

UNIVERSAL TRANSMITTER



- 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:

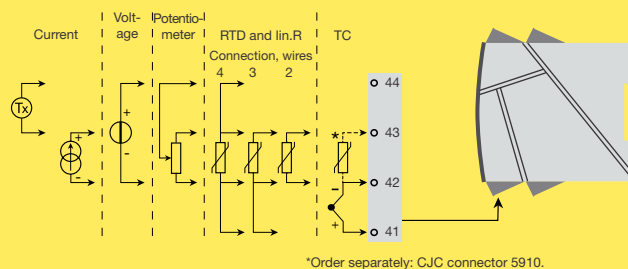
- Linearised, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analogue current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with standard analogue output.
- Galvanic separation of analogue signals and measurement of floating signals.
- The 4114 is designed according to strict safety requirements and is thus suitable for application in SIL 2 installations.

Technical characteristics:

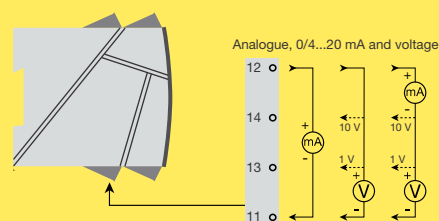
- When 4114 is used with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4114 is designed with electronic hardware switches, it is not necessary to open the module for setting of DIP switches.
- A green / red front LED indicates normal operation and malfunction.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

Applications

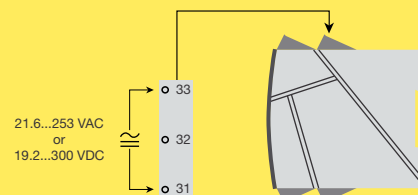
Input signals:



Output signals:



Supply:



Order codes:

- 4114 = Universal transmitter**
- 4501 = Display / programming front**
- 5910 = CJC connector**

PR 4501 Display / programming front



Application:

- Communications interface for modification of operational parameters in 4114.
- Can be moved from one 4114 module to another and download the configuration of the first transmitter to subsequent transmitters.
- Fixed display for visualisation of process data and status.

Technical characteristics:

- LCD display with 4 lines; Line 1 (H=5.57 mm) shows input signal, line 2 (H=3.33 mm) shows units, line 3 (H=3.33 mm) shows analogue output or TAG no. and line 4 shows communication status.
- Programming access can be blocked by assigning a password. The password is saved in the transmitter in order to ensure a high degree of protection against unauthorised modifications to the configuration.

Mounting / installation:

- Click 4501 onto the front of 4114.

Electrical specifications:

Specifications range:

-20°C to +60°C

Common specifications:

- Supply voltage, universal 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
- Max. consumption..... ≤ 2.0 W
- Fuse..... 400 mA SB / 250 VAC
- Isolation voltage, test / operation..... 2.3 kVAC / 250 VAC
- Communications interface Programming front 4501
- Signal / noise ratio..... Min. 60 dB (0...100 kHz)
- Response time (0...90%, 100...10%):
 - Temperature input..... ≤ 1 s
 - mA / V input ≤ 400 ms
- Calibration temperature..... 20...28°C
- Accuracy, the greater of the general and basic values:

General values		
Input type	Absolute accuracy	Temperature coefficient
All	≤ ±0.1% of span	≤ ±0.01% of span / °C

Basic values		
Input type	Basic accuracy	Temperature coefficient
mA	≤ ±4 µA	≤ ±0.4 µA / °C
Volt	≤ ±20 µV	≤ ±2 µV / °C
Pt100	≤ ±0.2°C	≤ ±0.01°C / °C
Linear resistance	≤ ±0.1 Ω	≤ ±0.01 Ω / °C
Potentiometer	≤ ±0.1 Ω	≤ ±0.01 Ω / °C
TC type: E, J, K, L, N, T, U	≤ ±1°C	≤ ±0.05°C / °C
TC type: R, S, W3, W5, LR	≤ ±2°C	≤ ±0.2°C / °C
TC type: B 160...400°C	≤ ±4.5°C	≤ ±0.45°C / °C
TC type: B 400...1820°C	≤ ±2°C	≤ ±0.2°C / °C

EMC immunity influence	< ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst	< ±1% of span

Auxiliary supplies:

- 2-wire supply (terminal 44...43) 25...16 VDC / 0...20 mA
- Max. wire size 1 x 2.5 mm² stranded wire
- Screw terminal torque 0.5 Nm
- Relative humidity..... < 95% RH (non-cond.)
- Dim., without display front (HxBxD) .. 109 x 23.5 x 104 mm
- Dim., with display front (HxBxD)..... 109 x 23.5 x 116 mm
- Protection degree..... IP20
- Weight 145 g / 160 g with 4501

RTD, linear resistance and potentiometer input:

Input type	Min. value	Max. value	Standard
Pt100	-200°C	+850°C	IEC60751
Ni100	-60°C	+250°C	DIN 43760
Lin. R	0 Ω	10000 Ω	-
Potentiometer	10 Ω	100 kΩ	-

- Cable resistance per wire, RTD (max.).. 50 Ω
- Sensor current, RTD..... Nom. 0.2 mA
- Effect of sensor cable resistance (3- / 4-wire), RTD
- Sensor error detection, RTD..... Yes
- Short circuit detection, RTD..... < 15 Ω

TC input:

Type	Min. value	Max. value	Standard
B	0°C	+1820°C	IEC 60584-1
E	-100°C	+1000°C	IEC 60584-1
J	-100°C	+1200°C	IEC 60584-1
K	-180°C	+1372°C	IEC 60584-1
L	-200°C	+900°C	DIN 43710
N	-180°C	+1300°C	IEC 60584-1
R	-50°C	+1760°C	IEC 60584-1
S	-50°C	+1760°C	IEC 60584-1
T	-200°C	+400°C	IEC 60584-1
U	-200°C	+600°C	DIN 43710
W3	0°C	+2300°C	ASTM E988-90
W5	0°C	+2300°C	ASTM E988-90
LR	-200°C	+800°C	GOST 3044-84

Cold junction compensation (CJC):

- via external sensor in connector 5910..... 20...28°C ≤ ±1°C -20...20°C / 28...70°C ≤ ±2°C
- via internal CJC sensor..... ±(2.0°C + 0.4°C * Δt)

Δt = internal temperature - ambient temperature

Sensor error detection, all TC types.. Yes

Sensor error current:

- when detecting Nom. 2 µA
- else..... 0 µA

Current input:

- Measurement range 0...20 mA
- Programmable measurement ranges . 0...20 and 4...20 mA
- Input resistance Nom. 20 Ω + PTC 50 Ω

Voltage input:

- Measurement range 0...12 VDC
- Programmable measurement ranges . 0/0.2...1; 0/1...5; 0/2...10 V
- Input resistance Nom. 10 MΩ

Current output:

- Signal range (span)..... 0...20 mA
- Programmable signal ranges..... 0/4...20 and 20...4/0 mA
- Load (max.)..... 20 mA / 800 Ω / 16 VDC
- Load stability ≤ 0.01% of span / 100 Ω
- Sensor error detection..... 0 / 3.5 / 23 mA / none
- NAMUR NE 43 Upscale / Downscale. 23 mA / 3.5 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 (min.)..... 500 kΩ

Ex / I.S. approval:

- FM, applicable in Cl. I, Div. 2, Gr. A, B, C, D Class I, Div. 2, Group IIC Zone 2
- Max. ambient temperature for T5..... 60°C

Marine approval:

- Det Norske Veritas, Ships & Offshore. Stand. f. Certific. No. 2.4

GOST R approval:

- VNIIM, Cert. No. www.prelectronics.com

Observed authority requirements: Standard:

- EMC 2004/108/EC EN 61326-1
- LVD 2006/95/EC EN 61010-1
- FM 3600, 3611, 3810 and ISA 82.02.01
- UL, Standard for Safety..... UL 508

of span = of the currently selected measurement range