

# 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  $\Omega$  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 k $\Omega$ .

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  $\Omega$ . 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 .....	$\pm 0.01^\circ\text{C}/^\circ\text{C}_{\text{amb}}$
span > 100°C .....	$\pm 0.01\%$ of span/ $^\circ\text{C}_{\text{amb}}$
Linearity error .....	< 0.1% of span
EMC immunity influence .....	< $\pm 0.5\%$
Relative air humidity .....	< 95% RH (non-cond.)
Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm
Tightness.....	IP50
Weight .....	120 g

### Input:

Type	Min. value	Max. value	Min. span	Norm
Pt100	-200°C	+850°C	50°C	IEC 751
Ni100	-50°C	+250°C	50°C	DIN 43760
Lin.R	0 $\Omega$	10 k $\Omega$	30 $\Omega$	-----

Max. offset.....	50% of selected max. value
Adjustment acc. to order.....	$\pm 2.5... \pm 25\%$ of span
Cable resistance per wire max. ....	10 $\Omega$
Sensor current.....	> 0.2 mA, < 0.4 mA
Basic accuracy.....	< $\pm 0.3^\circ\text{C}$
Temperature coefficient for span	
< 100°C .....	< $\pm 0.01^\circ\text{C}/^\circ\text{C}_{\text{amb}}$
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 $\Omega$
Current limit.....	< 28 mA
Upscale / Downscale .....	$\geq 23 \text{ mA} / \leq 3.6 \text{ mA}$

### Observed authority requirements: Standard:

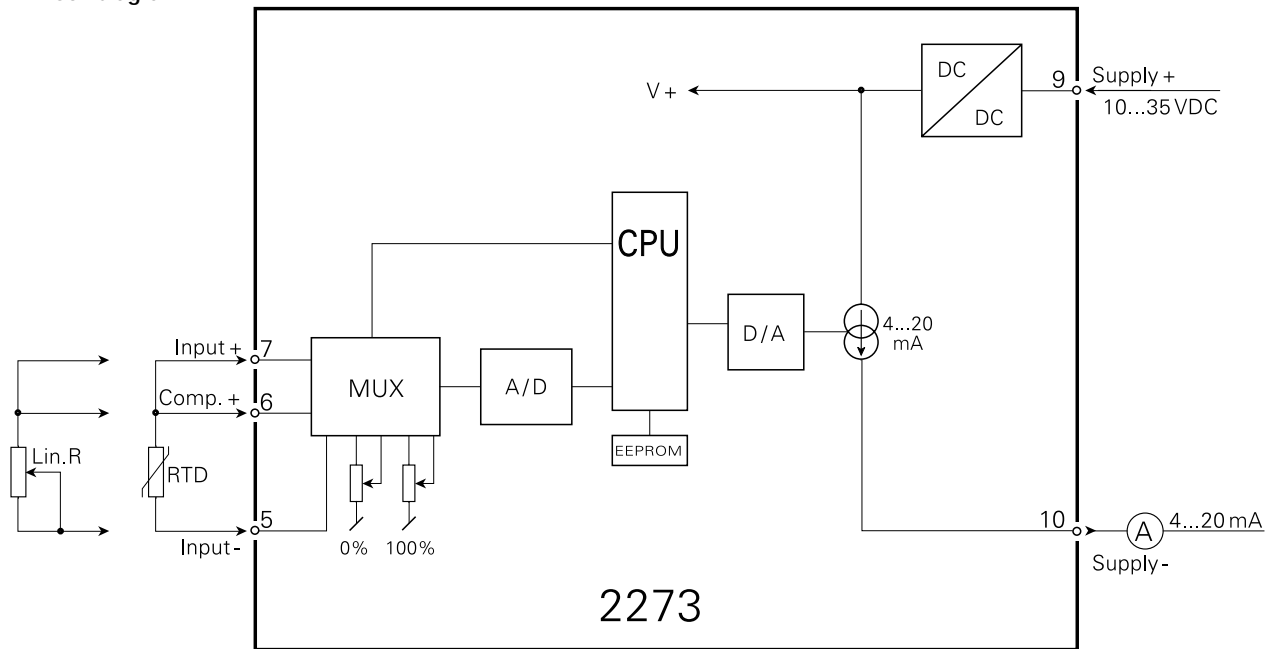
EMC 89/336/EEC, Emission .....	EN 50 081-1, EN 50 081-2
Immunity .....	EN 50 082-2, EN 50 082-1
Emission and immunity .....	EN 61 326

Of span = Of the presently selected range

Order : 2273

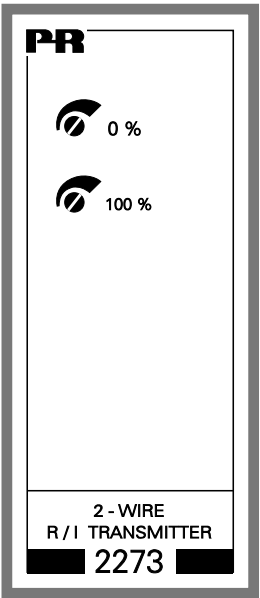
Type	Input	Output	Range
2273	Pt100 : L	4...20 mA : 2	Acc. to order
	Ni100 : N		
	Lin. R : R		
	Spec. : X		

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