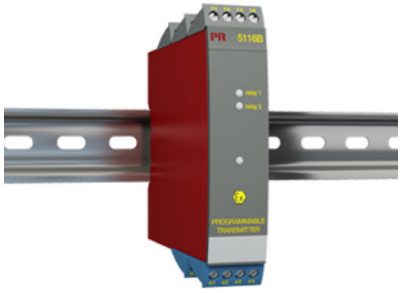
PERFORMANCE MADE SMARTER



Programmable transmitter

5116B

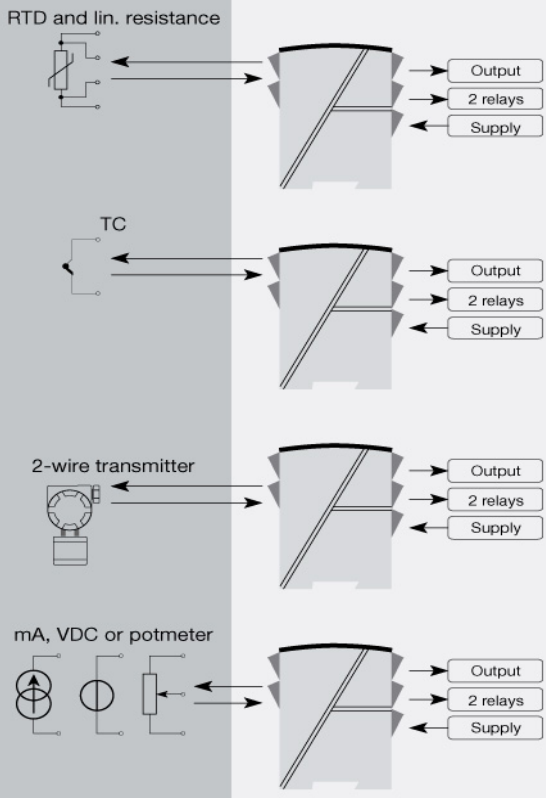
– Input for RTD, TC, mV, Ohm, potentiometer, mA and V
– 2-wire supply > 16.5 V to Ex zone 0
– Bipolar voltage input
– Output for current, voltage and 2 relays
– Universal supply by AC or DC

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 buttton.
- 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



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Order:

Type
5116B

*NB! Please remember to order CJC connectors type 5910Ex 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.	235 g
DIN rail type	DIN EN 60715/35 mm
Wire size	0.13...2.08 mm^2 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 (1)

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	PR 5909 Loop Link communications interface
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 = ∞, VDROP < 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 (1)
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 (1)	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
ATEX	2014/34/EU
RoHS	2011/65/EU
EAC	TR-CU 020/2011
EAC LVD	TR-CU 004/2011
EAC Ex	TR-CU 012/2011

Approvals

ATEX	KEMA 04ATEX1316 X
FM	FM21US0035X
c UL us, UL 508	E231911
EAC Ex	EAEU KZ 7500361.01.01.08756
DNV Marine	TAA0000101