

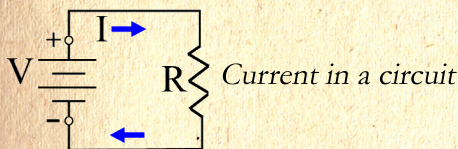


# IS FOR CURRENT

Current is the amount of charge that passes through a circuit per unit time. When one Coloumb of charge passes through a circuit per second, that is one ampere of current. Current may be abbreviated as I or A.

$$I = \frac{\Delta Q}{\Delta T}$$

In most circuits, the charged particle that makes up the current is the electron. Electrons bounce from atom to atom at nearly the speed of light, but in a brownian manner. Thus while the net speed of any one particle is about the pace of a man walking, voltage signals propagate instantaneously.



Current is shown travelling from the positive terminal to the negative terminal. This is generally the opposite from the true direction of travel of charge carrying particles (electrons). Ben Franklin is originator of this convention, because he was a terrible scientist.

The physics of AC vs DC are exactly the same, but there are some practical differences in their application. DC current causes much more ohmic heating in the conductor, so DC wires are usually much larger for the same power rating, to minimize the resulting efficiency loss. Capacitors will block DC, because there is no direct connection between the plates, but not AC. Similarly, because AC is constantly reversing the push direction of the electrons, and AC circuit can discharge to earth. The reasoning of why that is is left as an exercise.