



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

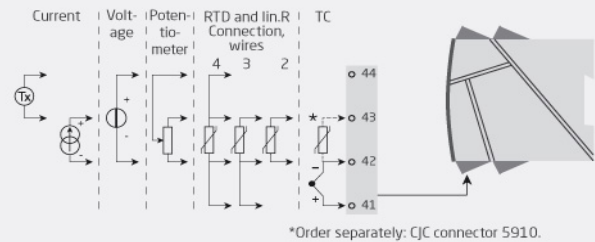
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- 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

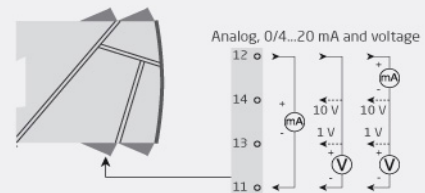
- When 4114 is used with the PR 4500 display series, all operational parameters can be modified to suit any application. As the 4114 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green / red front LED indicates normal operation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

Applications

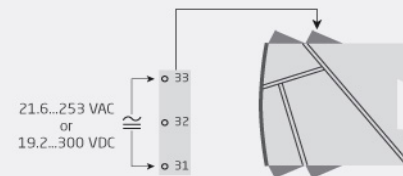
Input signals:



Output signals:



Supply:



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

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
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