

# 2-WIRE PROGRAMMABLE TRANSMITTER



- 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:**

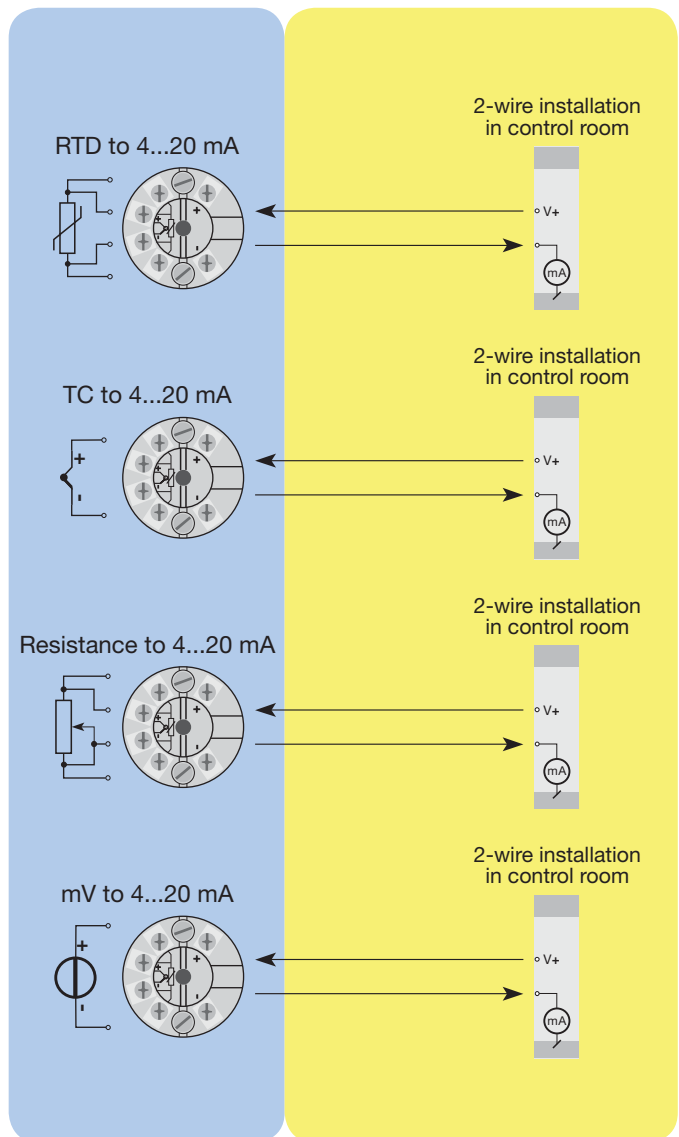
- Linearised temperature measurement with Pt100...Pt1000, Ni100...Ni1000, or TC sensor.
- Conversion of linear resistance variation to a standard analogue current signal, for instance from valves or Ohmic level sensors.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

**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:**

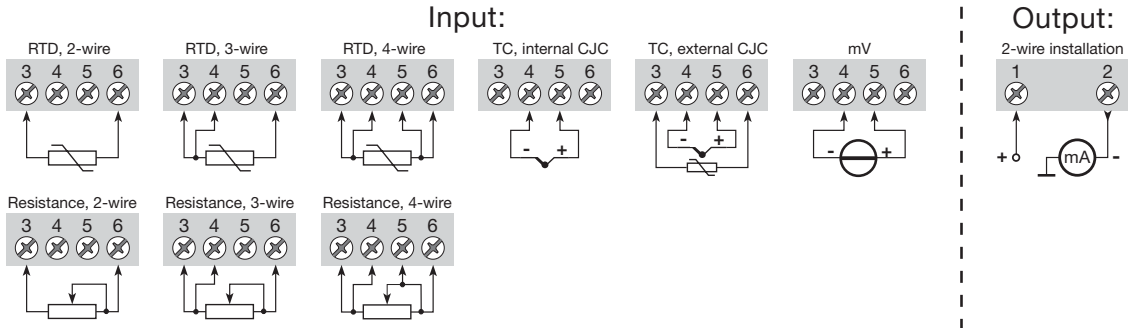
- For DIN form B sensor head mounting.
- **NB:** As Ex barrier we recommend 5104B, 5114B, or 5116B.



Order: 5331

Type	Version	Ambient-temperature	Galvanic isolation
5331	CSA, FM & ATEX : D	-40°C...+85°C : 3	1500 VAC : B

**Connections:**



**Electrical specifications:**

**Specifications range:**

-40°C to +85°C

**Common specifications:**

Supply voltage, DC ..... 7.2...30 V  
 Voltage drop ..... 7.2 VDC  
 Isolation voltage, test / operation ..... 1.5 kVAC / 50 VAC  
 Communications interface ..... Loop Link  
 Signal / noise ratio ..... Min. 60 dB  
 Signal dynamics, input ..... 20 bit  
 Signal dynamics, output ..... 16 bit  
 Accuracy, the greater of general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.05% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
RTD	≤ ±0.2°C	≤ ±0.01°C/°C
Lin.R	≤ ±0.1 Ω	≤ ±10 mΩ/°C
Volt	≤ ±10 μV	≤ ±1 μV/°C
TC type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C/°C
TC type: B, R, S, W3, W5, LR	≤ ±2°C	≤ ±0.2°C/°C

EMC immunity influence ..... < ±0.5% of span  
 Extended EMC immunity:  
 NAMUR NE 21, A criterion, burst ..... < ±1% of span

Vibration ..... IEC 60068-2-6 Test FC  
 Lloyd's specification no. 1 ..... 4 g / 2...100 Hz  
 Humidity ..... < 95% RH (non-cond.)  
 Dimensions ..... Ø 44 x 20.2 mm  
 Protection degree (encl. / terminal) ... IP68 / IP00

**Electrical specifications, input:**

Max. offset ..... 50% of selec. max. value

**TC input:**

Type	Min. temperature	Max. temperature	Min. span	Standard
B	+400°C	+1820°C	200°C	IEC584
E	-100°C	+1000°C	50°C	IEC584
J	-100°C	+1200°C	50°C	IEC584
K	-180°C	+1372°C	50°C	IEC584
L	-100°C	+900°C	50°C	DIN 43710
N	-180°C	+1300°C	100°C	IEC584
R	-50°C	+1760°C	200°C	IEC584
S	-50°C	+1760°C	200°C	IEC584
T	-200°C	+400°C	50°C	IEC584
U	-200°C	+600°C	75°C	DIN 43710
W3	0°C	+2300°C	200°C	ASTM E988-90
W5	0°C	+2300°C	200°C	ASTM E988-90
LR	-200°C	+800°C	50°C	GOST 3044-84

Cold junction compensation ..... < ±1.0°C

**RTD and linear resistance input:**

RTD type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	25°C	IEC 60751
Ni100	-60°C	+250°C	25°C	DIN 43760
Lin. R	0 Ω	5000 Ω	30 Ω	----

Cable resistance per wire (max.) ..... 5 Ω  
 Sensor current ..... Nom. 0.2 mA

**Voltage input:**

Measurement range ..... -12...800 mV  
 Min. span ..... 5 mV

**Current output:**

Signal range ..... 4...20 mA  
 Min. signal range ..... 16 mA  
 Updating time ..... 440 ms  
 Load resistance ..... ≤ (V<sub>supply</sub> - 7.2) / 0.023 [Ω]

**Sensor error detection:**

Programmable ..... 3.5...23 mA

**EEx / I.S. approval:**

KEMA 06ATEX0062 X ..... II 1 GD, T80°C...T105°C  
 EEx ia IIC T6 / T4  
 Max. amb. temperature for T1...T4 ... 85°C  
 Max. amb. temperature for T5 and T6 .. 60°C  
 ATEX, applicable in zone ..... 0, 1, 2, 20, 21 or 22

**Ex / I.S. data:**

Signal output / supply, terminal 1 to 2:  
 U<sub>i</sub> ..... : 30 VDC  
 I<sub>i</sub> ..... : 120 mADC  
 P<sub>i</sub> ..... : 0.84 W  
 L<sub>i</sub> ..... : 10 μH  
 C<sub>i</sub> ..... : 1.0 nF  
 Sensor input, terminal 3, 4, 5 and 6:  
 U<sub>o</sub> ..... : 9.6 VDC  
 I<sub>o</sub> ..... : 25 mADC  
 P<sub>o</sub> ..... : 60 mW  
 L<sub>o</sub> ..... : 33 mH  
 C<sub>o</sub> ..... : 2.4 μF

FM, applicable in ..... IS, Cl. I, Div. 1, Gr. A, B, C, D  
 IS, Cl. I, Zone 0, AEx ia IIC  
 5300Q502  
 CSA, applicable in ..... IS, Cl. I, Div. 1, Gr. A, B, C, D  
 IS, Cl. I, Zone 0, Ex ia IIC  
 533XQC03  
 CSA Installation Drawing No. .... 533XQC03

**Marine approval:**

Det Norske Veritas, Ships & Offshore .. Stand. for Certific. No. 2.4

**GOST R approval:**

VNIIFTRI, Cert No. .... www.prelectronics.com

**Observed authority requirements:**

**Standard:**  
 EMC 2004/108/EC ..... EN 61326-1  
 ATEX 94/9/EC ..... EN 50014, EN 50020,  
 EN 50284, IEC 61241-0  
 and IEC 61241-11  
 FM ..... 3600, 3611, 3610  
 CSA, CAN / CSA ..... C22.2 No. 157,  
 E60079-11, UL 913

**Of span** = Of the presently selected range