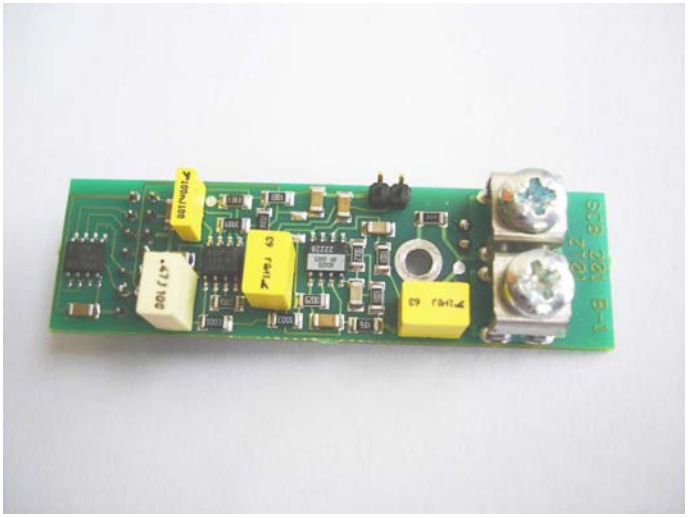
- Built-in module for MA10
- Thermocouple R, S, B, K
- Disturbance filter
- Stability of parameters
- Digital calibration
- Clips temperature measurement



Basic characteristic

ZT01 module is used as voltage amplifier from thermocouple (Tc) for temperature measurement. ZT01 is designed for mounting into MA10 unit.

Input clips voltage goes through simple RC filter to a precise device amplifier, which amplifies measured voltage to normalised voltage to the range of 3V. The clips are inside mounted to the ground and to the supply as is pictured. In the case of thermocouple interrupt is the max value of measured voltage generated. A little offset can be added to the measured value, which offsets measuring range to plus values. ZT01 module does not use the offset. For measurement with thermocouple is important to know the clips temperature. Thermoelectric voltage is not proportional to absolute thermocouple temperature, but is proportional to the temperature difference between hot (sensor) and cold (clip) end. The cold end temperature is measured by resistance thermometer with Pt100 sensor, which is placed between clips. Thermometer is connected as a bond with the amplifier and gives proportional voltage to temperature with 3V range. Voltage is not linear with temperature. Non-linearity can by offset be SW, but it is not necessary for ordinary usage.

Module does not have any setting components (trimmers). Basic parameter tolerance is relatively wide, but the parameters are highly stable. Amplification and offsets of both analog channels are stored in the form of numbers in EEPROM. These are calibration constants and in their order the superior control system calculates the exact value of measured variable. Due to calibration constant the modules of the same type can be exchanged. without additional calibration. Reference voltage tolerance Vref does not affect the Tc measuring. It has an affect on Pt100 measuring, however this tolerance is compensated with SW in MA10 unit. The whole built-up unit is calibrated for extra precise measuring. The input modules are not exchangeable after this calibration.

Module is built on the PCB and is connected to the unit through double-row connector and mechanically fastened with M3 screw. There are sturdy screw clips used to wire connection from thermocouple. During installation is necessary to bear in mind, that in some application is worked with microvolt supply and high resolution, which has a big effect on temperature accuracy clip-contact resistance accuracy and disturbance. Shielded cables are recommended. Shields can be mounted on the bottom cover of the unit with clips.

Technical data

Digital power supply	+5V±5%, max. 5mA
Analog power supply	+5V±2%, max. 10mA
	-5V±2%, max. 10mA
Reference voltage Vref	+3V±0,1%, max. 1mA
Output voltage	max. ±3,5V
Tc input: input voltage	max. ±3V
amplification (without calibration)	184 ±1,5%
input offset (without cal.)	±0,2mV
accuracy after cal.	0,02% from range

Pt100: range	-10 - +80°C
amplification (without cal.)	0,0379V/°C ±1,5%
offset (without cal.)	±7°C
non-linearity	±0,18°C
accuracy after cal.	0,4°C
Ambient temperature	0 - 50°C
for guarantied accuracy	20 - 30°C
Dimensions	max. 20x70x22mm
Clips	M4 screw, wire 0,2 - 2mm^2

Note: The actual amplifies and offsets are stored in EEPROM

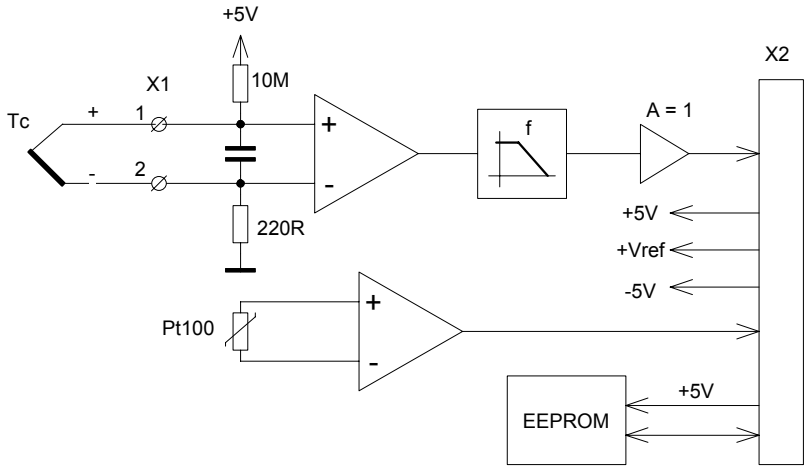
Order data

Modules are standardly supplied as a part of MA10 unit, but can be also supplied separately.

Specify ZT01 type mark in the order.

Modules range spreads according to customers requests. After agreement can be supplied modules with other parameters.

Schematic diagram



Mounting dimensions