Ohm's Law

By
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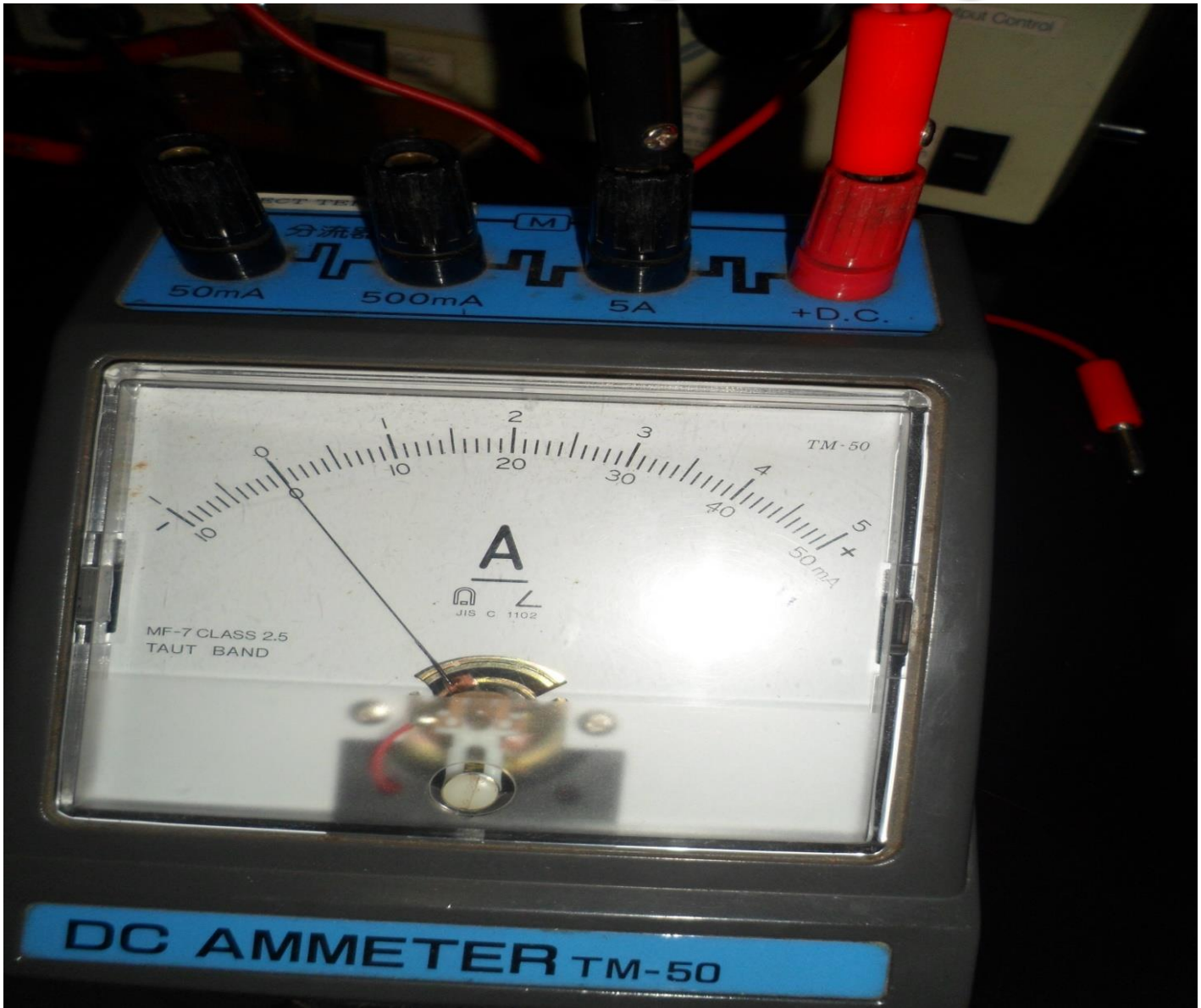
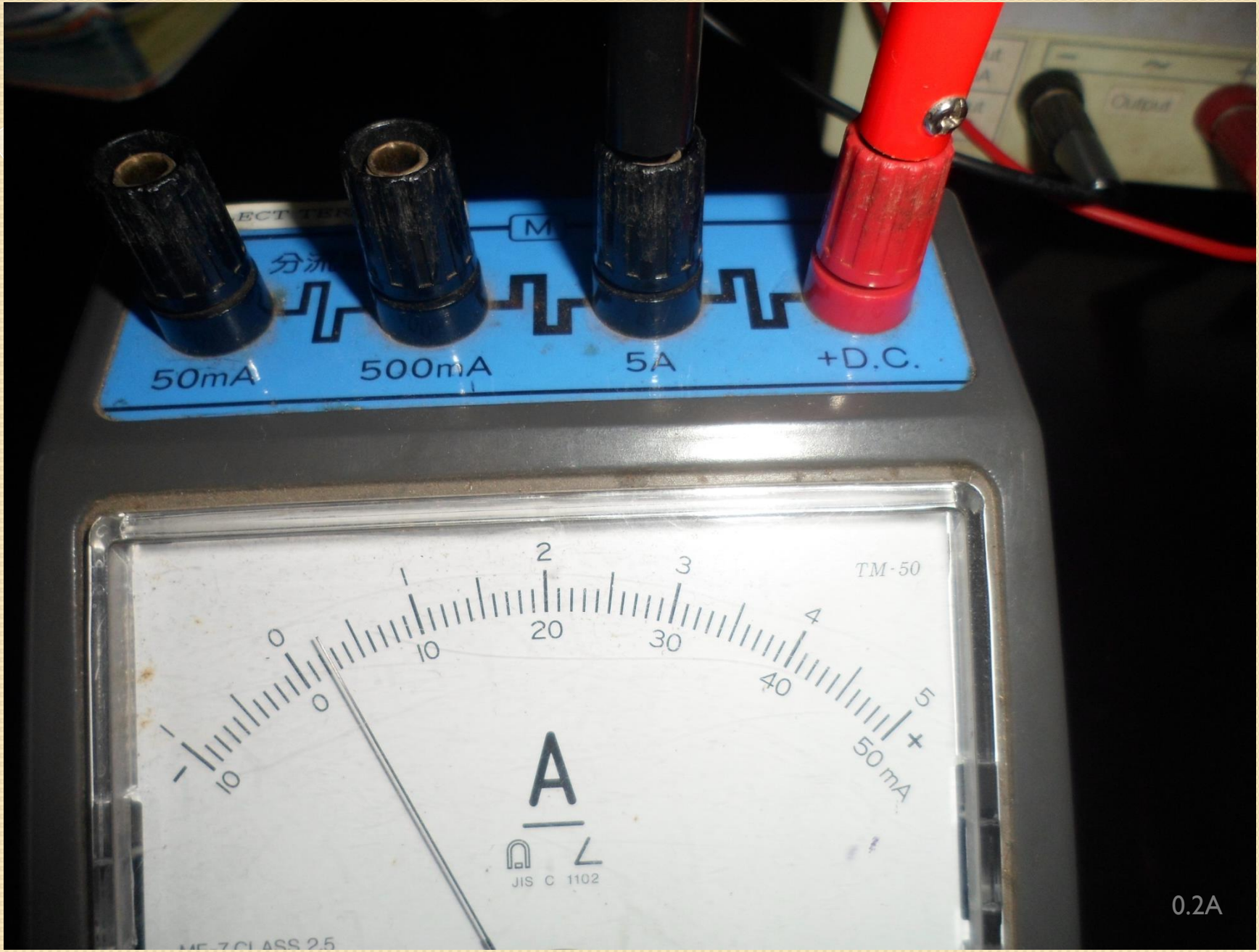
Questions to Investigate

- What is the relationship between electric current and voltage?

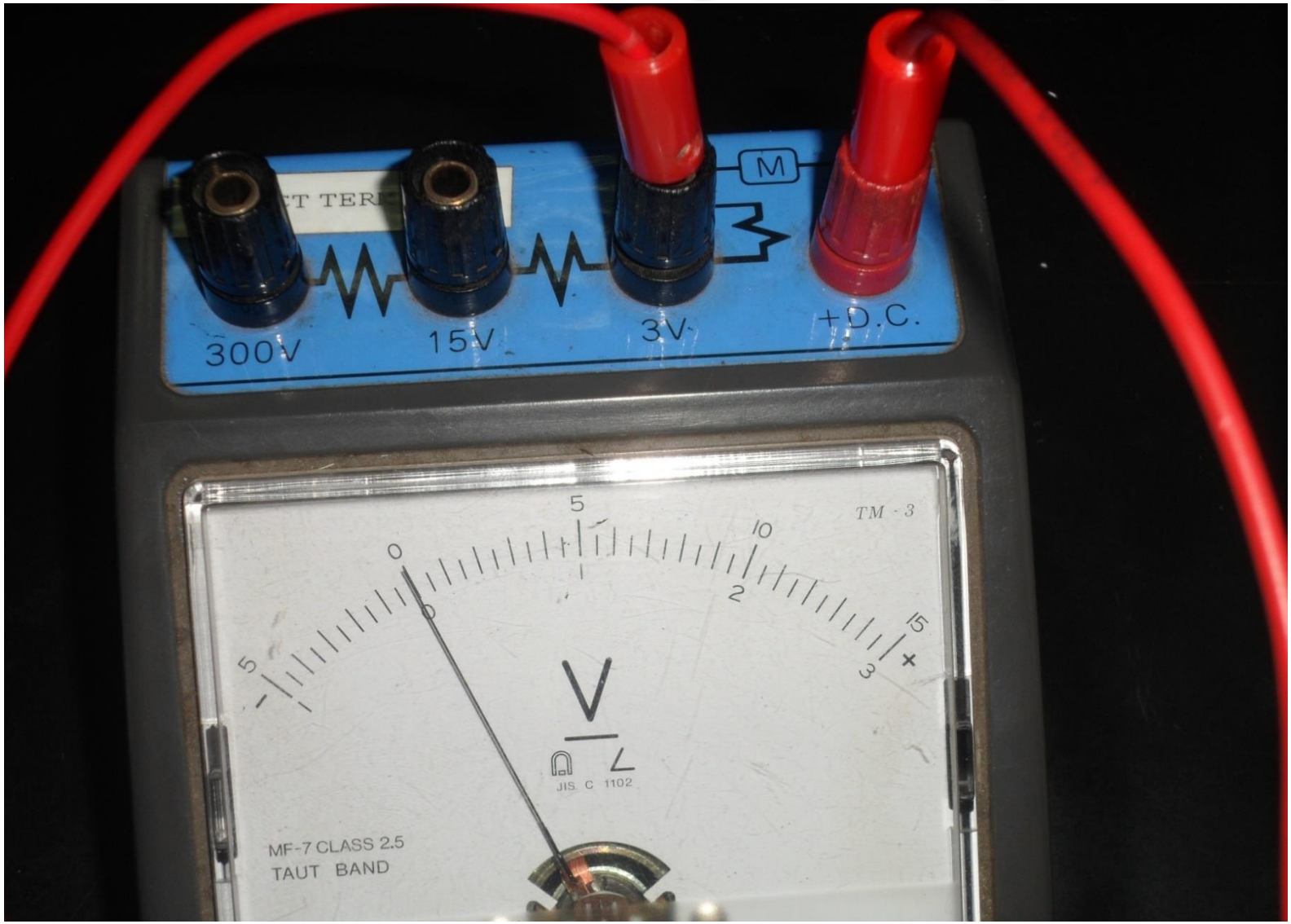
Ammeter reading & Range



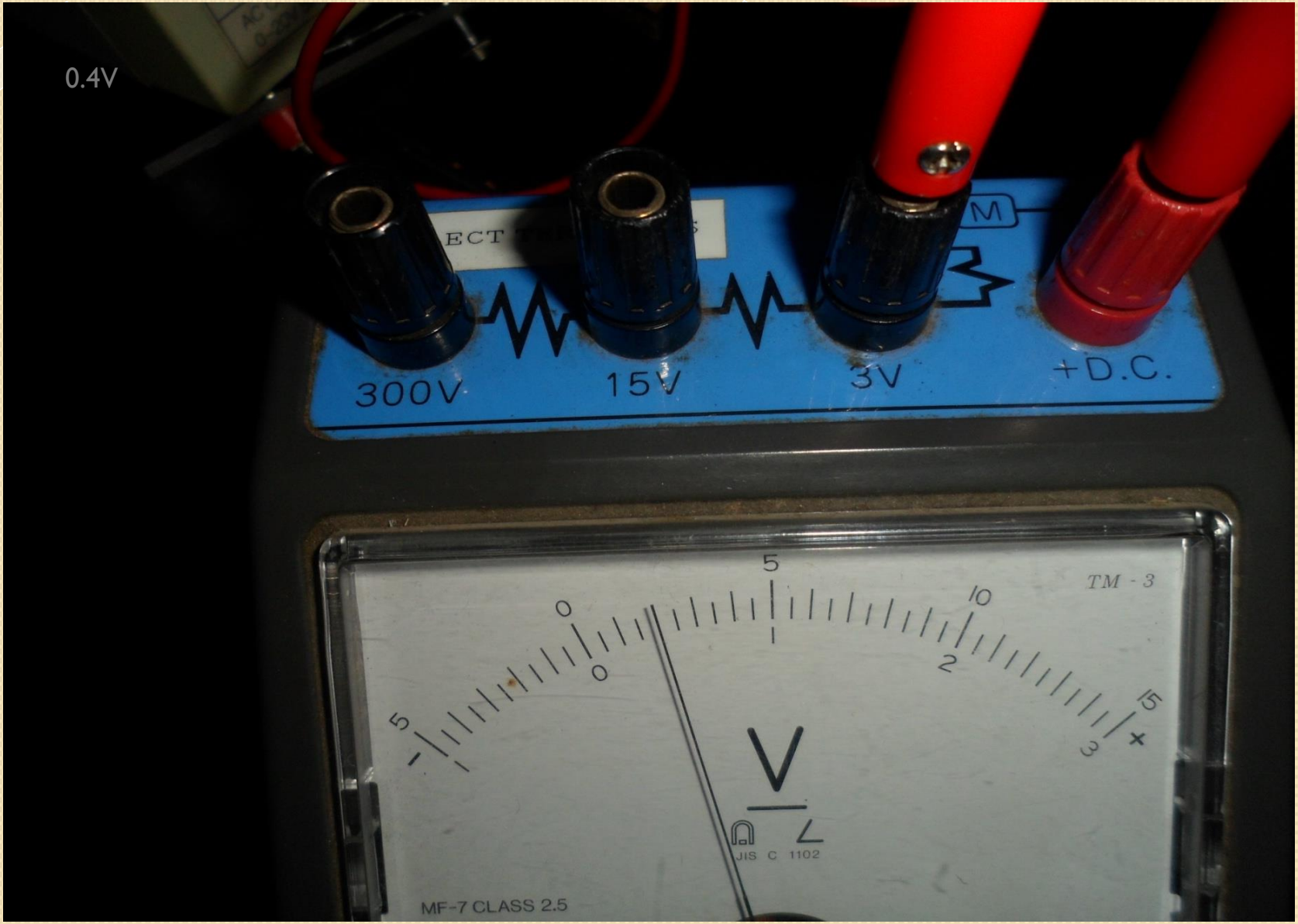

50mA
500mA
5A
+D.C.
TM-50
A
JIS C 1102
50 mA
0.2A

1.3A

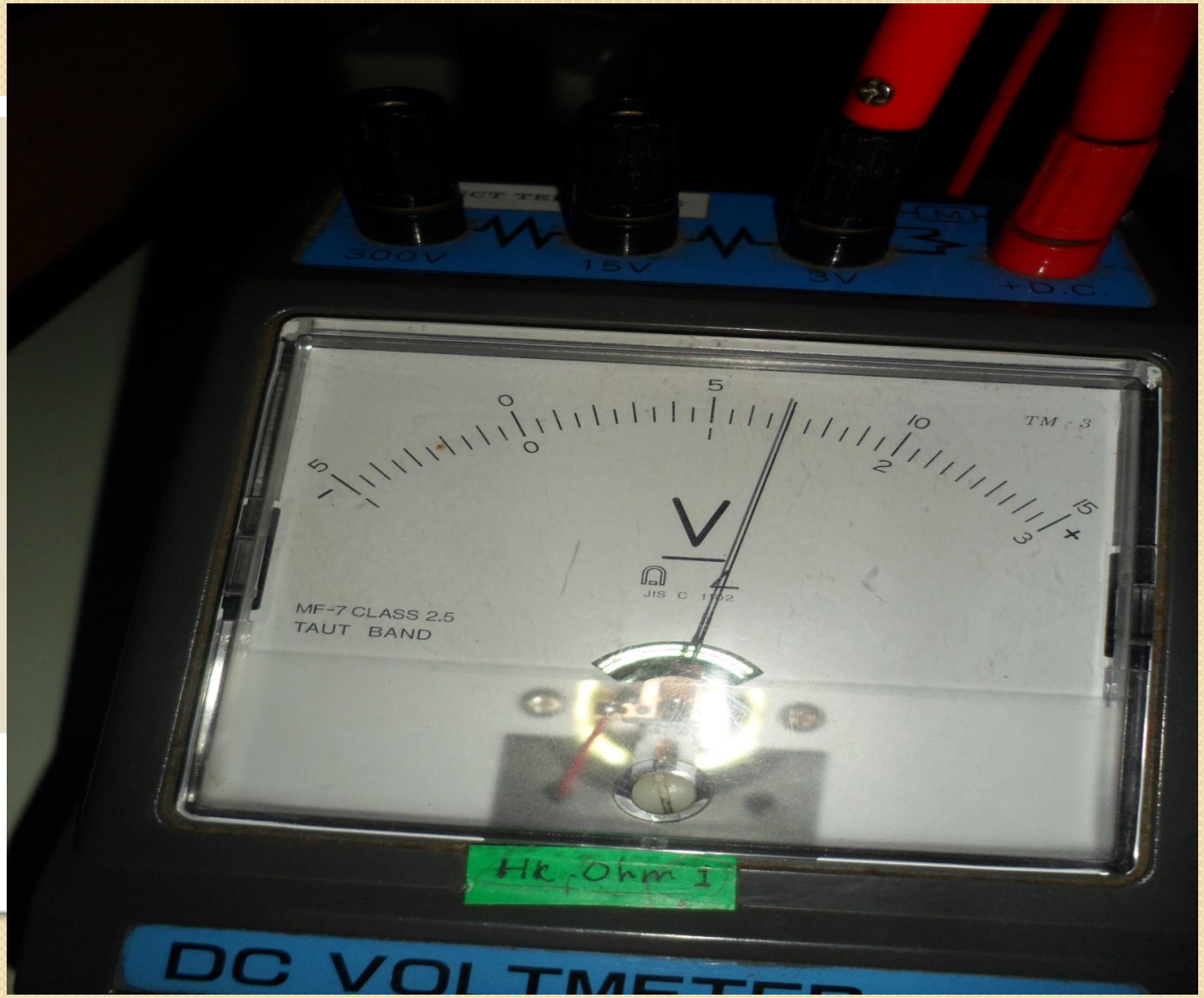
Voltmeter Reading & Range



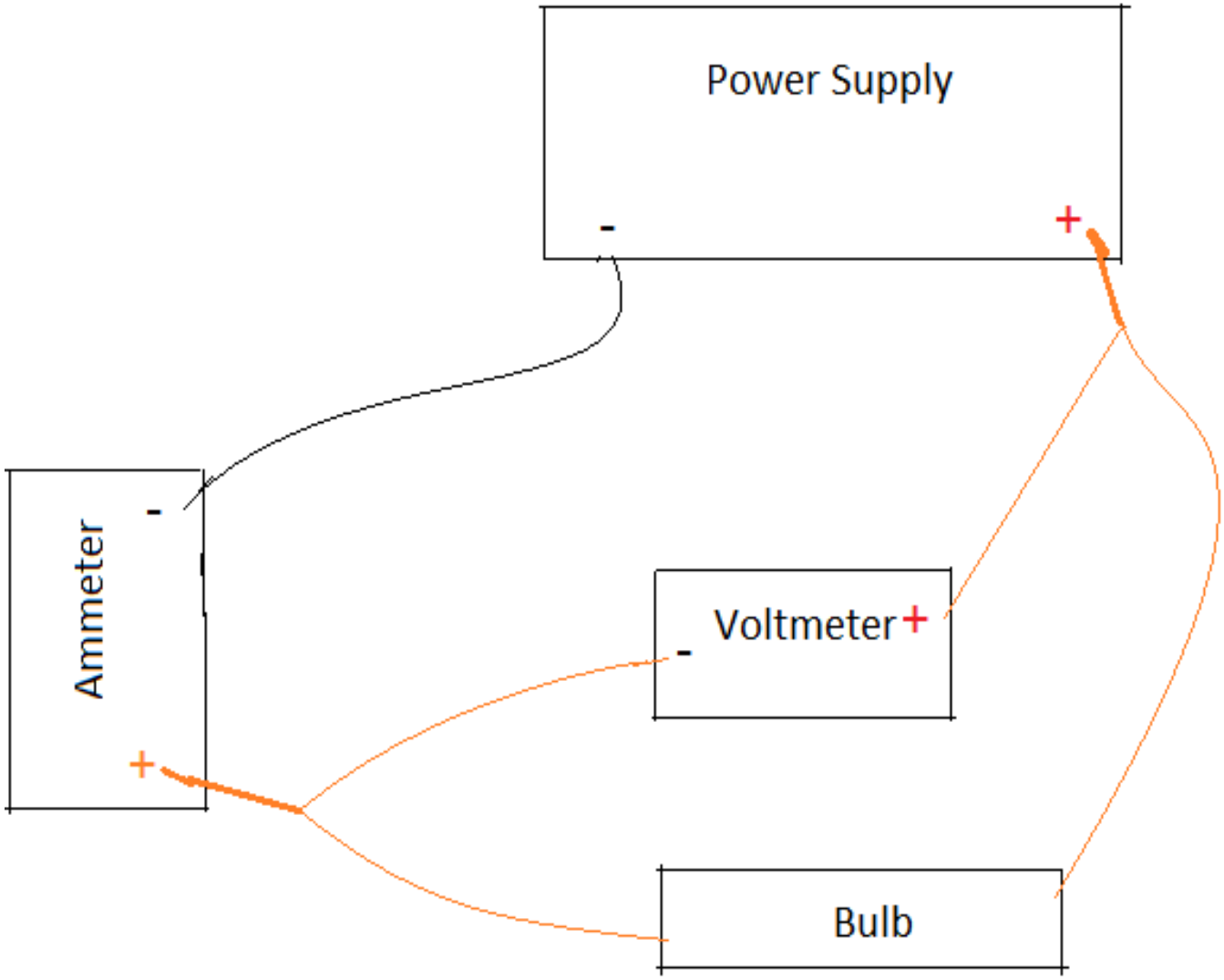
0.4V

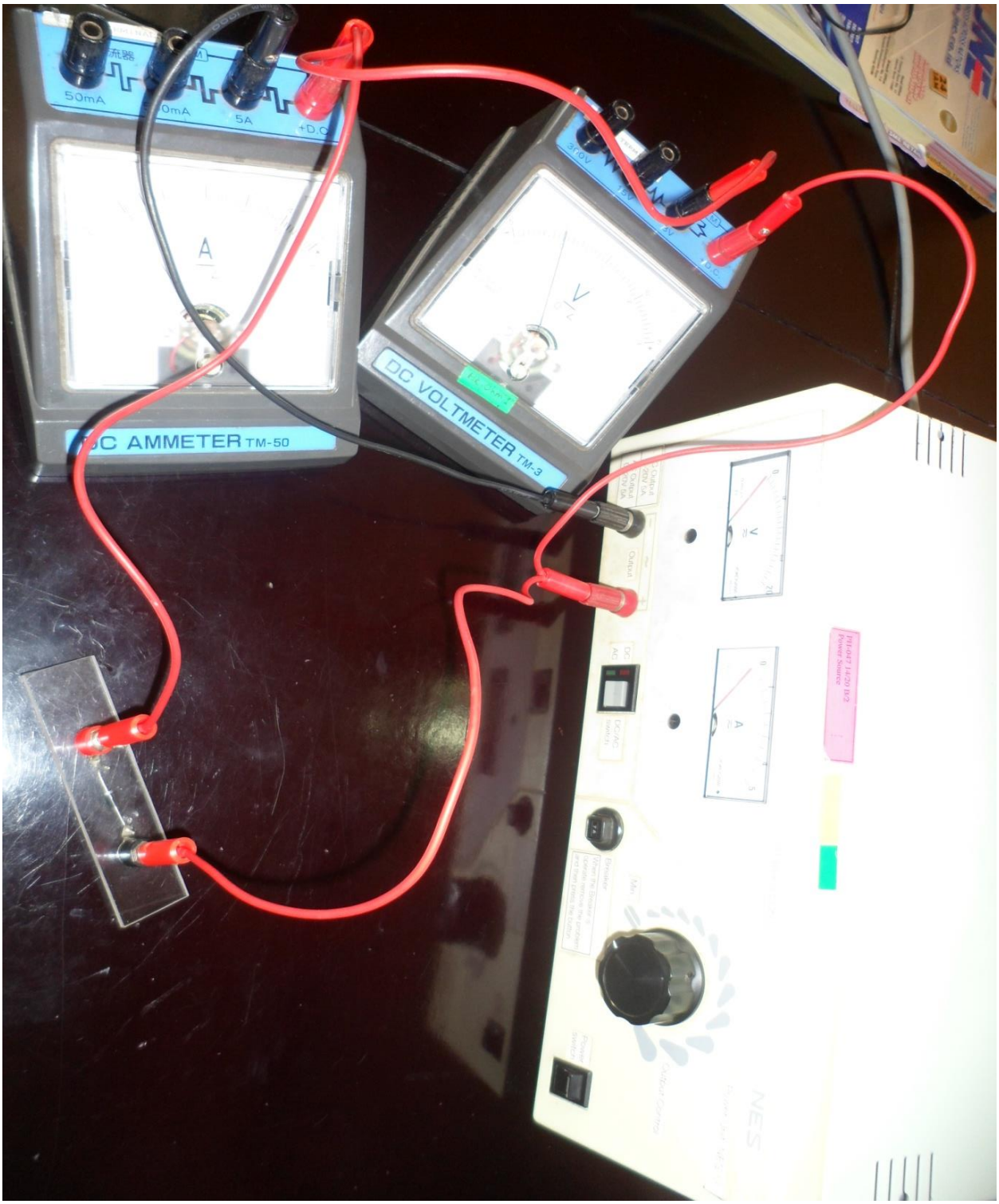


1.4V



Block Diagram of Circuit




50mA
5A
+D.C
DC AMMETER TM-50
DC VOLTMETER TM-3

Errors

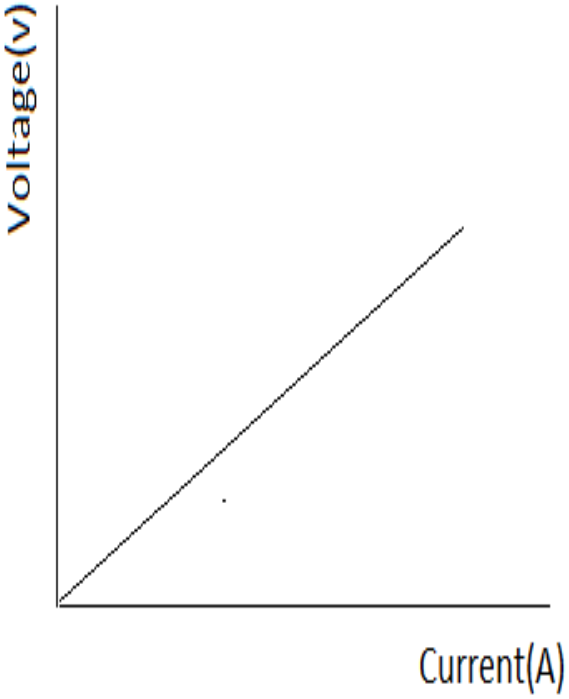
- In reality, the data we get is not the same as what we get in theory.

Why?

- Because **there are sources of error in every aspect**, which make our **numbers imperfect**. For example:
  - personal error
  - Zero error
  - Instrumental error etc.

Voltage versus current graph for the bulb in range of (0- 0.4V)

- The graph is **straight line** passing through origin.
  - slop is **constant**
  - **Slope = Electric resistance**
- In this range, the resistance of the bulb is **constant**
- Devices with constant resistance are called **Ohmic devices**



Conclusion of Experiment **A** (Ohm's Law)

- Current in ohmic device is directly proportional to voltage across the ends of the device.

$$V \propto I$$

$$V = RI$$

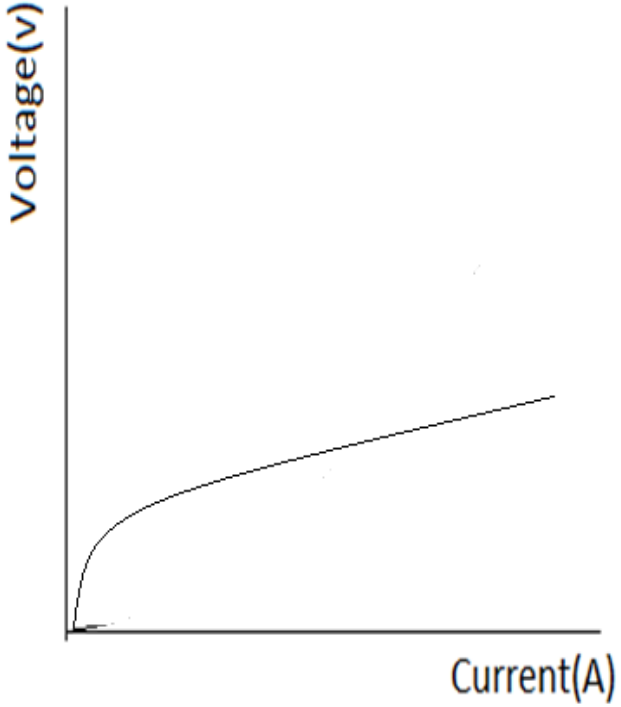
Where: **V** is potential difference (voltage)

I is electric current

R is electrical resistance and **constant**

Voltage versus current graph for Diode

- In this case V versus I graph is not a straight line, but **curve**.
- The Slope is **not constant**
- **so…resistance of diode is not constant.**
- Diode is non-ohmic device
- **Non ohmic device does not obey ohm's law**



Tes

waktu **20** menit