Resistance measurement with the BD 300

Resistance measurement with the BD 300 ***DATA ACQUISITION RECORDER.***

The multi channel programmable BD 300 has a built-in current source and the possibility of mathematical functions. Due to these features the instrument can directly be used to perform resistance measurements.
The current needed to perform a resistance measurement can be taken from the ***SOURCE-****terminal that is normally used to connect a Pt100.*
This terminal gives an open potential of $\pm$ *2.5 Volt (DC), and a short connection current of*
0.5 mA. ($R_i \sim 5\ k\Omega$ *)*

By using one channel to measure the current floating through the resistor and another channel to measure the potential over the resistor, the Ohm's law can be used to calculate the resistance.
The result of this calculation is connected to one of the remaining channels.

In case the resistor has a resistance of more than 10 $k\Omega$ *the current floating through the resistor becomes lower than 0.3 mA. The error of measurement will than become 0.5 % or more.*
The lowest resistance that can be measured is about 0.1 Ohm. It is advised to connect the (Voltage) probes as close to the resistor as possible. The schematic below shows how to connect the Resistor to the inputs.

Settings of the BD 300:

- *Select channel 1* ***PEN SUBMENU*** *and press F6* ***CALCULATIONS***
- *Press F6 until Divide is selected and press enter*
- *The line F1 – F6 sets the input and a constant factor*
- *F8 sets the Engineering unit for the calculation [Ohm]*

	PEN 1 CALCULATIONS: DIVISION	
F1	1.000 * Input 2 / Input 1	*F5*
F2		*F6*
F3		*F7*
F4	CALC UNIT: Ohm	*F8*

The result of the calculation, the resistance measured, is now written to Pen 1. It is possible to show the resistance value directly in enlarged digits on the screen. To do this select the function: ***DISPLAY ENLARGED PEN 1****.*

BD 300 'connections' for resistance measurement.