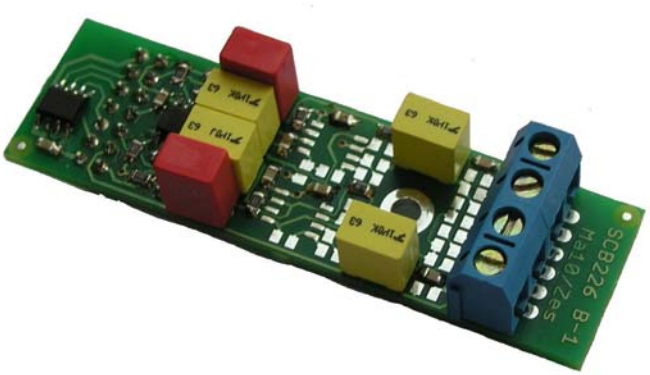
Analog converters
Z1000
Amplifier for temperature sensor Ni1000

14.8

- Built-in module for MA10
- Temperature sensor Ni1000
- Disturbance filter
- Parameter stability
- Digital calibration
- 2 measuring channels



Basic characteristic

Z1000 module works as a voltage amplifier from Ni1000 temperature sensor for temperature measuring. Z1000 sensor is designed for mounting into an analog inputs unit, MA10 type, with D/A converter.

Temperature sensor is connected to a measuring bridge and changes sensor resistance to voltage, which is subsequently amplified and filtered by 2.level filter.

Connection between input voltage and sensor resistance is roughly described by relations:

$$Uout = G \cdot VR \cdot \left(\frac{R2}{R2+R3} - \frac{R1}{R1+R_{Ni}} \right) \qquad R_{Ni} = \frac{G \cdot VR \cdot R1}{G \cdot VR \cdot \frac{R2}{R2+R3} - Uout}$$

where is G… amplification
VR….reference voltage of bridge
Uout.. output voltage
R_{Ni}…. Actual value of sensor voltage

Z1000 module contains 2 measuring channels.

Calibration constants for both measuring channels are stored in EEPROM.

Technical data

Digital power supply	+5V±5%, max. 5mA
Analog power supply	+5V±2%, max. 10mA
	-5V±2%, max. 10mA
Reference voltage Vref	+3V max. 1mA
Output voltage	max. ±3,5V
amplification (without calibration)	23,5 ±1,5%
output offset (without cal).	4,9mV
accuracy after cal.	0,1% from range

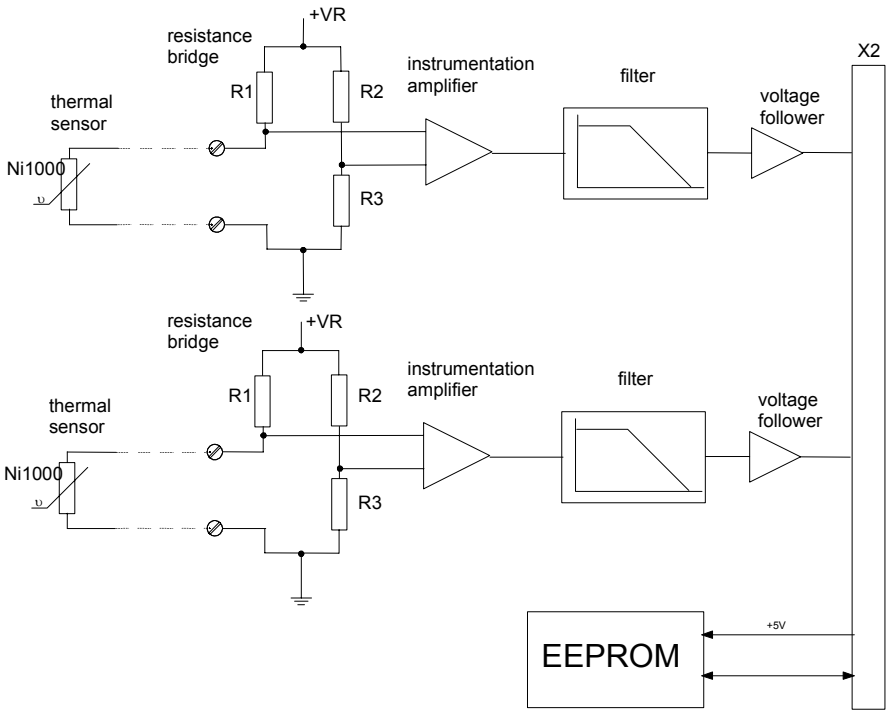
Measurable resistance range	820 .. 1870Ω
Temperatures for Ni1000 5000ppm	-44°C - +155°C
Ambient temperature	0 - 50°C
for guarantied accuracy	20 až 30°C
Dimensions	max. 20x70x22mm
Wire section	max. 2mm^2

Note: The actual amplifies and offsets are stored in EEPROM

Order date

Modules are standardly supplied as a part of MA10 unit, but can be also supplied separately.
Specify Z1000 type mark in the order.
After agreement can be supplied modules with other parameters.

Schematic diagram



top view

1	GND
2	-AV
3	DO
4	UoutB
5	DI
6	GND
7	GND
8	GND
9	SK
10	UoutA
11	CS
12	+VR
13	+5V
14	+AV

Typical values of resistors for Ni1000/5000ppm

R1	22kΩ
R2	22kΩ
R3	820Ω

Mounting measurements