Wrocław University of Science and Technology

ELECTRIONIC MEASUREMENTS
LABORATORY REPORT

Chair of Electronic and Photonic Metrology
ELECTRIONIC MEASUREMENTS LABORATORY

Theme of class: DC CURRENT MEASUREMENT

Group no: 1

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1 Introduction

1.1 Theory

Electric current can be measured in two ways: directly and indirectly. To make a direct measurement, the meter must be connected to the circuit in series. An ideal meter should have a zero internal resistance as not to impact the current flowing through; in reality, meters will always have a non-zero resistance creating a voltage drop.

The systematic error of current measurements $\Delta_m I$ can be calculated using formulas shown in Eq. 1, 2 (for: I_A – measured current, R_A – internal ammeter resistance, R_C – circuit resistance).

$$\Delta_m I = -I_A \cdot \frac{R_A}{R_C} \tag{1}$$

$$\delta_m I = -\frac{R_A}{R_A + R_C} \tag{2}$$

1.2 Equipment

The following devices were used during the laboratory:

- power supply: DF1730SB3A;
- analog ammeter: LM-3;
- digital meter: Agilent 34401A;
- decade resistor: DR4b-16;
- resistance standard: product name unknown.

2 Experiment

3 Conclusions