

# 2-Wire Programmable Transmitter

Model 6331B

- RTD, TC, Ohm or mV Input
- Extremely High Measurement Accuracy
- 1.5 kVAC Galvanic Isolation
- 1- or 2-channel version
- Programmable Sensor Error Value
- Complies with European ATEX Requirements for Hazardous Installation

## Application:

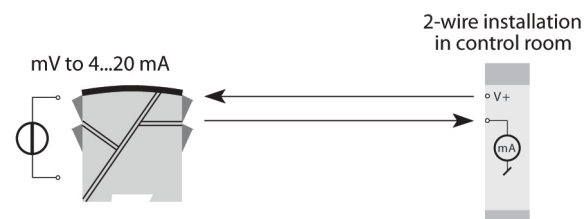
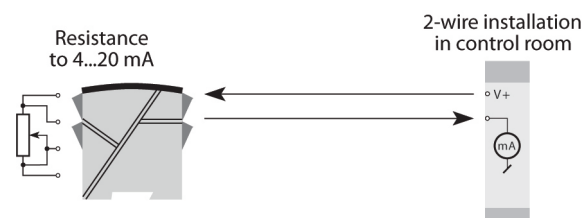
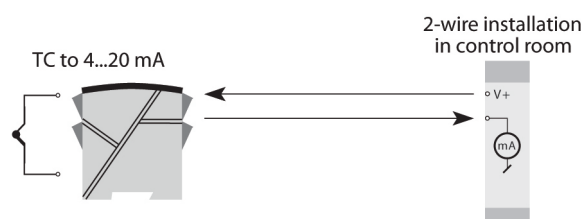
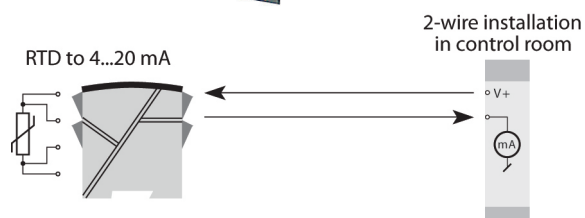
- Linearized temperature measurement with Pt100...Pt1000 or Ni100...Ni1000 or TC sensor.
- Conversion of linear resistance variation to a standard analog current signal.
- Amplification of a bipolar mV signal to a standard 4...20 mA current signal.

## Technical Characteristics:

- Within seconds the user can program a 6331B to measure temperatures within all standard ranges.
- The RTD and resistance inputs have cable compensation for 2-, 3-, and 4-wire connection.
- A limit can be programmed on the output signal.
- Continuous check of vital stored data.

## Mounting/Installation:

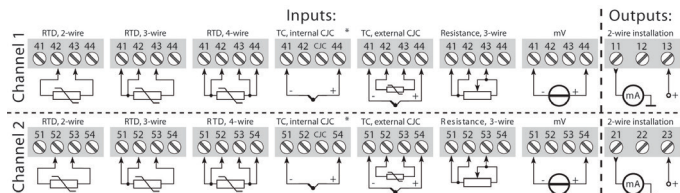
- Mounted vertically or horizontally on a DIN rail. Using the 2-channel version, up to 84 channels per meter can be mounted.



Ideas. Solutions. Success.

## Specifications

Order: **6331B2A(Single Channel)**  
**6331B2B(Dual Channel)**



## Electrical Specifications

### Specifications Range:

-40°C to +60°C

### Common Specifications:

Supply voltage, DC..... 7.2...30 VDC  
Voltage drop ..... 7.2 VDC  
Isolation voltage, test / operation ..... 1.5 kVAC / 50 VAC  
Isolation voltage, ch. 1 / ch. 2 ..... 1500 VAC  
Communications Interface ..... Loop Link  
Signal / noise ratio..... Min. 60 dB  
Response time (programmable)..... 1...60 s  
Signal dynamics, input ..... 20 bit  
Signal dynamics, output ..... 16 bit  
Calibration temperature ..... 20...28°C  
Accuracy, the greater of general and basic values:

| General Values |                           |                                |
|----------------|---------------------------|--------------------------------|
| Input Type     | Absolute Accuracy         | Temperature Coefficient        |
| All            | $\leq \pm 0.05\%$ of span | $\leq \pm 0.01\%$ of span / °C |

| Basic Values                    |                              |                                              |
|---------------------------------|------------------------------|----------------------------------------------|
| Input Type                      | Basic Accuracy               | Temperature Coefficient                      |
| RTD                             | $\leq \pm 0.2^\circ\text{C}$ | $\leq \pm 0.01^\circ\text{C}/^\circ\text{C}$ |
| Lin. R                          | $\leq \pm 0.1\ \Omega$       | $\leq \pm 10\ \text{m}\Omega/^\circ\text{C}$ |
| Volt                            | $\leq \pm 10\ \mu\text{V}$   | $\leq \pm 1\ \mu\text{V}/^\circ\text{C}$     |
| TC type:<br>E, J, K, L, N, T, U | $\leq \pm 1^\circ\text{C}$   | $\leq \pm 0.05^\circ\text{C}/^\circ\text{C}$ |
| TC type: B, R, S,<br>W3, W5, LR | $\leq \pm 2^\circ\text{C}$   | $\leq \pm 0.2^\circ\text{C}/^\circ\text{C}$  |

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

Max wire size..... 1 x 1.5 mm<sup>2</sup> (16AWG) stranded wire  
Humidity .....  $< 95\%$  RH (non-cond.)  
Dimensions (H x W x D) ..... 109 x 23.5 x 104 mm  
Protection degree ..... IP20

### Electrical Specifications, Input:

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

#### 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 $\Omega$ | 5000 $\Omega$ | 30 $\Omega$ | ----      |

Cable resistance per wire..... 5  $\Omega$

Sensor current..... Nom. 0.2 mA

### 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.....  $\pm 1.0^\circ\text{C}$

### 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 .....  $\leq (V_{\text{supply}} - 7.2) / 0.023\ [\Omega]$

### Sensor Error Detection:

Programmable ..... 3.5...23 mA  
NAMUR NE43 Upscale ..... 23 mA  
NAMUR NE43 Downscale ..... 3.5 mA

### EEEx / I.S. Approval\*:

KEMA 06ATEX0115 X..... II 1 G, EEEx ia IIC T6...T5  
Max. ambient temperature..... T6: -40°C  $\leq$  Ta  $\leq$  40°C  
T5: -40°C  $\leq$  Ta  $\leq$  60°C  
Applicable in zone ..... 0, 1 or 2

### Ex / I.S. Data\*:

Output, terminal 11...13, (21...23):  
U<sub>i</sub> ..... 30 VDC  
I<sub>i</sub> ..... 120 mADC  
P<sub>i</sub> ..... 0.84 W  
L<sub>i</sub> ..... 10  $\mu\text{H}$   
C<sub>i</sub> ..... 1.0 nF  
Input, terminal 41...44, (51...54):  
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  $\mu\text{F}$

**GOST R Approval\*:** ..... Certificate available upon request.

### Observed authority requirements: Standard:

EMC 2004/108/EC ..... EN 61326-1  
ATEX 94/9/EC ..... EN 50014, EN 50020 and EN 50284

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

**Loop Link** = PC compatible programming software.

**IS** = Intrinsically Safe

\*The transmitter is manufactured by PR electronics. All approvals listed are recognized under the PR name.

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