

Ex SIGNAL CALCULATOR



- 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 AC or DC supply



Application:

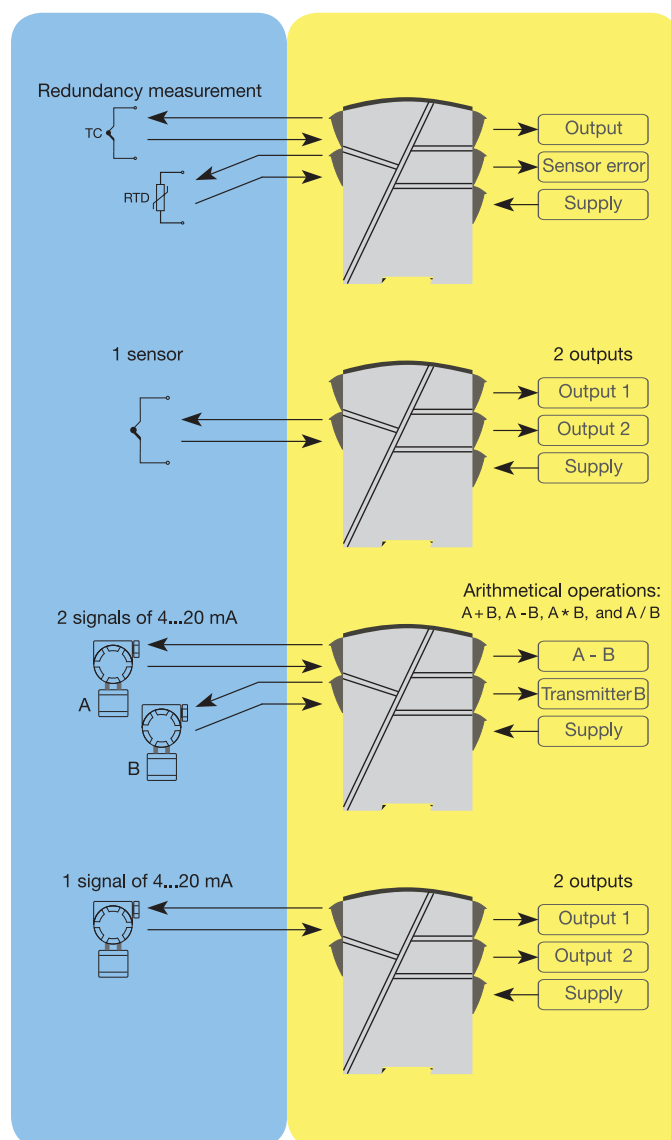
- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analogue process signal to two separate analogue outputs.
-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

Technical characteristics:

- Within a few seconds the user can program PR5115B to a selected application using the configuration program PReset.
- A green front LED that indicates normal operation, sensor error on each sensor, and functional error.
- 5-port 3.75 kVAC galvanic isolation.

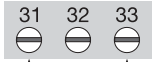
Mounting / installation:

- Mounted vertically or horizontally on a DIN rail. As the modules can be mounted without any distance between neighbouring units, up to 42 modules can be mounted per metre.



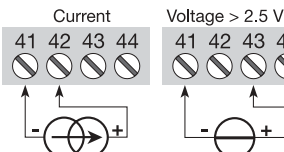
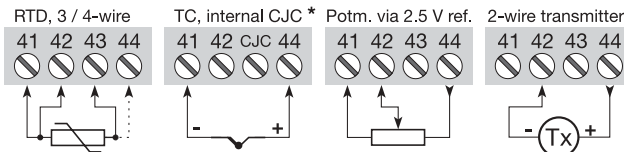
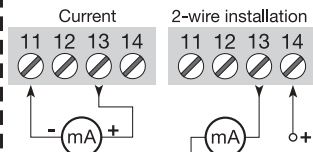
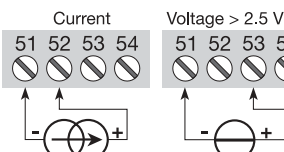
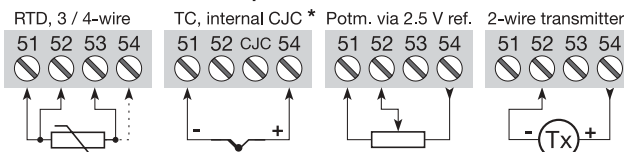
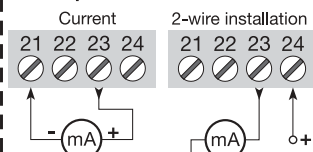
Connections:

All connection options are shown in the user manual.

Supply:

Type	Input
5115B	RTD / TC / mV / R : 1
	mA / V / mV : 2
	Input 1, RTD / TC / mV / R
	Input 2, mA / V / mV : 3

***NB!** Please remember to order CJC connectors type 5910EEEx (input 1) and 5913EEEx (input 2) for TC inputs with an internal CJC.

Input 1:**Output 1:****Input 2:****Output 2:****Electrical specifications:****Specifications range:**

-20 to +60°C

Common specifications:

Supply voltage, universal	24...230 VAC ±10%
	24...250 VDC ±20%
Max. consumption.....	≤ 3 W
Fuse.....	400 mA SB / 250 VAC
Isolation voltage, test / operation.....	3.75 kVAC / 250 VAC
Communications interface	Loop Link 5905A
Signal / noise ratio.....	Min. 60 dB (0...100 kHz)
Redundancy switch-over time	≤ 400 ms
Signal dynamics, input	22 bit
Calibration temperature.....	20...28°C
Accuracy, the greater of general and basic values:	

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.05% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
mA	≤ ±4 µA	≤ ±0.4 µA/°C
Volt	≤ ±10 µV	≤ ±1 µV/°C
RTD	≤ ±0.2°C	≤ ±0.01°C/°C
Lin.R	≤ ±0.1 Ω	≤ ±10 mΩ/°C
TC type:		
E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C/°C
TC type:		
B, R, S, W3, W5	≤ ±2°C	≤ ±0.2°C/°C

EMC immunity influence	< ±0.5% of span
Extended EMC immunity:	
NAMUR NE 21, A criterion, burst	< ±1% of span

Auxiliary supplies:

Reference voltage	2.5 VDC ±0.5% / 15 mA
2-wire supply	28...18 VDC / 0...20 mA
Dimensions (HxVxD).....	109 x 23.5 x 130 mm

Electrical specifications - INPUT:

Max. offset..... 50% of selec. max. value

TC input:

Sensor error current	Nom. 30 µA
Cold junction compensation	< ±1°C

mV input:

Measure. range/min. measure. range.	-150...+150 mV / 5 mV
Input resistance.....	Nom. 10 MΩ

RTD and linear resistance input:

Max. cable resistance per wire.....	10 Ω
Sensor current.....	Nom. 0.2 mA

Current input:

Measure. range/min. measure. range.	0...100 mA / 4 mA
Input resistance	Nom. 10 Ω + PTC 10 Ω

Voltage input:

Measure. range/min. measure. range.	0...250 VDC / 5 mVDC
Input resistance	Nom. 10 MΩ

Electrical specifications - OUTPUT:

Max. offset..... 50% of selec. max. value

Current output:

Signal range / min. signal range.....	0...20 mA / 10 mA
Max. load.....	20 mA / 600 Ω / 12 VDC

Voltage output:

Signal range / min. signal range.....	0...10 VDC / 500 mVDC
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2-wire 4...20 mA output:

Max. external 2-wire supply 29 VDC

Sensor error detection:

Programmable..... 0...23 mA

Ex data for 5115B, all types:

U_m..... : 250 V

Ex data for 5115B1 (input 1 for 5115B3)

Terminal 41, 42, 44 to 43 (51, 52, 54 to 53)	
U ₀	: 7.5 VDC
I ₀	: 6.0 mADC
P ₀	: 11.25 mW
L ₀	: 200 mH
C ₀	: 6.0 µF

Ex data for 5115B2 (input 2 for 5115B3)

Terminal 44 to 41 (54 to 51)	
U ₀	: 28 VDC
I ₀	: 87 mADC
P ₀	: 0.62 W
L ₀	: 4.2 mH
C ₀	: 0.08 µF

Terminal 42, 43 to 41 (52, 53 to 51)	
U ₀	: 7.5 VDC
I ₀	: 6.0 mADC
P ₀	: 11.25 mW
L ₀	: 200 mH
C ₀	: 6.0 µF

Ex / I.S. approval:

DEMKO 00 ATEX 128567	Ex II (1) G D [EEx ia] IIC 0, 1, 2, 20, 21 or 22
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Observed authority requirements:

EMC 89/336/EEC, Emission	EN 50 081-1, EN 50 081-2
Immunity	EN 50 082-2, EN 50 082-1
Emission and immunity	EN 61 326
LVD 73/23/EEC.....	EN 61 010-1
PELV/SELV.....	IEC 364-4-41 and EN 60 742
ATEX 94/9/EC.....	EN 50 014, EN 50 020 and EN 50 281-1-1

Of span = Of the presently selected range