



Temperature / mA converter

9113B

- Input for RTD, TC and mA
- Active / passive mA output
- 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 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.
- The device automatically detects whether it must supply an active or a passive current signal.
- 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

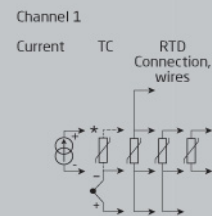
- 1 green and 2 red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

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

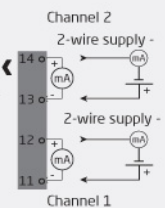
Connections

Input signals:

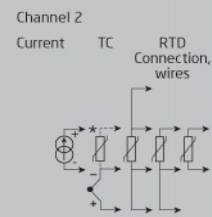
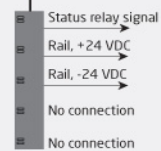


Output signals:

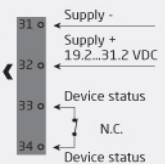
Analog, 0/4...20 mA



Power rail



Power connection:



Zone 2 & Cl. 1, Div. 2, gr. A-D
or Safe Area

Zone 0, 1, 2,
20, 21, 22, M1 &
Cl. I/II/III, Div. 1
gr. A-G

Order:

Type	Unit channels
9113B	Single : A
	Double : B

Environmental Conditions

Specifications range.....	-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 : 2007
Vibration: 2...13.2 Hz.....	±1 mm
Vibration: 13.2...100 Hz.....	±0.7 g

Common specifications

Supply voltage.....	19.2...31.2 VDC
Fuse.....	400 mA SB / 250 VAC
Max. power consumption.....	≤ 3.5 W (2 channels)
Isolation voltage, test /working: Input to any.....	2.6 kVAC / 300 VAC reinforced isolation
Analogue output to supply.....	2.6 kVAC / 300 VAC reinforced isolation
Status relay to supply.....	1.5 kVAC / 150 VAC reinforced isolation
Communications interface.....	Communication enabler 4511 / Programming front 4501
Signal / noise ratio.....	Min. 60 dB (0...100 kHz)
Accuracy.....	Better than 0.1% of selected range
Average response time incl. delay: Temperature input.....	≤ 1 s
mA input.....	≤ 0.4 s
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst.....	< ±1% of span

Input specifications

RTD input.....	Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
Cable resistance per wire (max.), RTD.....	50 Ω
Sensor current, RTD.....	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD.....	< 0.002 Ω / Ω
Sensor error detection, RTD.....	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 temperature-ambient temperature
Sensor error detection, TC.....	Programmable ON or OFF (only wire breakage)
Sensor error current: When detecting / else.....	Nom. 2 μA / 0 μA
Current input: Measurement range.....	0...20 mA
Current input: Programmable measurement ranges.....	0...20 and 4...20 mA
Input resistance, current input.....	Nom. 20 Ω + PTC 50 Ω
Sensor error detection, current input.....	Programmable ON / OFF

Output specifications

Current output: Signal range.....	0...20 mA
Programmable current ranges.....	0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.).....	20 mA/600 Ω/12 VDC
Load stability, current output.....	≤0.01% of span / 100 Ω
Sensor error indication, current output.....	0 / 3.5 / 23 mA / none
NAMUR NE 43 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
2-wire 4...20 mA output: External 2-wire supply range.....	3.5...26 VDC
Signal range.....	4...20 mA
Max. load resistance [Ω].....	(Vsupply - 3.5) / 0.023 A
Load stability, 4...20 mA output.....	≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation.....	< 0.005% of span / V
Max. voltage, status relay.....	110 VDC / 125 VAC
Max. current, status relay.....	0.3 ADC / 0.5 AAC
Max. AC power, status relay.....	62.5 VA / 32 W
*of span.....	= of the currently selected measurement range

Approvals

EMC.....	EN 61326-1
LVD 2006/95/EC.....	EN 61010-1
ATEX 2004/108/EC.....	KEMA 07ATEX0148 X
IECEX.....	KEM 09.0052X
FM.....	3038279-C
INMETRO.....	NCC 12.1310 X
UL.....	UL 61010-1
EAC TR-CU 020/2011.....	EN 61326-1
EAC Ex TR-CU 012/2011.....	RU C-DK.GB08.V.00410
DNV Marine.....	Stand. f. Certific. No. 2.4
CCOE.....	P337349/3
SIL.....	SIL 2 certified & fully assessed acc. to IEC 61508