

Glossary of Electrical terms.

Alternating Current (AC) - The type of mains electricity used in the UK having a cyclical current waveform. Normally used in UK houses at 240V (RMS) alternating at 50 times per second (50 hertz).

Ampere (A or Amp) - Unit of electrical current. Either how much electricity an appliance will use, or a circuit (fuse, mcb, cable, connectors etc) can handle. Fuses are always rated by current as are cables. Each appliance will have an Amp rating or if only a wattage is quoted, Amps = Wattage/Voltage.

Bonding - The process by which all metal parts in a buildings are electrically connected together and then linked to a real earth. This is done to prevent any metal component within a building becoming dangerous should it become live due to an electrical fault or damage. Any fault should cause the circuit protection device to operate and isolate the incoming mains. (aka [earthing](#)).

Building Regulations - Part P of the Building Regulations covers the installation and modification of electrical wiring - applies to England and Wales. see [Part P](#).

Cable - Used to route and control power around a property - see [Twin and Earth](#) and [Three Core and Earth](#).

Cartridge Fuse - A fuse within a ceramic cylindrical body which is pushed into a fuse holder. Used in older type consumer units, fused sockets, 13amp fused plugs etc. If the fuse blows, the cartridge is replaced. See [Fuse](#).

CE marking (Conformity Europe) - European standards covering everything from Stuffed Toys to Electrical equipment. Everything sold in the UK should be CE marked for conformance to the relevant directives (if there is a directive covering it).

Ceiling Rose - The ceiling fitting above conventional lights. Inside they usually function as a junction box for the wires from the switch. Care needs to be taken when working on them as they contain live wires even when the light is switched off at the light switch.

Circuit Breaker - A switch like device with a pre-set current limit used to protect a circuit from electrical overload. If the circuit breaker is activated (or tripped), it can be reset by pushing a button - however the reason for the trip should always be investigated as it is an indication of an overload, possible some form of fault.

Circuit protective conductor (CPC) - A name used for the protective earth wiring of all metal parts of a building (see [Earthing](#)).

Conduit - A pipe or tubing used to house cable. In walls to switches and socket usually oval and plastic in modern houses, or round and metal in older ones.

Conduit Box - A mounting box used to join lengths of Conduit, often contains cable joins.

Consumer unit - The electrical switch panel normally located on the consumer side of the meter and which contains the main double pole switch and the fuses, circuit-breakers, or residual current operated trip devices.

Current - The amount of power drawn by an appliance - see [Ampere](#).

Dimmer Switch - A switch which incorporates a control for the brightness of a light fitting.

Direct current (DC) - Unlike Alternating Current, the flow of electricity does not alternate - it flows in just one direction. Normally used in low voltage electronic circuits and computers etc around the house and is usually derived from the alternating mains via a power supply.

Double Pole Switch - A switch which breaks (or makes) both the live and neutral lines with one throw of the switch.

Earth Leakage Circuit Breaker (ELCB) - A protection device which cuts off the power if it detects minute currents flowing to earth. No longer the preferred method of protection being replaced by [RCDs](#) in new installations.

Earthing - The process by which all metal parts in a buildings are electrically connected together and then linked to earth. This is done to prevent any metal component within a building becoming dangerous should it become live due to an electrical fault or damage. The link conductors are referred to as [Circuit Protective Conductors](#) (CPC). Any fault should cause the circuit protection device to operate and isolate the incoming mains. (aka [bonding](#)).

Electrical First Fix - Generally used to refer to that part of an electrical installation that is not visible on completion - i.e. wires above the ceiling, in the walls etc.

Electrical Second Fix - Generally used to refer to that part of an electrical installation that is visible on completion - i.e. the light fitting, wall switches etc.

Frequency - In [alternating current](#), the rate at which the current changes direction - in the UK typically 50 Hertz. One complete cycle in one second is 1 Hertz.

Fuse - A crude protection device which destroys itself (or 'blows') and breaks the circuit should the current exceed the rating of the fuse. Once the fuse has blown, it needs to be replaced - unlike Circuit Breakers/MCBs. Modern fuses are generally in sealed cartridges which need to be replaced. See also [Cartridge Fuse](#).

Fuse Box - see [Consumer Unit](#).

Fused Connection Unit (FCU) - A fused outlet from a mains circuit where the cable to the fixed appliance is hard wired in (i.e. not a plug and socket) and contains a fuse for the appliance - such as a cooker in a kitchen. See also [SFCU \(Switched Fused Connection Unit\)](#).

Fused Spur - An electrical supply using one feed cable to a socket taken off a ring main via a fuse of lower rating than the fuse for the ring main. See also [Spur](#).

Grommet - A small, round rubber/plastic washer with a groove in the outer edge so that it can be located in mounting boxes etc to prevent chafing of cables passing through.

Junction Box - A box containing terminal blocks for joining electrical cable.

Kilowatt (kW) - see [watts](#).

Kilowatt Hour (kWh) - Measure of energy used equated to an hour - i.e. a 5 kW appliance operated for 12 minutes will use 1kWh, operated for 1 hour will use 5kWh, or operated for 5 hours will use 25kWh.

'Knockout' - An area in a mounting or junction box which was weakened during manufacture so that it can be easily 'knocked out' if necessary when being installed to allow the entry of cables.

Loop-in Lighting Circuit - A method of wiring light fittings and switches by running the cable to each light in series.

Low Voltage (LV) - see [Separated Extra Low Voltage \(SELV\)](#).

mA (Milliamp) - 1/1000th of an Ampere - see [Ampere](#)

Miniature Circuit Breaker (MCB) - A modern alternative to fuses used in Consumer Units (Fuse Boxes). They have the benefit that if they trip, they can be reset and they offer a more precise tripping value.

Mounting Box - A metal or plastic, square or rectangular box secured to a surface and to which the switch, socket or other fitting is secured, normally using screws through the fitting into lugs at each end of the box. Surface mounted Mounting Boxes are usually plastic - Mounting Boxes which recess into walls (so that the accessory face plate is flush) are usually metal and smaller. Metal Mounting Boxes must be earthed.

Ohms - A unit of electrical resistance. Resistance (ohms) = Voltage / Ampere (known as Ohm's Law).

One Way Switch - A switch plate which controls a light from one position, having two terminals and using [Twin and Earth cable](#).

Overcurrent - A current exceeding the rated value, the circuit/appliance should be protected by a Circuit Breaker or fuse so that any overcurrent in the circuit is short lived. For cables the rated value is their current carrying capacity.

Part P Building Regulations - Part P of the Building Regulations covers the installation and modification of electrical wiring and applies to England and Wales. These regulations state that

to ensure that the required standards are met, most work must either be carried out by a certified electrician or the work must be tested to the satisfaction of the local Building Control Department. See [our page giving more details about the Part P Regulations](#).

Printed Circuit Board (PCB) - Widely used method of assembling electronic components, used in boilers, washing machines etc. Often not considered repairable and replacements can be expensive.

Radial Circuit - A power circuit starting at the Consumer Unit and terminating at the furthest socket or appliance, each socket being connected to the previous one in the circuit - i.e. not in a Ring Main. Only really usable where each circuit connects to just one high power appliance (Shower, Cooker etc).

Residual Current Breaker with Overload protection (RCBO) - These combine the functions of a [MCB](#) and a [RCD](#) in one unit. Used to protect a particular circuit, as opposed to a single RCD for the whole building. Generally more used in commercial building than domestic ones.

Residual Current Device (RCD) - Modern alternatives (better) to Earth Leakage Circuit Breakers and fuses in the Consumer Unit. RCDs are tripped if they detect a slight current imbalance between Live and Neutral wires above their trip value - typically 30mA. They can also be used at sockets to give specific protection (such as using an electric lawnmower), their advantage here is that if they trip they will not shut down the whole house.

Ring Main - A power circuit consisting of a ring formed from the Consumer Unit so that each socket on the loop is connected both ways around the loop back to the Consumer Unit. This shares the current being drawn from the sockets so that the cable used need not be as big as it otherwise would.

Root Mean Square (RMS) - A method of measuring waveforms to give meaningful measurements - this is a bit more complicated than intended for this glossary. The only point really of interest here is that UK mains voltage has a peak voltage in the cycle of 340V - which equates to 240V in RMS terminology.

Separated Extra Low Voltage (SELV) - A circuit operating at less than 50v a.c. or 120 V ripple-free d.c. via a step down transformer from the mains.

Single-Phase - This is probably too much information, all you really need to know is that in the UK, domestic electricity supply is normally Single Phase. Three phase can supply more electrical power so large machines and industrial equipment will often use the 3 phases. Working with Three Phase wiring is definitely not a job for the DIY person.

Single Pole Switch - A switch which breaks (or makes) just the live line with one throw of the switch, while leaving the neutral line connected through into the appliance.

Single Way Switch - see [One Way Switch](#).

Spur - An electrical supply using one feed cable to a socket taken off a ring main usually used to achieve an extra socket without having to do too much work. See also [Fused Spur](#).

Switched Fused Connection Unit (SFCU) - A fused outlet from a mains circuit where the cable to the fixed appliance is hard wired in (i.e. not a plug and socket) and contains a fuse and switch (usually a double pole to isolate both live and neutral from the appliance) - such as a fixed wall heater. See also [FCU \(Fused Connection Unit\)](#).

Three Core and Earth - Power cable with three coloured insulated cores and a bare earth wire used for two way switching and other purposes.

Transformer - An electrical component which changes the voltage of [Alternating Current](#) - such as reducing mains voltage to [SELV](#).

Twin and Earth - Standard power cable with two coloured insulated cores and a bare earth wire for supplying lights, sockets, heaters etc. The different applications require different sizes - typically 1.5mm² for lighting, 2.5mm² for ring mains, 6mm² for cookers and showers.

Two Way Switch - Switches which can be used in pairs so that either can switch a light on or off. Each switch has terminals allowing them to be linked using [Three Core and Earth cable](#).

Voltage (V) - The numerical value of the electrical potential between two points in a circuit.
Volts = Wattage/Amperes.

Wattage (W) - A unit of power - in electrical equipment defined as Watts = Volts x Amperes.
One watt is fairly small and household equipment will often be rated in terms of Kilowatt (kW) -
1kW = 1000W.