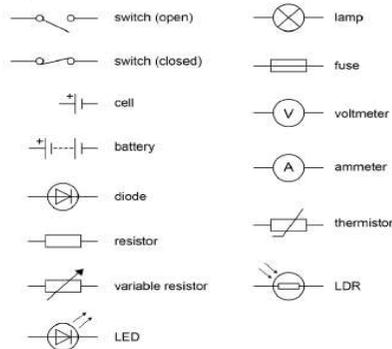


Static Electricity (Triple only)

Examples: Hair standing up after taking a jumper off, rubbing a balloon on your hair.

Static electricity is a build up of negative charges (electrons) which are then released. An object is charged if electrons are added or removed.

Circuit Symbols

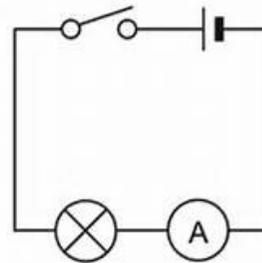


Current

Current is the flow of charge (electrons) around a circuit.

- * It is measured in Amps (A)
- * It is measured using an Ammeter
- * In a series circuit the current is the same everywhere.
- * In a parallel circuit the current splits at each branch. The current through the cell is equal to the current through all the branches added together.

The ammeter must be placed in the circuit to take a reading.

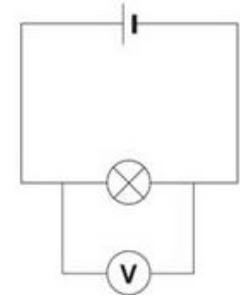


Potential Difference (Voltage)

Potential Difference is the amount of energy transferred to a component by each unit of charge.

- * It is measured in Volts (V)
- * It is measured using a Voltmeter
- * In a series circuit the PD of the cell is shared between all the components. The component with the highest resistance receives the most PD.
- * In a parallel circuit each branch receives the same PD as the cell.

The voltmeter must be placed in parallel with a component in order to measure the PD across it.



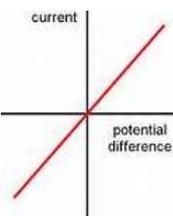
Resistance

Resistance is the measure of how hard it is for current to pass through a component.

- * It is measured in Ohms (Ω)
- * It is calculated using $R=V/I$
- * If you add resistors in series the resistance increases, if you add resistance in parallel the resistance decreases.

I-V Curves (Current-Voltage curves)

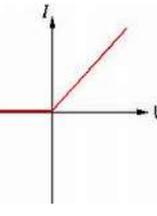
Fixed Resistor



Filament Bulb



Diode

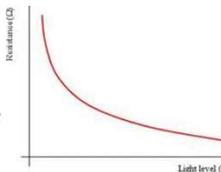


- * Fixed Resistor - Straight line shows it is a constant resistance. The steeper the line the lower the resistance.
- * Filament Bulb - Resistance increases as the bulb heats up and ions vibrate more.
- * Diode - Only allows current to flow in one direction.

Thermistors and LDR's

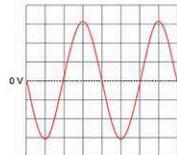
They have the same shaped graph

- * LDR's - Street lighting, cameras
- * Thermistors - Ovens, fridges, central heating



AC & DC

* Alternating Current (AC) the current changes direction. UK mains supply is 230V and 50Hz.

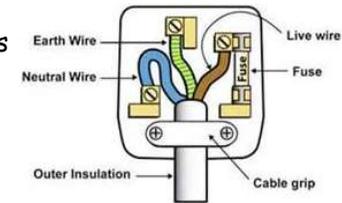


* Direct Current (DC) flows in the same direction. DC comes from a battery or from a AC supply which has passed through a diode.

* The trace works like a graph, with time on the x-axis and voltage on the y-axis.

Electrical Safety

The plug and wires are coated in plastic which doesn't conduct electricity.

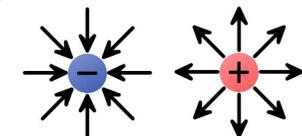


Safety Devices

* Earth Wire - Only needed for devices with a metal casing. Provides a safe route for the current if the live wire touches the casing.

Electrical fields (Triple only)

Field lines travel away from the positive and towards the negative.



The closer you are to the charge, the stronger the electrical field