

# 2-WIRE R/I TRANSMITTER



- Input for Pt100, Ni100, or Ohm
- Sensor cable compensation
- Linearised 4...20 mA output
- 2-wire connection
- 10...35 VDC supply voltage
- For mounting in 11-pole relay socket



## Application:

Linearised temperature measurement with Pt100 or Ni100 sensor. • Conversion of linear resistance change to standard analogue current / voltage signal from e.g. valves or linear movements with attached potentiometer. • As 4...20 mA signal simulator via externally mounted 10-turn potentiometer.

## Technical characteristics:

### General:

The unit is built around a microprocessor core with an efficient program flow. The supply voltage of 10...35 VDC is converted to a 4...20 mA signal on the 2-wire output. The output has voltage supply ground as reference and is protected against polarity reversal. Adjustment range for 0 and 100% trimmers is as standard set to 5% of span, but may be ordered with an adjustment range up to 50% of span. The sensor connection is always a 3-wire connection with cable compensation for up to 10 Ω in each wire. If a 2-wire connection is requested, pins 7 and 6 must be short-circuited in the socket (no cable compensation). Sensor error detection is standard set to Upscale, but may be ordered to Downscale.

### Input:

Linearised Pt100 temperature input according to the norm IEC 751 within the range -200...+850°C. Linearised Ni100 temperature input according to the norm DIN 43760 within the range -50...+250°C. Linear resistance input in the range 0...10 kΩ.

Measurement range should be specified when placing the order e.g. 0...150°C. For RTD input the min. span is 50°C, for linear resistance 30 Ω. The RTD input can be delivered as multiples of the main type (e.g. Pt1000). The input can be reversed so that 0% e.g. is 150°C and 100% is 0°C.

### Output:

Analogue 2-wire current output of 4...20 mA. Maximum load depends on the voltage supply as  $R_{load} = (V_{supply} - 10) / 0.02 [\Omega]$ .

## Electrical specifications:

### Specifications range:

-20°C to +60°C

### Common specifications:

|                                       |                       |
|---------------------------------------|-----------------------|
| Supply voltage.....                   | 10...35 VDC           |
| Internal consumption.....             | 40 mW...0.5 W         |
| Warm-up time.....                     | < 5 min.              |
| Signal / noise ratio.....             | Min. 60 dB            |
| Signal dynamics, input.....           | 17 bit                |
| Signal dynamics, output.....          | 16 bit                |
| Response time (0...90%, 100...10%) .. | < 165 ms              |
| Calibration temperature.....          | 20...28°C             |
| Temperature coefficient               |                       |
| span < 100°C.....                     | ±0.01°C/°Camb.        |
| span > 100°C.....                     | ±0.01% of span/°Camb. |
| Linearity error.....                  | < 0.1% of span        |
| EMC immunity influence.....           | < ±0.5%               |
| Relative air humidity.....            | < 95% RH (non-cond.)  |
| Dimensions (HxWxD).....               | 80.5 x 35.5 x 84.5 mm |
| Protection degree.....                | IP50                  |
| Weight.....                           | 120 g                 |

### Input:

| Type   | Min. value | Max. value | Min. span | Standard  |
|--------|------------|------------|-----------|-----------|
| Pt100  | -200°C     | +850°C     | 50°C      | IEC 751   |
| Ni100  | -50°C      | +250°C     | 50°C      | DIN 43760 |
| Lin. R | 0 Ω        | 10 kΩ      | 30 Ω      | -----     |

|                                    |                            |
|------------------------------------|----------------------------|
| Max. offset.....                   | 50% of selected max. value |
| Adjustment acc. to order.....      | ±2.5...±25% of span        |
| Cable resistance per wire max..... | 10 Ω                       |
| Sensor current.....                | > 0.2 mA, < 0.4 mA         |
| Basic accuracy.....                | < ±0.3°C                   |
| Temperature coefficient for span   |                            |
| < 100°C.....                       | < ±0.01°C/°Camb.           |
| Sensor error indication.....       | Upscale / Downscale        |

### Output:

|                          |                                     |
|--------------------------|-------------------------------------|
| Signal range.....        | 4...20 mA                           |
| Min. signal range.....   | 16 mA                               |
| Load (max.).....         | $(V_{supply} - 10) / 0.02 [\Omega]$ |
| Load stability.....      | < 0.01% of span/ 100 Ω              |
| Current limit.....       | < 28 mA                             |
| Upscale / Downscale..... | ≥ 23 mA / ≤ 3.6 mA                  |

### GOST R approval:

VNIIM, Cert. no. .... www.prelectronics.com

### Observed authority requirements: Standard:

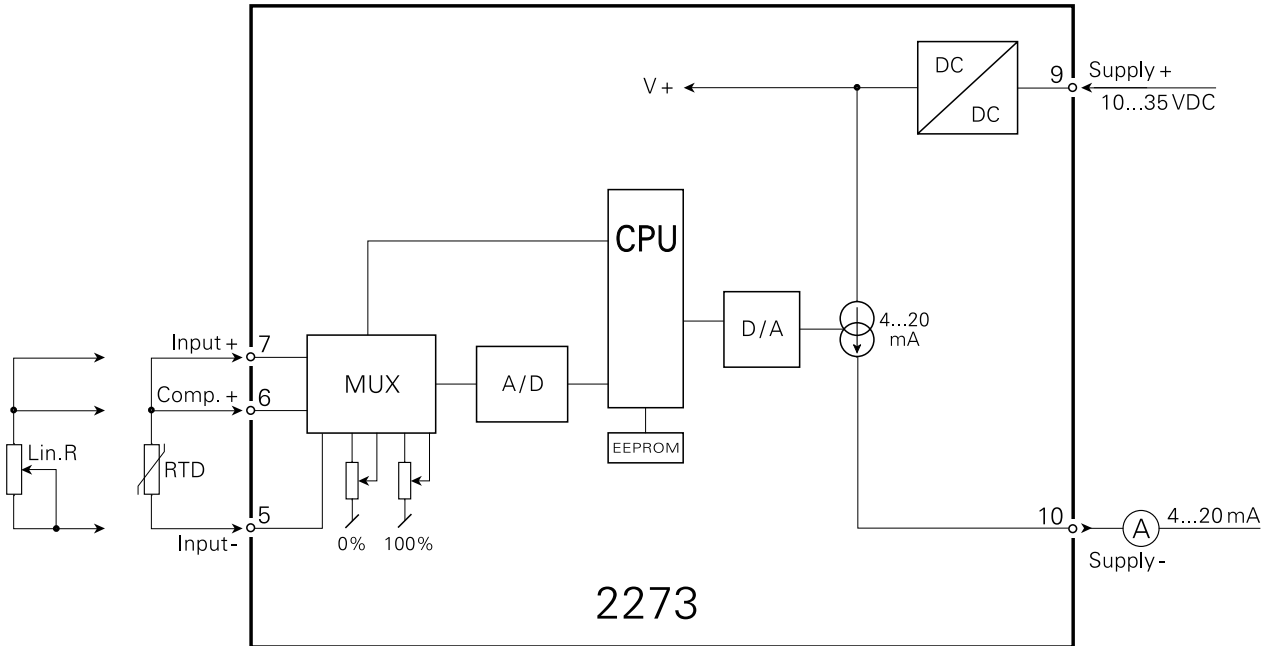
EMC 2004/108/EC ..... EN 61326-1

Of span = Of the presently selected range

Order : 2273

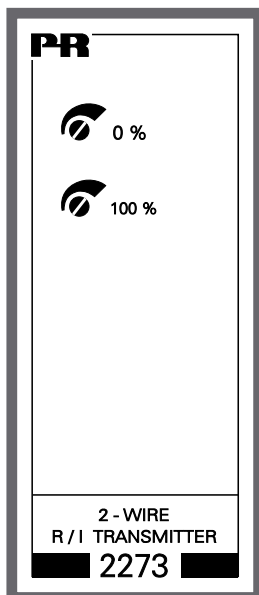
| Type | Input   | Output        | Range         |
|------|---|---------------|---------------|
| 2273 | Pt100 : L<br>Ni100 : N<br>Lin. R : R<br>Spec. : X | 4...20 mA : 2 | Acc. to order |

**Block diagram:**



For 2-wire connection, pins 6 and 7 must be short-circuited in the socket.

**Front layout:**



| Standard ranges Pt100 |
|-----------------------|
| -50...+50°C           |
| 0...+50°C             |
| 0...+100°C            |
| 0...+120°C            |
| 0...+150°C            |
| 0...+200°C            |
| 0...+250°C            |
| 0...+300°C            |
| 0...+400°C            |
| 0...+500°C            |
| +100...+300°C         |
| +200...+500°C         |