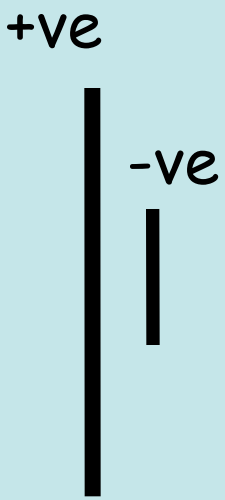
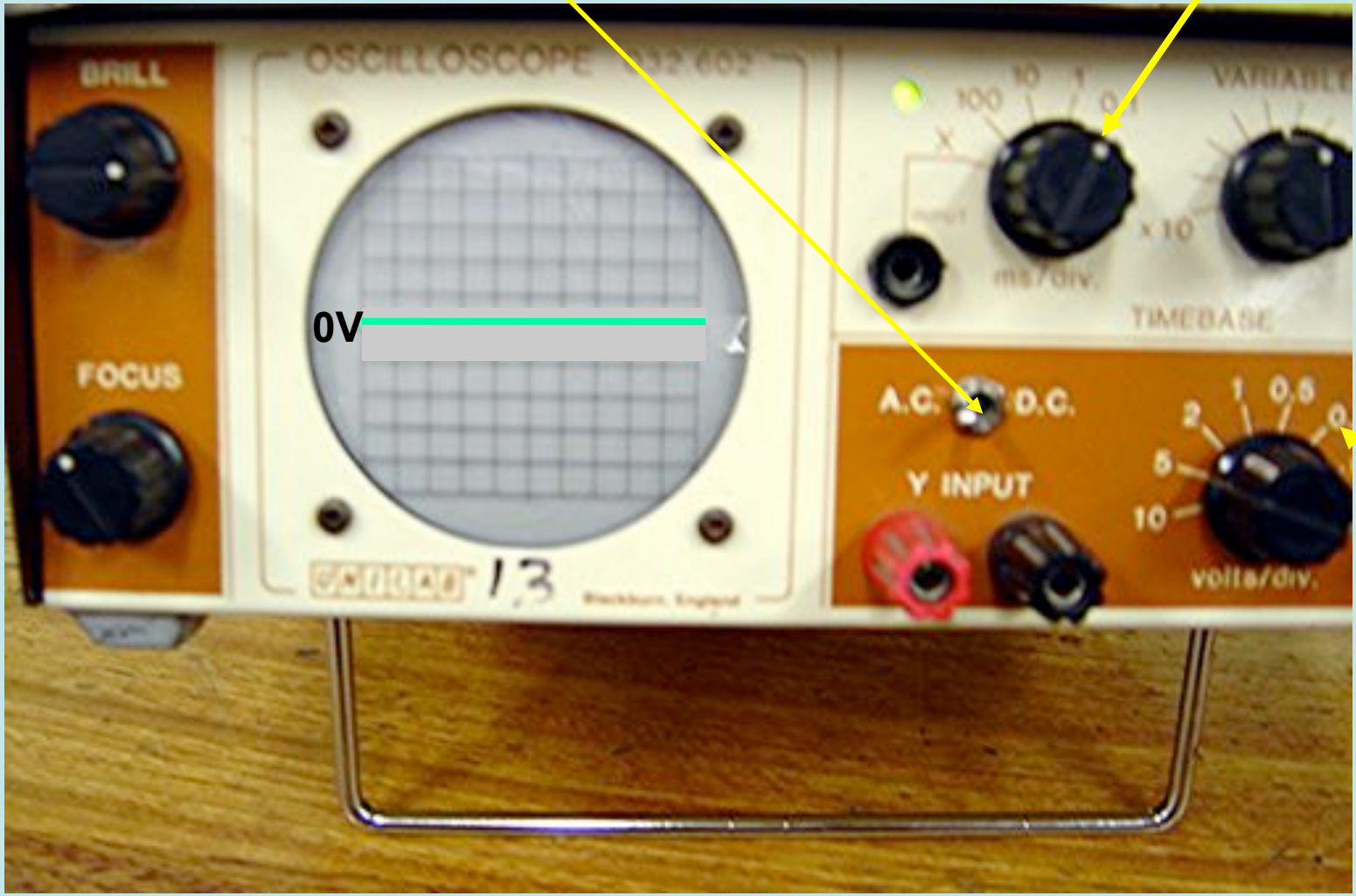
Electrical Energy Sources

What's the difference?

Direct Current (DC)

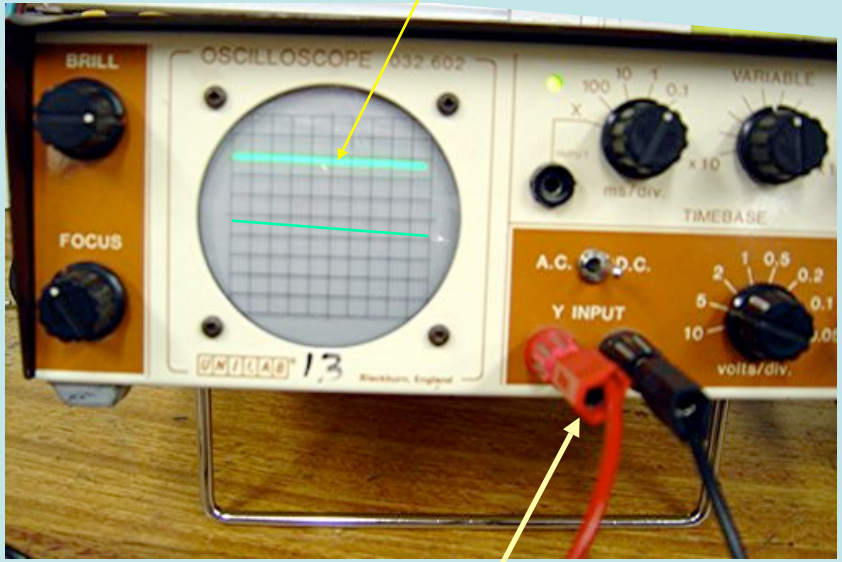


Batteries are typically 1.5V DC


AC/DC switch
Time base ms/ division
0V
Y axis
V/div
OSCILLOSCOPE
DRILL
FOCUS
VARIABLE
TIMEBASE
ms/div.
A.C.
D.C.
Y INPUT
volts/div.

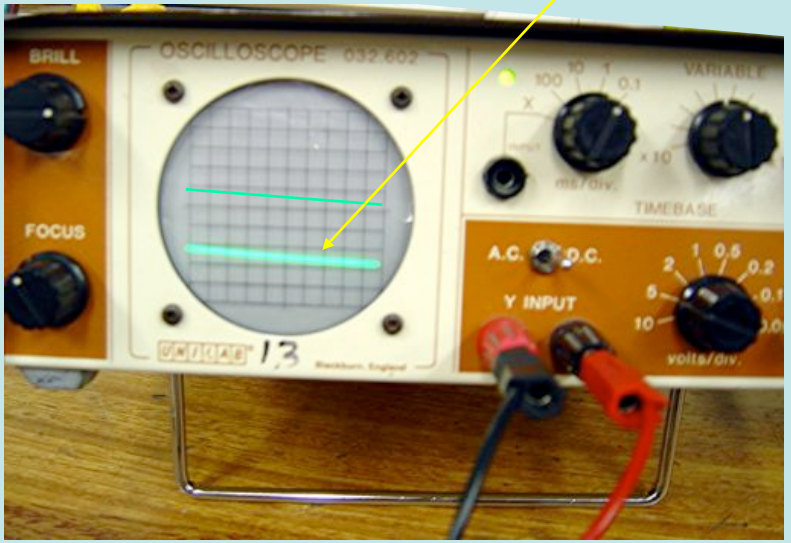
Direct Current

+ 6V



Y input positive

- 6V

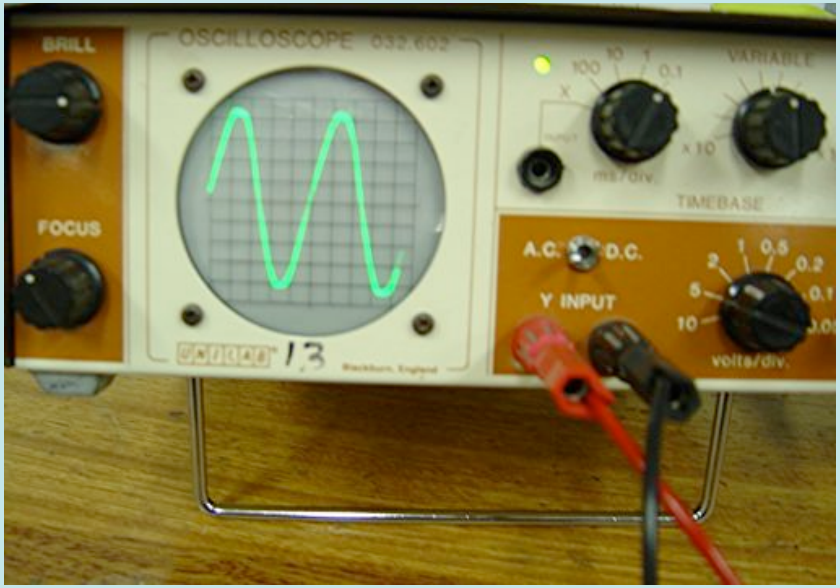


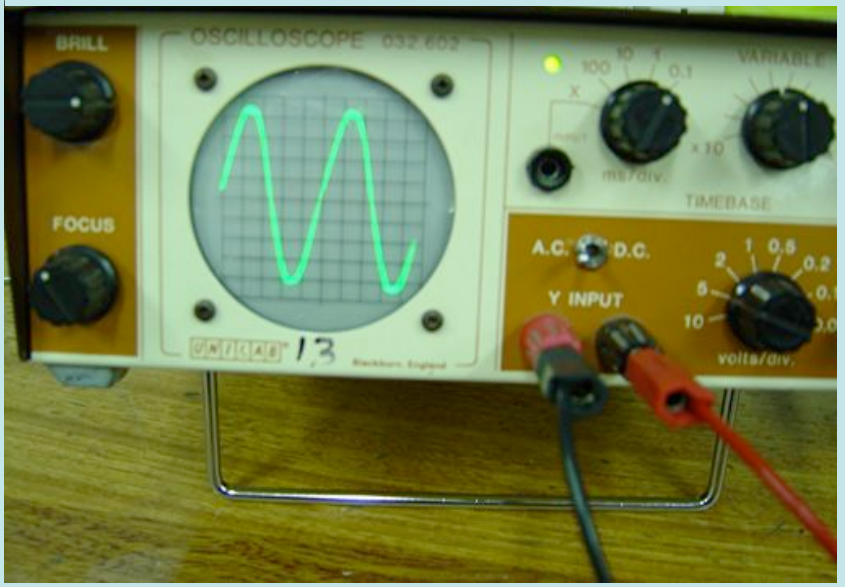
Connections reversed

Alternating Current

The mains supplies 230V AC (Alternating Current) 50Hz

Alternating Current

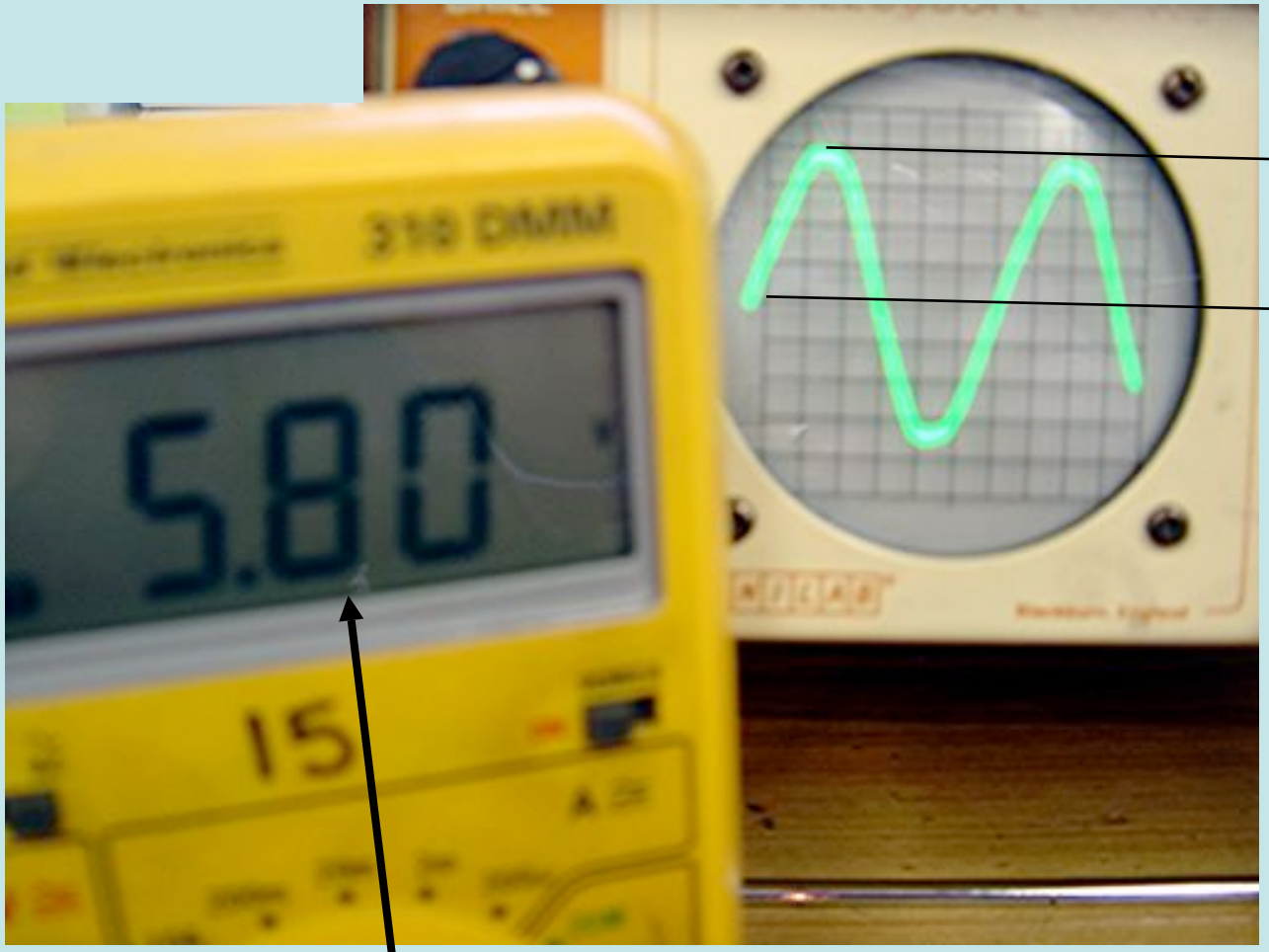




Mains current cycles from positive to negative 50 times per second (50Hz)

Signal pattern is the same independent of how the leads are connected

Alternating Current



8V peak

Multimeter 5.8V

$V_{peak} = \sqrt{2}\, V_{measured}$

AC and DC

- A battery provides direct current (DC). The current flows always in the same direction (negative to positive). A typical battery has a voltage of 1.5V.

- If the electricity supply is AC (alternating current) the current constantly changes direction. Mains electricity is 230V AC at 50Hz. This means that the current cycles from positive to negative 50 times per second.

- The measured AC voltage is less than the peak voltage (by a factor of $\sqrt{2}$). This is called the RMS (root mean square) value.