. 23 mA / 3.5 mA

Common output specifications
Updating time... 440 ms

*of span... = of the presently selected
                                                                           range

Approvals

EMC... 2004/108/EC
ATEX 94/9/EC... KEMA 06ATEX0062
IECEx... DEK 13.0035X
FM.. 2D5A7
CSA.. 1125003
INMETRO... DEKRA 13.0001 X
CCOE.. P337392/2
EAC.. TR-CU 020/2011
EAC Ex TR-CU 012/2011.............................. RU C-DK.GB08.V.00410
DNV Marine... Stand. f. Certific. No. 2.4