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## ISOLATED TRANSDUCER OF DC SIGNALS WITH PASSIVE OUTPUT FOR RAILWAY APPLICATIONS

- Measures and separates signals from RTD, TC and RTD sensors
- AY-USB adapter user configuration
- Rated impulse voltage Uni: 6kV
- version for mounting into switchboard on DIN 35 rail

Converter with software programmable input and passive output is used to convert:

- voltage from any thermocouple with linearization and internal cold junction compensation
- resistance (0..320Ω, 0..2.5kΩ)
- RTD signal (Pt100, Ni1000 temperature sensor)
- KTY thermistors up to 2.5kΩ
- potentiometer 0..100Ω, 0..1300Ω a 0..11kΩ, 2w OV 0..10k
- NTC 10kΩ, 0..100kΩ, 0..1V .. (more in the input signal table)

### Electrical specifications:

- |                                                                    |                                          |
|--------------------------------------------------------------------|------------------------------------------|
| - operating temperature range:                                     | OT (-40 ... + 70 ° C)                    |
| - storage temperature range:                                       | -40 ... + 80 ° C                         |
| - supply voltage:                                                  | 8 ... 30V DC                             |
| - power supply without interruption:                               | Class S1 Art.: 5.2.4                     |
| - user linearization with table (32 sections)                      | 16 / 20ms                                |
| - sampling for RTD and resistor:                                   | 52 / 80ms                                |
| - sampling for Tc, U:                                              | 0..30 s                                  |
| - digital filter (damping) programmable:                           | <10Ω / 1 wire                            |
| - max. sensor lead resistance:                                     | <0.5mA                                   |
| - sensor current:                                                  |                                          |
| - cold junction temperature compensation                           |                                          |
| for thermocouples:                                                 | -30..70 ° C, accuracy ± 1 ° C            |
| - output signal:                                                   | 4-20mA power supply line                 |
| - current output limit:                                            | min. 3mA, max. 21mA                      |
| - accuracy:                                                        | measurement error 0.1% + error see table |
| - temperature error:                                               | max. 0.05% / 10K                         |
| - EMC error:                                                       | <0.8%                                    |
| - enclosure:                                                       | IP40 / IP20 enclosure rating             |
| - Mounting position:                                               | Vertical, Latch down                     |
| - Weight:                                                          | 70g                                      |
| - environment:                                                     | degree of pollution 2                    |
| - air and surface distance input / output:                         | min. 6,5mm                               |
| - Rated impulse voltage Uni:                                       | 6kV                                      |
| - test voltage Ua:                                                 | 4kV                                      |
| - Connection wire:                                                 | 0.5 to 2.5mm <sup>2</sup>                |
| - optional AY-USB programming adapter (Rawet Studio setup program) |                                          |



### Type tests:

- |                     |                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------|
| ČSN EN 60688 ed.2   | Electrical measuring transducers for converting A.C. and D.C. electrical quantities to analogue or digital signals |
| ČSN EN 61326-1 ed.3 | Electrical equipment for measurement, control and laboratory use - EMC requirements                                |
| ČSN EN 61010-1 ed.2 | Safety requirements for electrical equipment for measurement, control, and laboratory use                          |
| ČSN EN 50155 ed.5   | Railway applications - Electronic equipment used on rolling stock                                                  |
| ČSN EN 50124-1 ed.2 | Railway applications - Insulation coordination                                                                     |
| ČSN EN 61373 ed.2   | Railway applications - Rolling stock equipment - Shock and vibration tests                                         |
| ČSN EN 45545-2+A1   | Railway applications - Fire protection on railway vehicles                                                         |
|                     | - meets the set of requirements for monitored products according to Table 2                                        |
|                     | - PCB complies with a set of requirements R24, R25                                                                 |
|                     | - the box meets the set of requirements R26                                                                        |
|                     | - meets the requirements of HL1, HL2, HL3                                                                          |

**Mounting:**

The transducers are mechanically mounted on a 35 mm DIN rail. After attaching the top edge with a screwdriver, the latch of the fastening mechanism is released and the device is pushed to the bottom with the bottom. After locking, the assembly is finished. Dismantling is carried out in the opposite way.

**Input Signal Variants:**

User-adjustable inputs: (Actual input and measuring range can be set within the specified maximum range)

| Typ       | Input                                                |                                       | range (linearization table) | error           |
|-----------|------------------------------------------------------|---------------------------------------|-----------------------------|-----------------|
| PX310/R.A | Thermocouple thermometer (Tc), internal compensation | Fe-CuNi J                             | -210..1200°C                | 0,3°C od -60°C  |
|           |                                                      |                                       | -210..1050°C                | 0,3°C od -100°C |
|           |                                                      |                                       | -210..300°C                 | 0,3°C od -160°C |
|           |                                                      | Fe-Ko L                               | 0..899°C                    | 0,05%           |
|           |                                                      |                                       | -210..400°C                 | 0,3°C od -150°C |
|           |                                                      | NiCr-NiAl K                           | -270..1372°C                | 0,1% od -99°C   |
|           |                                                      |                                       | -60..1372°C                 | 0,3°C od -20°C  |
|           |                                                      |                                       | -50..1768°C                 | 0,1% od 40°C    |
|           |                                                      | Pt10Rh-Pt S                           | -50..1768°C                 | 0,1% od 40°C    |
|           |                                                      | Pt30Rh-Pt6Rh B                        | 0..1820°C                   | 0,1% od 386°C   |
|           |                                                      | NiCr-CuNi E                           | -270..1000°C                | 0,1% od -153°C  |
|           |                                                      | NiCrSi-NiSi N                         | -270..1300°C                | 0,1% od -122°C  |
|           |                                                      | Pt13Rh-Pt R                           | -50..1768°C                 | 0,1% od 54°C    |
|           |                                                      | Cu-CuNi T                             | -270..400°C                 | 0,1% od -163°C  |
|           |                                                      | Ni-Ni18Mo M                           | -50..1410°C                 | 0,1%            |
|           |                                                      | W5Re-W26Re C                          | 0..2301°C                   | 0,05%           |
|           |                                                      | W3Re-W25Re D                          | 0..2301°C                   | 0,1% od 49°C    |
|           |                                                      | W-W26Re G                             | 0..2301°C                   | 0,1% od 286°C   |
|           |                                                      | F                                     | -30..1400°C                 | 0,05%           |
|           |                                                      | U                                     | -200..400°C                 | 0,1%            |
|           | Resistance thermometer (RTD) 2w or 3w                | Pt100                                 | -200..400°C                 | 0,18°C          |
|           |                                                      | Pt100                                 | -30..600°C                  | 0,18°C          |
|           |                                                      | Pt1000                                | -200..400°C                 | 0,18°C          |
|           |                                                      | Pt1000                                | -100..500°C                 | 0,18°C          |
|           |                                                      | Ni100, Ni1000 TKR6180 (5000)          | -60..180°C                  | 0,18°C          |
|           | Linear temp. sensor (KTY)                            | KTY81..KTY85                          | -55..150°C                  | 0,25°C          |
|           | Resistance Transmitter (OV)                          | OV/3w                                 | 0..320Ω, 0..2,5kΩ           | 0,03Ω, 0,1Ω     |
|           | Potentiometr or OV/2w                                | potentiometer value affects           | 0..320Ω, 0..2,5kΩ           | 0,03Ω, 0,1Ω     |
|           | DC voltage (U)                                       | -0,07V..1V                            | -70mV..140mV, 0..1V         | 0,01%           |
| PX310/R.B | Linear sensors                                       | KTY81-210 3w                          | -55..150°C                  | 0,2°C           |
|           |                                                      | KTY81-210 2w                          | -50..145°C                  | 0,15°C          |
|           |                                                      | OV 2W                                 | 0..11kΩ                     | 2Ω              |
| PX310/R.C | Potentiometer                                        | does not depend on value in the range | 0..1(20)kΩ                  | 0,02%           |

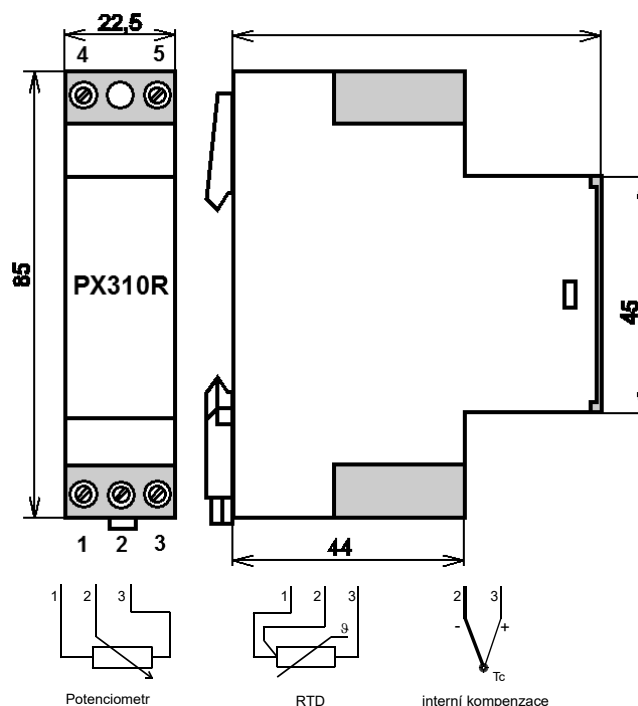
Other inputs: (changes in basic are required)

- NTC Thermistors 10k, 15k, 20k, 25k...
- Linear temperature sensors KTY, thermistors a.t.d. by appointment
- Possibility to adapt the input according to customer needs

## Dimensions and connection of terminals:

### PX310/R:

- 4(-)...5(+): output 4..20mA  
 1...3: input RTD (OV) 2W  
 1,2...3: input RTD (OV) 3W  
 1...2...3: input potentiometer  
 (center = 2)  
 2...3(+): input Tc (U)



### Ordering:

- type of converter
- input signal, range and its type
- the output signal is always 4..20mA (may not be specified)
- Quantity

### Order examples:

Basic version: (can be set by user using AY-USB adapter)

5pcs PX310 / R.A, Tc "J", 0..800 ° C / 4-20mA 4pcs PX310 / R.A, Ni1000 / 5000 2W -10..150 ° C / 4-20mA  
 1pc PX310 / R.A, Pt100 2W 0..60 ° C / 4-20mA 1pc PX310 / R.C, Pot 0..1kΩ / 4-20mA  
 3pcs PX310 / R.A, Pt100 3W 0..200 ° C / 4-20mA 5pcs PX310 / R.A, 0..1V / 4-20mA

### Other versions:

1pc PX310 / R.C, Pot. 10kΩ / 4-20mA 8pcs PX310 / R, 0..0.5V / 4-20mA  
 8pcs PX310 / R, 0..10mV / 4-20mA



Likvidaci po ukončení životnosti provést odděleným sběrem.  
 Rawet s.r.o. je členem sdružení RETELA [www.retela.cz](http://www.retela.cz)  
 rev.1