KAZAKH BRITISH TECHNICAL UNIVERSITY

SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

Laboratory work №1
Using a Multimeter to Measure Current

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Using a Multimeter to Measure Current

Purpose:
To be able to deal with some of the frequently used instruments and equipment; like the digital multimeter and DC Power supply.

Introduction:
A multimeter is a device used to measure two or more electrical quantities. A multimeter can be used to measure electrical functions such as voltage, current, resistance, continuity and some are able to measure electrical frequency.

Here is a step by step guide on how to use a multimeter to test for voltage:
1. First, figure out whether the application being testing utilizes AC or DC voltage. Afterward, adjust the meter dial to the suitable function to DC Voltage or AC voltage.
2. Adjust the range to the number little higher than the predictive value. If the value being measured is unknown, then set the range to the maximum available number.
3. Plug in the test leads into the common (black) and voltage (red) terminals.
4. Apply the leads to the test circuit.
5. Position and reposition the test till a dependable reading appears on the meter LCD.
6. While measuring AC voltage, variations may happen in the reading. As the test continues the measurement will steady.

To test resistance with a Digital Multimeter:
1. Turn the power off in the circuit being tested.
2. Adjust the meter dial to the resistance mode.
3. Choose the suitable range on the dial.
4. Plug in your test leads into the suitable terminals.

5. Connect the leads to the component being tested and note a reading.

Note: It is important to have good contact between the test leads and circuit being tested. Dirt, bodily contact, and poor test lead connection can considerably alter the readings.

Procedures:
PART A: Resistance measurement.

№	Resistor	By color codes	By multimeter	Error in %
1	Red-Black-Brown-G	200	205	2,5
2	Red-Red-Brown-G	220	229	4,1
3	Brown-Black-Red-G	1000	1080	8
4	Red-Blue-Red-G	2000	1980	1
5	Brown-Black-Black-G	10	10,15	1,5
6	Orange-Orange-Brown-G	330	346	5,3
7	Blue-Green-Black-G	65	66.63	2,5
8	Yellow-Violet-Brown-G	470	468	0,43
9	Orange-White-Red-G	3900	3880	0,51
10	Brown-Green-Brown-G	150	140	6,7

$$Error = \frac{|R_{act} - R_m|}{R_{act}} * 100\% \qquad (1)$$

PART B: Measuring the Resistance of Your Body
1)My body's resistance is over:15,4MOhm
2)Using this formula, we can find out what voltage is needed to kill me.

$$V = I * R \qquad (2)$$

I-current and it is equal to 200mA
It would take 3,08M volts to kill me

3

Conclusion

In this laboratory work we worked with a multimeter. In the first task, we needed to find the error in the color value of the resistor from the value that the multimeter showed us. To find this error, we used formula (1). Then, in the second task, we also used a multimeter, but to find the resistance of our body. After we found the resistance of our body, we found the voltage that can kill us. In order to find this voltage, we used formula (2).