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.
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 46277
Wire size: 0.13...2.08 mm² 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
Internal 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... 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-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
Sensor error detection... Loop break 4...20 mA

Voltage input
Measurement range... 0...250 VDC
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 mV 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... 2 ADC
Max. DC current, resistive load > 30 VDC... See manual for details
Sensor error reaction... Break / Make / Hold / None
of span... = of the currently selected measurement range

Observed authority requirements
EMC... 2014/30/EU
LVD... 2014/35/EU
RoHS... 2011/65/EU
EAC... TR-CU 020/2011

Approvals
UL... UL 508 / C22.2 no. 14
DNV-GL Marine... Stand. f. Certific. No. 2.4