PERFORMANCE MADE SMARTER



Signal calculator

5115A

- Redundancy measurement with 2 input signals
- Signal calculator with the four arithmetical operations
- Duplication of the input signal
- Input for RTD, Ohm, TC, mV, mA, and V
- Universal supply by AC or DC

Application

- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analog process signal to two separate analog outputs.
- Signal calculator with four arithmetical operations: Addition, subtraction, multiplication and division.
- Example: Differential measurement: (Input 1 * K1) - (Input 2 * K2) + K4
- Example: Average measurement: (Input 1 * 0.5) + (Input 2 * 0.5) + K4
- Example: Different functions on the outputs: Output 1 = input 1 - input 2, and Output 2 = input 1 + input 2
- Power supply for 2-wire transmitters.

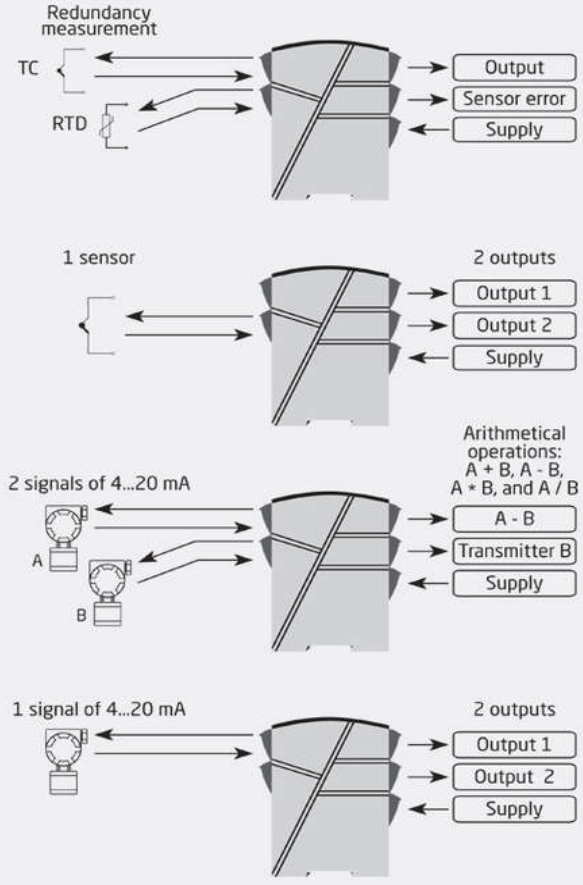
Technical characteristics

- Within a few seconds the user can program PR5115A to a selected application using the configuration program PReset.
- A green front LED indicates normal operation, sensor error on each sensor, and functional error.
- Continuous check of vital stored data for safety reasons.
- 5-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	Input
5115A	RTD / TC / mV / R / mA / V

*NB! Please remember to order CJC connectors type 5910 (input 1) and 5913 (input 2) for TC inputs with an 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
Wire size	1 x 2.5 mm^2 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	≤ 3 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
Programming	Loop Link
Signal / noise ratio	Min. 60 dB (0...100 kHz)
Redundancy switch-over time	≤ 400 ms
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 (max.)	10 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

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

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)

mV input

Measurement range	-150...+150 mV

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

Voltage output

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

Passive 2-wire mA output

Effect of external 2-wire supply voltage variation	< 0.005% of span / V
Max. external 2-wire supply	29 VDC
2-wire 4...20 mA output: Signal range	4...20 mA
Load stability, 4…20 mA output	≤ 0.01% of span / 100 Ω
*of span	= of the presently selected range

Observed authority requirements

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

Approvals

DNV-GL Marine	Stand. f. Certific. No. 2.4