PERFORMANCE MADE SMARTER



Universal transmitter

4114

– Input for RTD, TC, Ohm, potentiometer, mA and V
– 2-wire supply > 16 V
– FM-approved for installation in Div. 2
– Output for current and voltage
– Universal AC or DC supply

Advanced features
- Programmable by way of detachable display front (PR 4500 series), process calibration, signal simulation, password protection, error diagnostics and help text available in several languages.

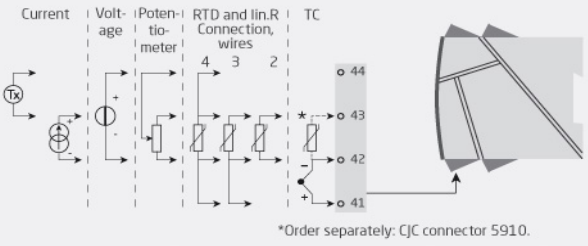
Application
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with standard analog output.
- Galvanic separation of analog signals and measurement of floating signals.
- The 4114 provides the required failure data (SFF and PFDAVG) for SIL 2 applications as per IEC 61508 / IEC 61511.
- Failure rates for 4114 correspond to Performance Level “d” according to ISO-13849.

Technical characteristics
- When 4114 is used with the PR 4500 display series, all operational parameters can be modified to suit any application. As the 4114 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green / red front LED indicates normal operation and malfunction.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

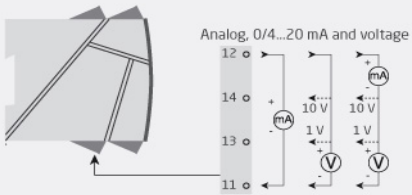
Note
- If you need an installation instruction in hard copy, you can order it for free when placing your order.

Applications

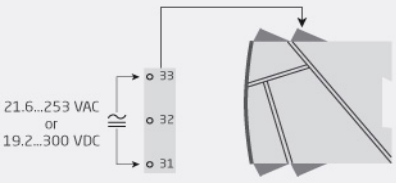
Input signals:



Output signals:



Supply:



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Order:

Type
4114

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

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Weight approx.	155 g
Weight incl. 4501 / 451x (approx.)	170 g / 185 g
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, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. required power	≤ 2.0 W
Max. power dissipation	≤ 2.0 W

Isolation voltage

Isolation voltage, test / working	2.3 kVAC / 250 VAC

Response time

Temperature input (0...90%, 100...10%)	≤ 1 s
mA / V input (0...90%, 100...10%)	≤ 400 ms

Auxiliary supplies

2-w. supply (term. 44...43)	25...16 VDC / 0...20 mA
Programming	PR 4500 communication interfaces
Signal / noise ratio	Min. 60 dB (0...100 kHz)
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; Pt300/400/500/1000; Ni50/100/120/1000; Cu10/20/50/100
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	Yes
Short circuit detection	< 15 Ω

Linear resistance input

Linear resistance min....max	0 Ω...10000 Ω

Potentiometer input

Potentiometer min....max	10 Ω...100 kΩ

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	Yes
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: Loop break 4...20 mA	Yes

Voltage input

Measurement range	0...12 VDC
Programmable measurement ranges	0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance	Nom. 10 MΩ (1)

Output specifications

Current output

Signal range	0...23 mA
Programmable signal ranges	0...20/4...20/20...0/20...4 mA
Load (@ current output)	≤ 800 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

Voltage output

Signal range	0...10 VDC
Programmable signal ranges	0/0.2...1; 0/1...5 ; 0/2...10; 1...0.2/0; 5...1/0; 10...2/0 V
Load (@ voltage output)	≥ 500 kΩ
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
RoHS	2011/65/EU & UK SI 2012/3032
EAC	TR-CU 020/2011
EAC LVD	TR-CU 004/2011

Approvals

c UL us, UL 508	E231911
FM	3025177
DNV Marine	TAA0000101
EU RO MR Type Approval	MRA000000Z
SIL	Hardware assessed for use in SIL applications