

Isolated universal converter

3114

- Input for RTD, TC, Ohm, potentiometer, mA and V
- 2-wire supply >15 V
- I.S. approvals: FM Div. 2, ATEX Zone 2, IECEx Zone 2, UKEX Zone 2
- Output for current and voltage
- Slimline housing of 6.1 mm



Applications

- Linearised, 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.

Technical characteristics

- A green front LED indicates normal operation and malfunction.
- Continuous check of vital stored data for safety reasons.
- 2.5 kVAC, 3-port galvanic isolation.

Programming

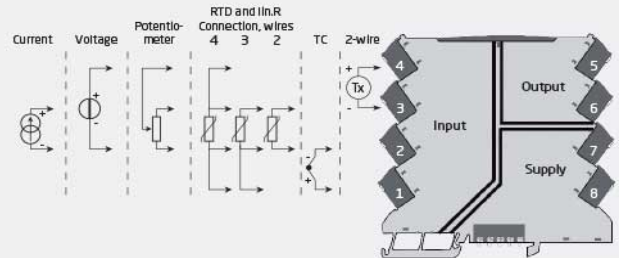
- Configuration, monitoring, and diagnostics using PR 4500 detachable communication interfaces via the PR 4590 ConfigMate. As the 3114 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- All programming can be password protected.
- Scrolling help text in 7 languages.

Mounting

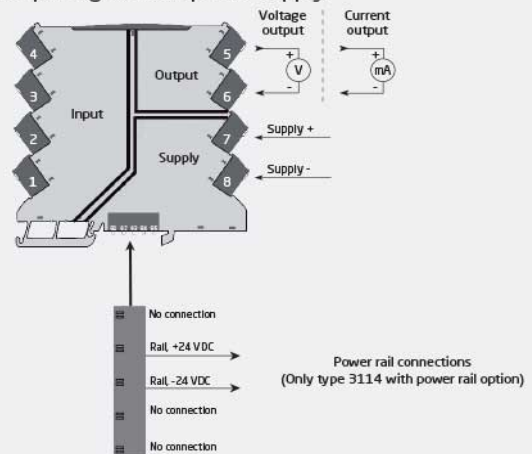
- Units can be mounted side by side, horizontally and vertically, without air gap on a standard DIN rail, even at 70°C ambient temperature.
- Units can be supplied separately or installed on PR 9400 power rail.
- The narrow 6.1 mm housing allows up to 163 units per meter.

Applications

Input signals:



Output signals and power supply:



Safe Area or
Zone 2 & Cl. 1, Div. 2, gr. A-D

Order

| Type | Version |
|------|--|
| 3114 | With power rail connector / terminals : - Supplied via terminals : -N |

Example: 3114

Environmental Conditions

| | |
|------------------------------|---|
| Operating temperature..... | -25°C to +70°C |
| Storage temperature..... | -40°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)..... | 113 x 6.1 x 115 mm |
| Weight approx..... | 70 g |
| DIN rail type..... | DIN EN 60715/35 mm |
| Wire size..... | 0.13...2.5 mm ² / AWG 26...12 stranded wire |
| Screw terminal torque..... | 0.5 Nm |
| Vibration..... | IEC 60068-2-6 |
| 2...25 Hz..... | ±1.6 mm |
| 25...100 Hz..... | ±4 g |

Common specifications

Supply

| | |
|-----------------------------|---------------------|
| Supply voltage..... | 16.8...31.2 VDC |
| Fuse..... | 400 mA SB / 250 VAC |
| Max. required power..... | ≤ 1.2 W |
| Max. power dissipation..... | 0.65 W |

Isolation voltage

| | |
|---|------------------------------------|
| Isolation voltage, test / working..... | 2.5 kVAC / 300 VAC (reinforced) |
| Zone 2 / Div. 2..... | 250 VAC |

Response time

| | |
|---|--------------------------------|
| Temperature input (0...90%, 100...10%)..... | ≤ 1 s |
| mA / V input (0...90%, 100...10%)..... | ≤ 400 ms |
| Signal / noise ratio..... | Min. 60 dB (0...100 kHz) |
| Signal dynamics, input..... | 24 bit |
| Signal dynamics, output..... | 16 bit |
| Programming..... | ConfigMate 4590 |
| 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..... | 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 |
|------------------------|---|

| | |
|----------------------------------|-----------------------|
| 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 |

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 |
| 2-wire transmitter supply..... | > 15 V / 20 mA |

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 |
| Sensor error indication..... | 0 / 3.5 / 23 mA / none |
| NAMUR NE43 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 (@ voltage output)..... | ≥ 10 kΩ |
| of span..... | = of the presently selected range |

I.S. / Ex marking

| | |
|-------------|---|
| ATEX..... | II 3 G Ex ec IIC T4 Gc |
| IECEX..... | Ex ec IIC T4 Gc |
| FM, US..... | Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, AEx nA IIC T4 |
| FM, CA..... | Cl. I, Div. 2, Gp. A, B, C, D T4 or Cl. I, Zone 2, Ex nA IIC T4 |

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 |

Approvals

| | |
|--------------------------|------------------------------|
| ATEX..... | KEMA 10ATEX0147 X |
| IECEX..... | KEM 10.0068X |
| UKEX..... | DEKRA 21UKEX0055X |
| c FM us..... | FM17US0004X / FM17CA0003X |
| c UL us, UL 61010-1..... | E314307 |
| CCC..... | 2020322310003554 |
| EAC Ex..... | EAEU KZ 7500361.01.01.08756 |
| DNV Marine..... | TAA00001RW |