

Using a Multimeter to Measure DC Voltage

Help Sheet

The following steps illustrate how to measure DC voltage (or potential difference) using a digital multimeter (DMM). DC voltage is measured in volts (V) or millivolts (mV).

Connecting the Test Leads

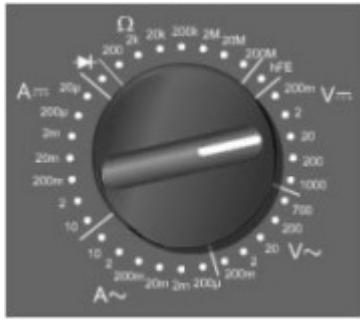


1. To take a measurement, the DMM must be connected to the circuit using a pair of test leads; one red, one black. Each test lead has a fine pointed probe at one end to 'probe' the circuit. At the other end is a plug for connecting the lead to the DMM.



2. Connect the black test lead to the COM socket, and connect the red lead to the socket labeled V.

Setting the Range



3. The DMM is set to the required range using the range selector. The type of range selector will depend on the make and model of the DMM you are using; typically, it will be a selector dial or a set of buttons.

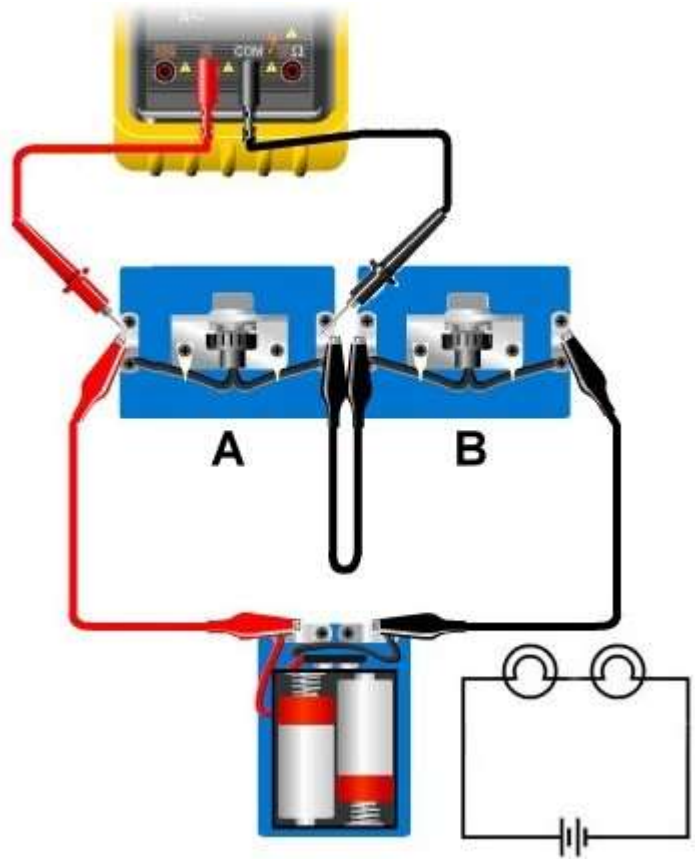
This symbol $V=$ is often used to identify the DC voltage range on the range selector.



4. Switch the range selector to the required position. If it has more than one DC voltage range position, you will need to select the required setting.

For example, the 20 V DC range can be used to display a voltage value of up to 20 V DC.

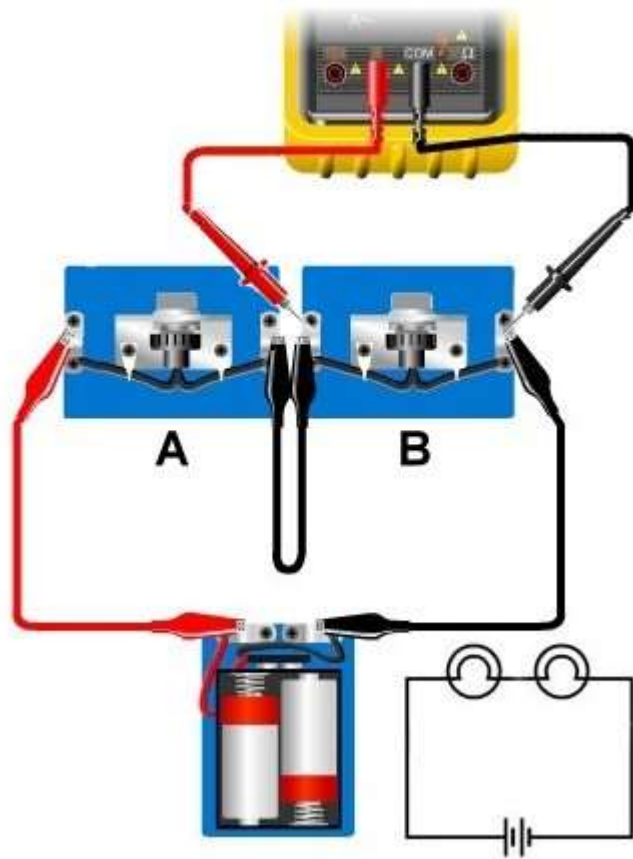
Making a Measurement



5. Ensure the DMM is switched on.

6. When measuring the voltage across a component in a circuit, the DMM is connected between the terminals of the component.

Two lamp components in series with multimeter probes connected to either side of lamp component A:



Two lamp components in series with multimeter probes connected to either side of lamp component B:

Reading the Display



7. The display on the DMM will show the measured voltage. If there is a negative sign on the display, then you probably have the probes connected to the component the wrong way round.



8. If you are not sure which DC voltage range setting to use, start with the highest available range and then keep lowering the setting.

If the range setting you choose is much bigger than the measured value, then the displayed result may not be very accurate.



If the range setting you choose is too small, the DMM will display an out-of-range indication.

This is typically shown by a 1. or an OL on the left side of the display. If this happens, you should step up to the next highest range setting.