

Measuring eight PT100 sensors with one UTI.

Figure 1 shows a simplified diagram for the measurement of eight PT100 sensors by using 1 UTI and 4 (1 out 5) analog switches.

In the circuit R_{ref} is a reference resistor with a well-known value. This reference resistor is used for all the PT100 measurements. The two R_{bias} resistors limit the current through the resistor chain. This current is maximum 2 mA. to prevent selfheating of the PT100 elements.

The analog multiplexers are controlled by the micro.

In pos.1 R_{ref} and R_{Pt1} are measured; in pos.2 R_{Pt2} and R_{Pt3} are measured; in pos.3 R_{Pt4} and R_{Pt5} are measured; in pos.4 R_{Pt6} and R_{Pt7} are measured and in pos.5 R_{Pt8} is measured.

According to the application the measurement sequence can be changed. In each position the value of the corresponding Pt element can be calculated by means of the three signal technique.

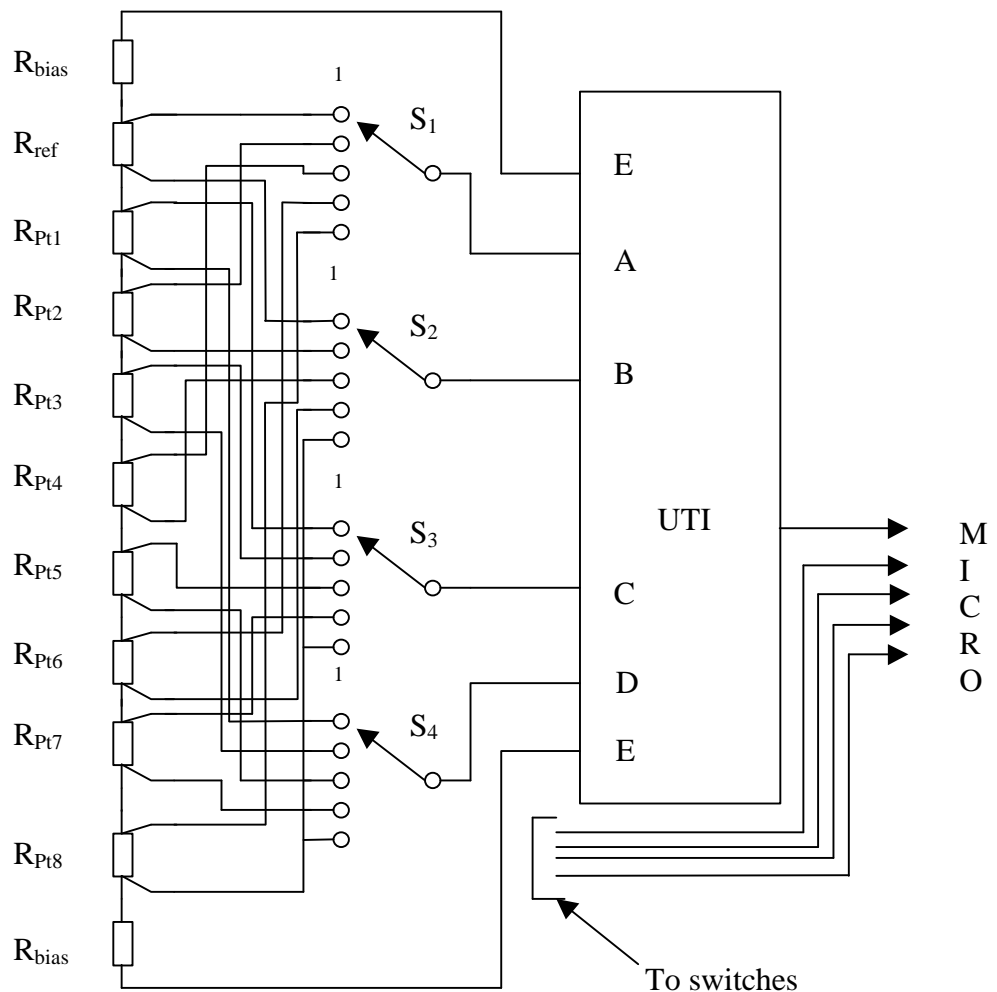


Figure 1. Setup for measuring 8 PT100 elements (4 wire method)

As analog switches AD608 can be used, in any case the leakage current must be lower than 5 nA.

Note: This measurement principal is only a concept and not(yet) investigated in practice.