

## Programmable transmitter

### 5116A

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



#### 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.

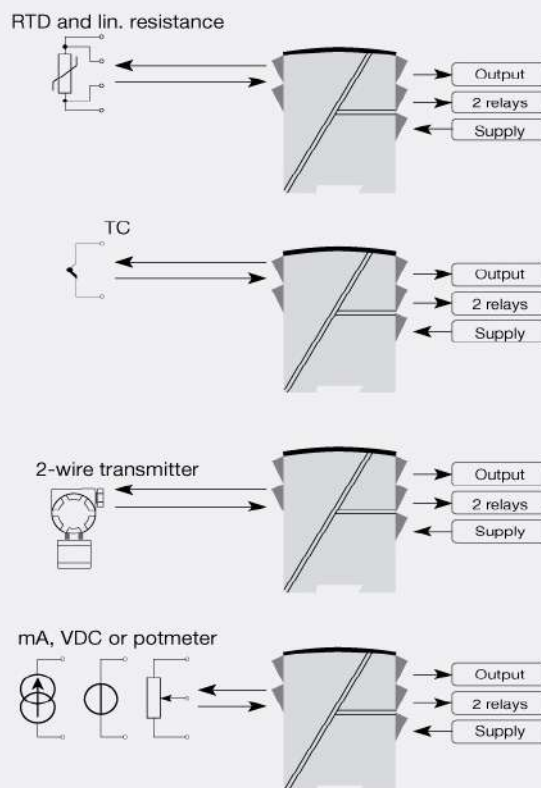
#### Technical characteristics

- Within a few seconds the user can program PR5116A 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.

#### Applications



**Order:**

| Type  |
|-------|
| 5116A |

\*NB! Please remember to order CJC connectors type 5910 for TC inputs with internal CJC

**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.....         | 225 g                                                 |
| DIN rail type.....         | DIN EN 60715/35 mm                                    |
| Wire size.....             | 0.13...2.08 mm <sup>2</sup> AWG 26...14 stranded wire |
| Screw terminal torque..... | 0.5 Nm                                                |
| Vibration.....             | IEC 60068-2-6                                         |
| 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, test / working..... | 3.75 kVAC / 250 VAC |
| PELV/SELV.....                         | IEC 61140           |

**Response time**

|                                                           |               |
|-----------------------------------------------------------|---------------|
| Temperature input, programmable (0...90%, 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           |
| Programming.....                                           | Loop Link                           |
| Signal / noise ratio.....                                  | Min. 60 dB (0...100 kHz)            |
| Accuracy.....                                              | Better than 0.05% of selected range |
| 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 NE21, A criterion, burst..... | < ±1% of span                       |

**Input specifications****Common input specifications**

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

**RTD input**

|                                                    |                                  |
|----------------------------------------------------|----------------------------------|
| RTD type.....                                      | Pt46, Pt100, Ni100, Cu53, 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**

|                                       |                                          |
|---------------------------------------|------------------------------------------|
| Thermocouple type.....                | B, E, J, K, L, N, R, S, T, U, W3, W5, LR |
| 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 = ∞, VDROPP < 6 V |
| Sensor error detection.....              | 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 (mV input)      |
| Potentiometer via 2.5 V ref.....   | 170 Ω                  |

## Output specifications

### Current output

|                                   |                         |
|-----------------------------------|-------------------------|
| Signal range.....                 | 0...20 mA               |
| Min. signal range.....            | 10 mA                   |
| Load (@ current output).....      | ≤ 600 Ω                 |
| Load stability.....               | ≤ 0.01% of span / 100 Ω |
| Current limit.....                | ≤ 28 mA                 |
| Sensor error indication.....      | Programmable 0...23 mA  |
| NAMUR NE43 Upscale/Downscale..... | 23 mA / 3.5 mA          |

### 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 voltage variation..... | < 0.005% 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..... | See manual for details            |
| Sensor error reaction.....                    | Break / Make / Hold / None        |
| of span.....                                  | = of the presently selected range |

## Observed authority requirements

|              |                |
|--------------|----------------|
| EMC.....     | 2014/30/EU     |
| LVD.....     | 2014/35/EU     |
| RoHS.....    | 2011/65/EU     |
| EAC.....     | TR-CU 020/2011 |
| EAC LVD..... | TR-CU 004/2011 |

## Approvals

|                      |            |
|----------------------|------------|
| c UL us, UL 508..... | E231911    |
| DNV Marine.....      | TAA0000101 |