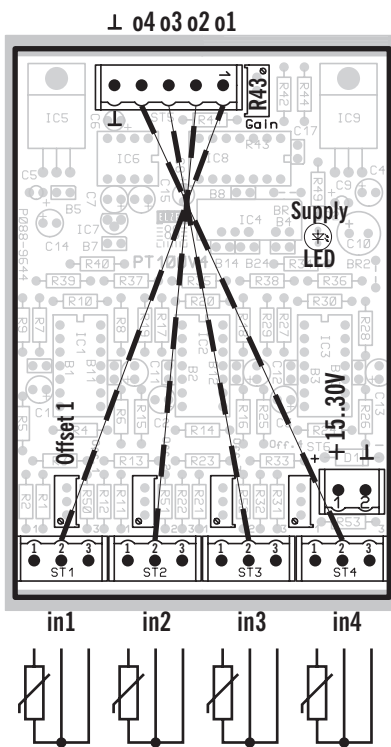




PER-PT100V4

RTD sensor conditioner

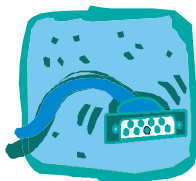


Pt100V4 takes the input from four Pt100 RTDs and converts temperatures between -50°C and $+205^{\circ}\text{C}$ to a 0..5V signal to be fed into a standard A/D converter input, for instance TSM-CPU32H2, TSM-ARMCPU, TSM-8AD12 or DinXA.

Technical data:

- Four Pt100 3-wire inputs.
- 0..5000mV output voltage nominal.
- Measuring current 0.255mA +/- 0.1%.
- Resistance of current source: 43kOhm +/- 0.1%.
- Gain error < 0.2% (adjustable at R43) plus < 0.003% per Ohm line resistance. Factory set to 178.47 Ohms (= 5000mV). Only align with high accuracy reference!
- Offset error < 150mV, trimmable per channel. Factory set to -4164mV at 0 Ohm input (0V at -50°C). Only align with high accuracy reference!
- RTD line error < 0.005% per Ohm with 3-wire-input.
- Error without further linearisation at 25°C ambient is < 1K at 0..150 $^{\circ}\text{C}$ input and < 2.5 $^{\circ}\text{C}$ at $-50..0^{\circ}\text{C}$ and 150..205 $^{\circ}\text{C}$ input.
- Software linearisation (for instance using Express-I/O PT100-linearisation option) allows errors down to 0.3K.
- Supply voltage: 24V (15..30V DC) @40mA.
- Ambient temperature $-40..+50^{\circ}\text{C}$.
- Dimensions inclusive of cradle 126x75.5mm

Output voltage is 19.53125mV per $^{\circ}\text{C}$ plus 976.5625mV offset ($0^{\circ}\text{C} = 976.5625\text{mV}$).
 One degree corresponds to 1 LSB of an 8 bit ADC, 4 LSBs at 10 bits, 16 LSBs at 12 bits and 256 LSBs at 16 bits.



Pt100 inputs
 3-wire input. White line goes to Pin 1.
 Short pins 2 and 3 of the input connector for 2-wire-sensors.

Shorting the Pt100 input results in a -4.6V output voltage! Leaving pin 1 open results in an output voltage slightly higher than 5V.

Both conditions are harmless to the analog inputs of the ELZET80 boards named above.

Outputs

Please note the outputs count from right to left 1..4!
 If the analog inputs are not isolated (they usually aren't), don't connect ground to the 2-pin supply voltage terminal but only wire ground between the 5-pin output connector and the analog input board's ground connection.
 For maximum accuracy, do not wire the outputs of unused inputs to the A/D input. Alternatively place 100 Ohm dummy resistors on open input connectors.