

Resistance measurement

Student Group

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Resistance measurement

Background Information

Procedure for resistance measurement: * Set the measuring device to resistance measurement * Connect the resistance to be measured to the corresponding sockets on the measuring device (the measuring device sockets labeled COM and Ω) * Read the measured value There are different types of resistance measurement: * **direct** resistance measurement * **indirect** resistance measurement The resistances can also be determined by measuring the current/voltage. **Ohm's law:** **In an electrical circuit, the current increases with increasing voltage and decreases with increasing resistance.**

$$I = \frac{U}{R}$$

Experimental Tasks

Direct resistance measurement

Determine the nominal and measured values of the resistance for R_{1} (brown, green, orange), R_{2} (yellow, violet, red), R_{3} (red, violet, red) and the incandescent lamp R_{L} . Also measure the approximate resistance R_{K} of your body from your right to



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your left hand.

Tab. 1: Direct resistance measurement

How do you explain the deviation between $R_{\text{L,nominal}}$ and $R_{\text{L,meas}}$?

What consequences can R_{K} have?

Now determine the series and parallel connections of resistors R_{1} , R_{2} and R_{3} .

Specify the formulas used:

$R_{\text{serial}} =$



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$R_{\text{parallel}} (= R_{\text{a}} || R_{\text{b}}) =$

Tab. 2: Series and parallel connections

Indirect resistance measurement

Build the measuring circuit shown in [figure 1](#) for each of the three resistors and set the voltage on the



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power supply to $\sim 12 \text{ V}$.

resistance measurement Measure U_n [V] and I_n [mA]. Calculate R_n

Fig. 1: Indirect



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[k Ω] from these values.

Tab. 3: Indirect resistance measurement

Test Questions - Resistors

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