



## Temperature / mA converter

### 9113A

- Input for RTD, TC and mA
- Active / passive mA output via the same two terminals
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR type 9400
- SIL 2-certified via Full Assessment



#### Advanced features

- Configuration and monitoring by way of detachable display front (PR 4500); process calibration and signal simulation.
- Copying of the configuration from one device to others of the same type via the display front.
- TC inputs can use either the internal CJC or a terminal with a built-in Pt100 sensor (PR 5910, channel 1 / PR 5913, channel 2) for higher accuracy.
- Advanced monitoring of internal communication and stored data.
- SIL 2 functionality is optional and must be activated in a menu point.

#### Application

- 9113A can be mounted in the safe area or in zone 2 / Class I, Division 2, Groups A, B, C, D.
- Conversion and scaling of temperature (Pt, Ni and TC) and active current signals.
- 9113A has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.
- Suitable for the use in systems up to Performance Level "d" according to ISO-13849.

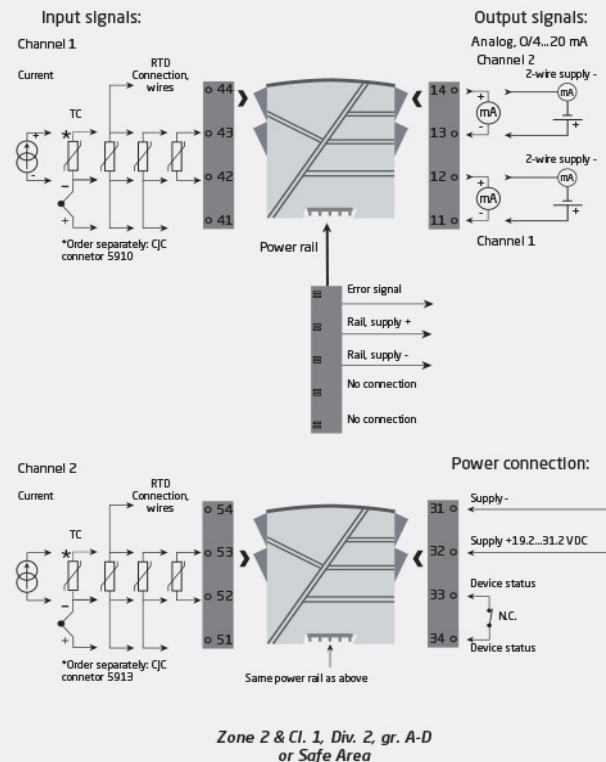
#### Technical characteristics

- 1 green and 2 red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

#### Mounting

- The devices can be mounted vertically or horizontally without distance between neighbouring units.

#### Applications



## Order

| Type  | Channels   | I.S. / Ex approvals                                  |
|-------|------------|--|
| 9113A | Single : A | ATEX, IECEx, FM, INMETRO, EAC-Ex, UKEX : -           |
|       | Double : B | UL 913, ATEX, IECEx, FM, INMETRO, EAC-Ex, UKEX : -U9 |
|       |            | KCs, ATEX, IECEx, FM, INMETRO, EAC-Ex, UKEX : -KCs   |

Example: 9113AB

## Environmental Conditions

|                              |  |
|------------------------------|--|
| Operating temperature.....   | -20°C to +60°C                                   |
| Storage temperature.....     | -20°C to +85°C                                   |
| Calibration temperature..... | 20...28°C  |
| Relative humidity.....       | < 95% RH (non-cond.)                             |
| Protection degree.....       | IP20   |
| Installation in.....         | Pollution degree 2 & meas. / overvoltage cat. II |

## Mechanical specifications

|                                    |   |
|------------------------------------|---|
| Dimensions (HxWxD).....            | 109 x 23.5 x 104 mm                                   |
| Dimensions (HxWxD) w/ PR 4500..... | 109 x 23.5 x 131 mm                                   |
| Weight approx.....                 | 250 g   |
| DIN rail type.....                 | DIN EN 60715/35 mm                                    |
| Wire size.....                     | 0.13...2.08 mm <sup>2</sup> 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.....                   | 19.2...31.2 VDC                 |
| Fuse.....                             | 400 mA SB / 250 VAC             |
| Max. required power.....              | ≤ 0.8 W / ≤ 1.4 W (1 ch./2 ch.) |
| Max. power dissipation, 1 / 2 ch..... | ≤ 0.8 W / ≤ 1.4 W               |

### Isolation voltage

|                                  |   |
|----------------------------------|---|
| Test /working: Input to any..... | 2.6 kVAC / 300 VAC reinforced isolation |
| Analog output to supply.....     | 2.6 kVAC / 300 VAC reinforced isolation |
| Status relay to supply.....      | 1.5 kVAC / 150 VAC reinforced isolation |

### Response time

|  |                                  |
|--|----------------------------------|
| Temperature input, programmable (0...90%, 100...10%).....  | 1...60 s                         |
| mA / V input (programmable).....                           | 0.4...60 s                       |
| Programming.....   | PR 4500 communication interfaces |
| Signal / noise ratio.....                                  | Min. 60 dB (0...100 kHz)         |
| Signal dynamics, input.....                                | 24 bit                           |
| Signal dynamics, output.....                               | 16 bit                           |
| Accuracy.....  | Better than 0.1% of sel. range   |
| EMC immunity influence.....                                | < ±0.5% of span                  |
| Extended EMC immunity: NAMUR NE21, A criterion, burst..... | < ±1% of span                    |

## Input specifications

### RTD input

|  |   |
|--|---|
| RTD type.....                                      | Pt10/20/50/100/200/250; Pt300/Pt400/500/1000; Ni50/100/120/1000 |
| Cable resistance per wire.....                     | 50 Ω (max.)   |
| Sensor current.....                                | Nom. 0.2 mA   |
| Effect of sensor cable resistance (3-/4-wire)..... | < 0.002 Ω / Ω   |
| Sensor error detection.....                        | Programmable ON / OFF   |

### TC input

|   |  |
|---|--|
| Thermocouple type.....  | B, E, J, K, L, N, R, S, T, U, W3, W5, LR       |
| Cold junction compensation (CJC) via ext. sensor in 5910..... | 20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C |
| CJC via int. mounted sensor.....                              | ±(2.0°C + 0.4°C * Δt)                          |
| Sensor error detection.....                                   | Programmable ON or OFF (only wire breakage)    |
| Sensor error current: When detecting / else.....              | Nom. 2 μA / 0 μA                               |

### Current input

|                                      |                       |
|--------------------------------------|-----------------------|
| Measurement range.....               | 0...23 mA             |
| Programmable measurement ranges..... | 0...20 and 4...20 mA  |
| Input resistance.....                | Nom. 20 Ω + PTC 50 Ω  |
| Sensor error detection.....          | Programmable ON / OFF |

## Output specifications

### Current output

|   |                                |
|---|--------------------------------|
| Signal range.....                                       | 0...23 mA                      |
| Programmable signal ranges.....                         | 0...20/4...20/20...0/20...4 mA |
| Load (@ current output).....                            | ≤ 600 Ω                        |
| Load stability.....                                     | ≤ 0.01% of span / 100 Ω        |
| Sensor error indication.....                            | 0 / 3.5 / 23 mA / none         |
| NAMUR NE43 Upscale/Downscale.....                       | 23 mA / 3.5 mA                 |
| Output limitation, on 4...20 and 20...4 mA signals..... | 3.8...20.5 mA                  |
| Output limitation, on 0...20 and 20...0 mA signals..... | 0...20.5 mA                    |
| Current limit.....                                      | ≤ 28 mA                        |

### Passive 2-wire mA output

|   |                      |
|---|----------------------|
| Max. external 2-wire supply.....                        | 26 VDC               |
| Effect of external 2-wire supply voltage variation..... | < 0.005% of span / V |

### Status relay

|                    |                                   |
|--------------------|-----------------------------------|
| Max. voltage.....  | 125 VAC / 110 VDC                 |
| Max. current.....  | 0.5 AAC / 0.3 ADC                 |
| Max. AC power..... | 62.5 VA / 32 W                    |
| of span.....       | = of the presently selected range |

## Observed authority requirements

|              |                              |
|--------------|------------------------------|
| EMC.....     | 2014/30/EU & UK SI 2016/1091 |
| LVD.....     | 2014/35/EU & UK SI 2016/1101 |
| ATEX.....    | 2014/34/EU & UK SI 2016/1107 |
| RoHS.....    | 2011/65/EU & UK SI 2012/3032 |
| EAC.....     | TR-CU 020/2011               |
| EAC Ex.....  | TR-CU 012/2011               |
| EAC LVD..... | TR-CU 004/2011               |

## Approvals

|                          |   |
|--------------------------|---|
| ATEX.....                | KEMA 07ATEX0148 X                                     |
| IECEX.....               | KEM 09.0052X  |
| UKEX.....                | DEKRA 21UKEX0175X                                     |
| c FM us.....             | FM19US0059X /<br>FM19CA0032X                          |
| INMETRO.....             | DEKRA 23.0005X  |
| c UL us, UL 61010-1..... | E314307   |
| c UL us, UL 913.....     | E233311 (only 9113xx-U9)                              |
| KCs.....                 | 21_AV4BO_0175X (only<br>9113Ax-KCs)                   |
| EAC Ex.....              | RU C-DK.HA65.B.00355/19                               |
| DNV Marine.....          | TAA0000JD   |
| ClassNK.....             | TA24034M  |
| SIL.....                 | SIL 2 certified & fully assessed<br>acc. to IEC 61508 |