Programmable transmitter

5116B

- Input for RTD, TC, mV, Ohm, potentiometer, mA and V
- 2-wire supply > 16.5 V to Ex zone 0
- Bipolar voltage input
- Output for current, voltage and 2 relays
- Universal supply by AC or DC

Applications

Application
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 potential-free relay contacts which can be configured for advanced functions.
- Galvanic separation of analog signals and measurement of floating signals.

Technical characteristics
- Within a few seconds the user can program PR5116B to suit the specific application.
- By way of the front push-button the input can be calibrated to the exact span of the process. Zero drift on the process signal can be adjusted by a single press of the front button.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 3.75 kVAC galvanic isolation.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.
### Environmental Conditions

- **Operating temperature:** -20°C to +60°C
- **Calibration temperature:** 20...28°C
- **Relative humidity:** < 95% RH (non-cond.)
- **Protection degree:** IP20

### Mechanical specifications

- **Dimensions (HxWxD):** 109 x 23.5 x 130 mm
- **Weight approx.:** 235 g
- **Wire size:** 0.13...2.08 mm² AWG 26...14 stranded wire
- **Screw terminal torque:** 0.5 Nm
- **Vibration: 2...13.2 Hz**
  - ±1 mm
- **13.2...100 Hz**
  - ±0.7 g

### Common specifications

#### Supply

- **Supply voltage:** universal: 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
- **Fuse:** 400 mA SB / 250 VAC
- **Max. required power:** 2.4 W
- **Max. power dissipation:** 2.0 W

#### Isolation voltage

- **Isolation voltage:** 3.75 kVAC / 250 VAC
- **Isolation voltage, test / working:**

#### Response time

- **Temperature input, programmable (0...50%, 100...10%):**
  - 400 ms...60 s
- **mA / V input (programmable):**
  - 250 ms...60 s

#### Auxiliary supplies

- **2-wire supply (pin 54...52):**
  - 28...16.5 VDC / 0...20 mA
- **Loop Link:**
- **Signal / noise ratio:** Min. 60 dB (0...100 kHz)
- **Accuracy:** Better than 0.05% of selected range

#### Input specifications

- **Signal dynamics, input:** 22 bit
- **Signal dynamics, output:** 16 bit
- **Auxiliary voltages: Reference voltage:** 2.5 VDC ±0.5% / 15 mA
- **EMC immunity influence:** < ±0.5% of span
- **Extended EMC immunity: NAMUR NE41, 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:** 10 Ω (max. 50 Ω)
- **Sensor current:** Nom. 0.2 mA
- **Effect of sensor cable resistance (3-4-wire):** < 0.002 Ω / Ω
- **Sensor error detection:** Yes

#### TC input

- **Cold junction compensation (CJC):** < ±1.0°C
- **Sensor error current:** Nom. 30 μA
- **Sensor error detection:** Yes

### Current input

- **Measurement range:** 0...100 mA
- **Min. measurement range (span):** 4 mA
- **Input resistance: Supplied unit:** Nom. 10 Ω + PTC 10 Ω
- **Input resistance: Non-supplied unit:** RSHUNT = ∞, VDROP < 6 V
- **Loop break 4...20 mA**

### Voltage input

- **Measurement range:** 0...250 VDC
- **Measurement range:** 2500...+2500 mV
- **Min. measurement range (span):** 5 mV
- **Input resistance:** Nom. 10 MΩ (≤ 2.5 VDC)
- **Input resistance:** Nom. 5 MΩ (> 2.5 VDC)
- **Input resistance:** > 5 MΩ (mA input)

### Output specifications

- **Potentiometer via 2.5 V ref.:** 170 Ω

### Passive 2-wire mA output

- **Signal range:** 4...20 mA
- **Load stability:** ≤ 0.01% of span / 100 Ω
- **Max. external 2-wire supply:** 29 VDC
- **Effect of external 2-wire supply variation:** < 0.05% of span / V

### Voltage output

- **Signal range:** 0...10 VDC
- **Min. signal range:** 500 mV
- **Load (@ voltage output):** ≥ 500 kΩ

### Relay output

- **Relay functions:** Increasing / decreasing
- **Relay functions:** Window
- **Max. voltage:** 250 VAC / VDC
- **Max. current:** 2 A
- **Max. AC power:** 500 VA
- **Max. DC current, resistive load ≤ 30 VDC:** 2 ADC
- **Max. DC current, resistive load > 30 VDC:** See manual for details
- **Sensor error reaction:** Break / Make / Hold / None

### Observed authority requirements

- **EMC:** 2011/35/EU
- **LVD:** 2014/35/EU
- **RoHS:** 2014/30/EU
- **EAC:** TR-CU 020/2011

### Approvals

- **ATEX:** KEMA 04ATEX1316 X
- **UL:** 3023092
- **FM:** 3023092
- **UL:** UL 508 / C22.2 no. 14
- **EAC Ex.:** RU C-DK-HA65.B.00355/19
- **DNV-GL Marine:** TAA0000101