PERFORMANCE MADE SMARTER



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

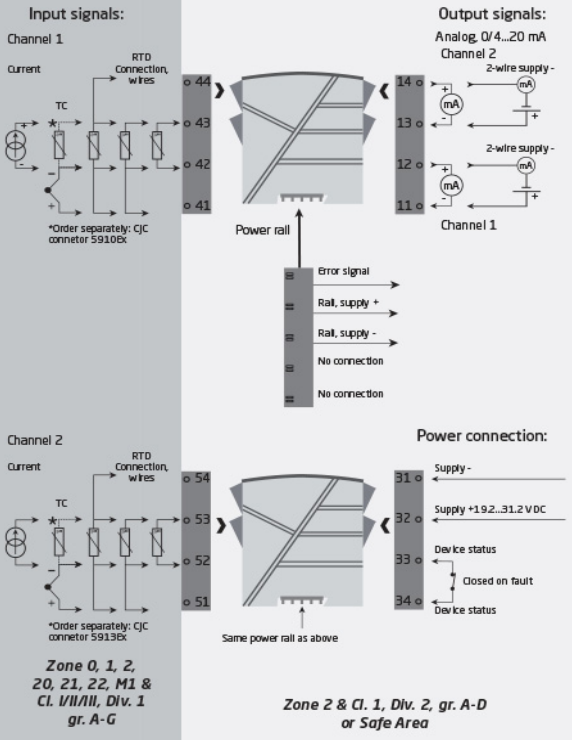
Advanced features
- Configuration and monitoring by way of detachable display front (PR 4500); process calibration and signal simulation.
- Copying of the configuration from one device to others of the same type via the display front.
- TC inputs can use either the internal CJC or a terminal with a built-in Pt100 sensor (PR 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
- 9113Bxx can be mounted in the safe area or in zone 2 / Class 1, Division 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Division 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.
- Failure rates for 9113 correspond 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



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Order

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

Example: 9113BB

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^2 AWG 26...14 stranded wire
Stripping length	5 mm
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 (1)
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

Relay function	Bistable, closed on fault
Max. voltage	125 VAC / 110 VDC
Max. current	0.5 AAC / 0.3 ADC
Max. AC power	62.5 VA / 32 W

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
UKEX	DEKRA 23UKEX0109X
c FM us	FM19US0059X / FM19CA0032X
INMETRO	DEKRA 23.0005X
c UL us, UL 61010-1	E314307
c UL us, UL 913	E233311 (only 9113xx-U9)
CCC	2024322316005841
KCs	21_AV4BO_0173X / 21_AV4BO_0174X (only 9113Bx-KCs)
UA type examination	СЦ 26.1126 X (only 9113Bx)
PESO	P659688/1 (only 9113Bx)
EAC Ex	EAEU KZ 7500361.01.01.08756
DNV Marine	TAA00000JD
ClassNK	TA24034M
SIL	SIL 2 certified & fully assessed acc. to IEC 61508