

Laboratory Application Assignment

In your first lab application assignment you will use a DMM to measure the voltage, current, and resistance in Fig. 1–18. Refer to Sec. 1–12, "The Digital Multimeter," if necessary.

Equipment: Obtain the following items from your instructor.

- Variable dc power supply
- $1\text{-k}\Omega$, $\frac{1}{2}\text{-W}$ resistor
- DMM
- Connecting leads

Measuring Voltage

Set the DMM to measure dc voltage. Be sure the meter leads are inserted into the correct jacks (red lead in the $V\Omega$ jack and the black lead in the COM jack). Also, be sure the voltmeter range exceeds the voltage being measured. Connect the DMM test leads to the variable dc power supply as shown in Fig. 1–18a. Adjust the variable dc power supply voltage to any value between 5 and 15 V. Record your measured voltage.

$V = \underline{\hspace{2cm}}$ Note: Keep the power supply voltage set to this value when measuring the current in Fig. 1–18c.

Measuring Resistance

Disconnect the meter leads from the power supply terminals. Set the DMM to measure resistance. Keep the meter leads in the same jacks you used for measuring voltage. Connect the DMM test leads to the leads of the $1\text{-k}\Omega$ resistor as shown in Fig. 1–18b. Record your measured resistance.

$R = \underline{\hspace{2cm}}$ (The measured resistance will most likely be displayed as a decimal fraction in $\text{k}\Omega$.)

Measuring Current

Set the DMM to measure dc current. Also, move the red test lead to the appropriate jack for measuring small dc currents (usually labeled mA). Turn off the variable dc power supply. Connect the red test lead of the DMM to the positive (+) terminal of the variable dc power supply as shown in Fig. 1–18c. Also, connect the black test lead of the DMM to one lead of the $1\text{-k}\Omega$ resistor as shown. Finally, connect the other lead of the resistor to the negative (–) terminal of the variable dc power supply. Turn on the variable dc power supply. Record your measured current.

$I = \underline{\hspace{2cm}}$

Figure 1–18 Measuring electrical quantities. (a) Measuring voltage. (b) Measuring resistance. (c) Measuring current.

