

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 (4501), process calibration, signal simulation, password protection, error diagnostics and help text available in several languages.

Application

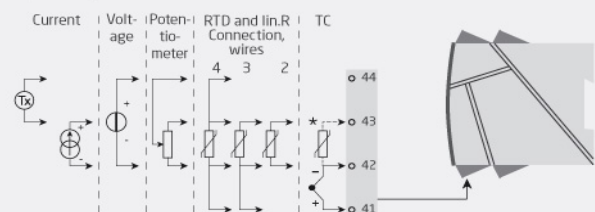
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with standard analog output.
- Galvanic separation of analog signals and measurement of floating signals.
- The 4114 is designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.
- Suitable for the use in systems up to Performance Level "d" according to ISO-13849.

Technical characteristics

- When 4114 is used with the 4501 display / programming front, 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.

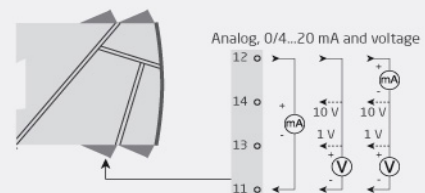
Applications

Input signals:

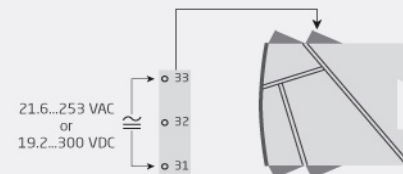


*Order separately: CJC connector 5910.

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 |
| Dimensions (HxWxD) w/ 4501/451x..... | 109 x 23.5 x 116 / 131 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 |
| LVD..... | 2014/35/EU |
| RoHS..... | 2011/65/EU |
| 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 |