



Temperature / mA converter

9113B

- 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 4511/4501); 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 5910Ex, channel 1 / PR 5913Ex, 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

- The device can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature (Pt, Ni and TC) and active current signals.
- The 9113 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

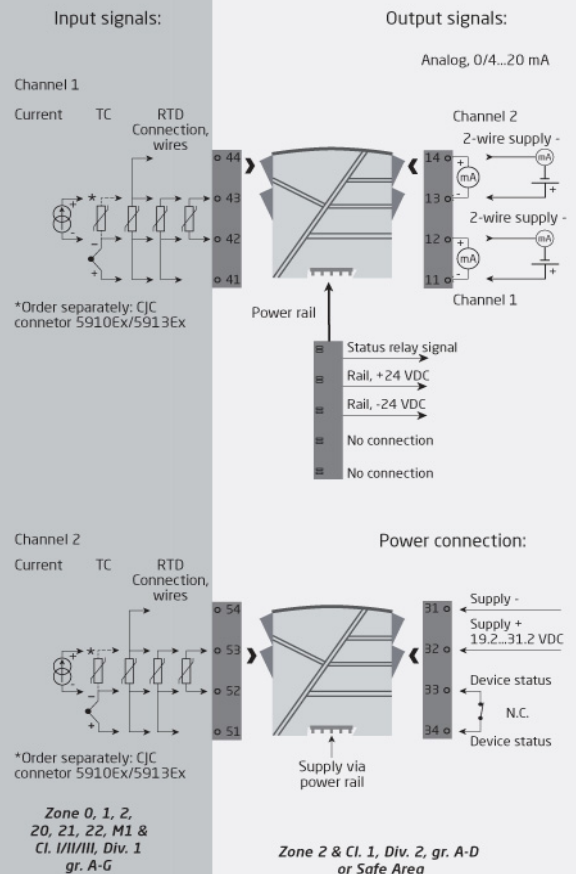
Technical characteristics

- 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 | Unit channels |
|-------|---------------|
| 9113B | Single : A |
| | Double : B |

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 & measurement / overvoltage cat. II |

Mechanical specifications

| | |
|---|---|
| Dimensions (HxWxD)..... | 109 x 23.5 x 104 mm |
| Dimensions (HxWxD) w/ 4501 / 4511..... | 109 x 23.5 x 116 / 131 mm |
| Weight approx..... | 250 g |
| Weight incl. 4501 / 4511 (approx.)..... | 265 g / 350 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..... | 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..... Communication enabler 4511 / Programming front 4501

| | |
|------------------------------|------------------------------------|
| 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 selected 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..... | Pt10/20/50/100/200/250/300/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 connector 5910..... | 20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C |
| CJC via internally mounted sensor..... | ±(2.0°C + 0.4°C * Δt) |
| Δt = | Internal temp.-ambient temp. |
| 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 |
| Max. load resistance [Ω]..... | (Vsupply-3.5)/0.023 A |
| Effect of external 2-wire supply voltage variation..... | < 0.005% of span / V |

Status relay

| | |
|--------------------|-------------------|
| Max. voltage..... | 110 VDC / 125 VAC |
| Max. current..... | 0.3 ADC / 0.5 AAC |
| Max. AC power..... | 62.5 VA / 32 W |

Observed authority requirements

| | |
|-----------|----------------|
| EMC..... | 2014/30/EU |
| LVD..... | 2014/35/EU |
| RoHS..... | 2011/65/EU |
| EAC..... | TR-CU 020/2011 |

Approvals

| | |
|----------------------------|--|
| ATEX 2014/34/EU..... | KEMA 07ATEX0148 X |
| IECEx..... | KEM 09.0052X |
| FM..... | 3038279-C |
| INMETRO..... | DEKRA 16.0003 X |
| UL..... | UL 61010-1 |
| EAC Ex TR-CU 012/2011..... | RU C-DK.GB08.V.00410 |
| DNV-GL Marine..... | Stand. f. Certific. No. 2.4 |
| CCOE..... | P337349/3 |
| SIL..... | SIL 2 certified & fully assessed acc. to IEC 61508 |