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:

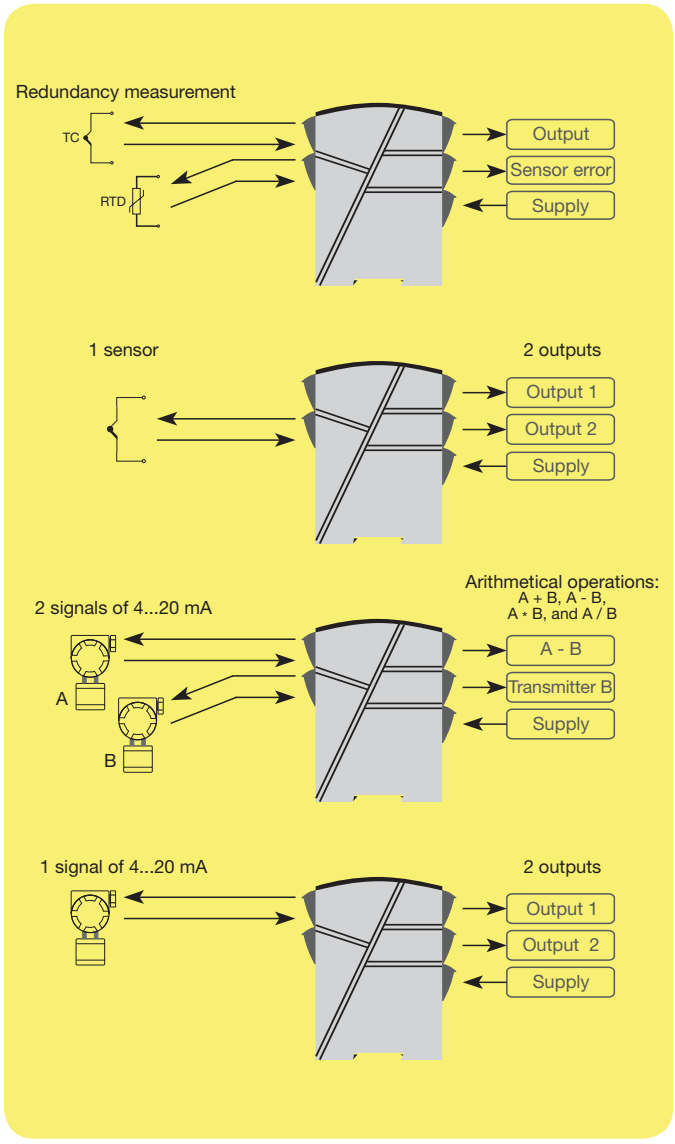
- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analogue process signal to two separate analogue outputs.
- Signal calculator with four arithmetical operations: Addition, subtraction, multiplication and division.
- Example: Differential measurement: (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

Technical characteristics:

- Within a few seconds the user can program PR5115A 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.
- 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 modules can be mounted without any distance between neighbouring units, up to 42 modules can be mounted per metre.



PR electronics
DS CERTIFIED QUALITY SYSTEM AND ENVIRONMENTAL MANAGEMENT SYSTEM DS/EN ISO 9001 DS/EN ISO 14001
Lerbakken 10 · DK-8410 Rønde
Tlf. 8637 2677 · Fax 8637 3085
www.prelectronics.dk

Order: 5115A _

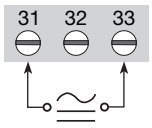
Type	Input
5115A	RTD / TC / mV / R / mA / V : _

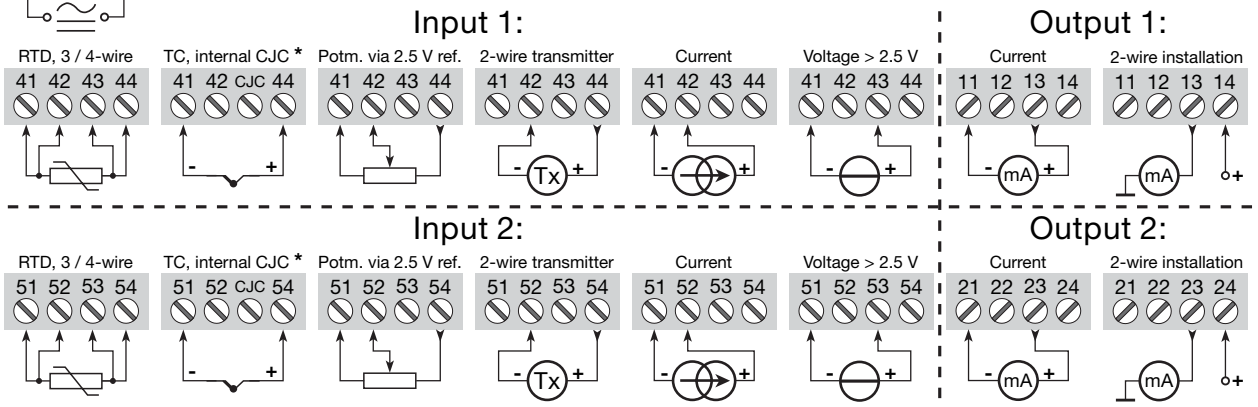
***NB!** Please remember to order CJC connectors type 5910 (input 1) and 5913 (input 2) for TC inputs with an internal CJC.

Connections:

All connection options are shown in the user manual.

Supply:





Electrical specifications:

Specifications range:

-20 to +60°C

Common specifications:

Supply voltage, universal	21.6...253 VAC, 50...60 Hz 19.2...300 VDC
Max. consumption	≤ 3 W
Fuse	400 mA SB / 250 VAC
Isolation voltage, test / operation	3.75 kVAC / 250 VAC
Communications interface	Loop Link
Signal / noise ratio	Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%), programmable:	
Temperature input	400 ms...60 s
mA / V / mV input	250 ms...60 s
Redundancy switch-over time	≤ 400 ms
Signal dynamics, input	22 bit
Signal dynamics, output	16 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, LR	≤ ±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 (pin 44...42 and 54...52)	28...17.1 VDC / 0...20 mA
Max. wire size	1 x 2.5 mm^2 stranded wire
Screw terminal torsion	0.5 Nm
Relative humidity	< 95% RH (non-cond.)
Dimensions (HxWxD)	109 x 23.5 x 130 mm
Protection degree	IP20

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:

Measurement range	-150...+150 mV
Min. measurement range	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
Effect of sensor cable resistance (3- / 4-wire)	< 0.002 Ω / Ω

Current input:

Measurement range	0...100 mA
Min. measurement range (span)	4 mA
Input resistance:	
Supplied unit	Nom. 10 Ω + PTC 10 Ω
Non-supplied unit	R_{SHUNT} = ∞, V_{DROP} < 6 V

Voltage input:

Measurement range	0...250 VDC
Input resistance ≤ 2.5 VDC	Nom. 10 MΩ
2.5 VDC	Nom. 5 MΩ

Electrical specifications - OUTPUT:

Max. offset	50% of selec. max. value

Current output:

Signal range	0...20 mA
Min. signal range (span)	10 mA
Max. load	20 mA / 600 Ω / 12 VDC

Voltage output:

Signal range	0...10 VDC
Min. signal range (span)	500 mV
Min. load	500 kΩ

2-wire 4...20 mA output:

Signal range	4...20 mA
Load stability	≤ 0.01% of span / 100 Ω
Load resistance	≤ (V_{supply}-3.5) / 0.023 [Ω]
Max. external 2-wire supply	29 VDC

Sensor error detection:

Programmable	0...23 mA
NAMUR NE43 Upscale	23 mA
NAMUR NE43 Downscale	3.5 mA

Marine approval:

Det Norske Veritas, Ships & Offshore	Stand. for Certific. No. 2.4

GOST R approval:

VNIIM, Cert. No.	See homepage

Observed authority requirements:	**Standard:**
EMC 2004/108/EC	EN 61326-1
LVD 2006/95/EC	EN 61010-1
PELV/SELV	IEC 364-4-41 and EN 60742

Of span = Of the presently selected range