

## Electricity & Ohms Law

### Basics of Electricity

- Electric charge – matter is made from neutrons. Electrons have a -ve charge.
- Voltage – the potential difference the higher the voltage the higher the current (measured in parallel).
- Current (A-amp) – the flow of electrons through the wire (measured in series).
- Resistance – resistance to the flow of electrons poor conductors have a high resistance.
- Ohms Law – Voltage = current x resistance
- Power (W-watts) – how much energy is consumed per second – Power (W) = voltage x current.
- Fuses – available in 3, 5, 13 amp.
- *Example: 600w = 240v x 5*
- Resistors – used to regulate current volume controls are variable resistors.
- Capacitors – Used to store electric charge, used in PSU's to smooth out fluctuations. Large capacitors can hold high voltages.
- Fuses – Protect circuits by thin fuse wire blowing and protecting the components.
- Domestic supply – UK 240v mains can reduce at times in high supply.
- 3-Phase Supply – 660v industrial power to power main frames.

### Testing

- Testing voltage – Mains Power supply & Computer power supply.
- Testing resistance – checking fuses & cables.
- Test equipment – Mains testers (mains tester plug, screwdrivers and probes) & Multi-meters.

### Power Supplies

Types – Step down plus rectification, lowers voltage before rectifying.

- Switching, High voltage AC & DC convertors and no mains transformer. More efficient as less waste energy as heat but cost more.

Connectors – P8 & P9, Molex & Mini Molex.

Problems – Black out, Brown out, Spikes, and Sag's.

### Uninterruptible Power Supply (UPS)

Supplies uninterrupted power when mains power failed.

Online – PC's get power from UPS battery.

Offline – PC's get power from mains, battery kicking in after slight delay.

NB UPS – only a short time solution most companies have generator backups.