



National Operational Guidance



NFCC
National Fire
Chiefs Council

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Information

Domestic voltage in the UK was historically referred to as 240 volt alternating current (AC) but is now supplied at 230V 50Hz. This is a single-phase earthed system.

Voltages of more than 50V AC with a current rating in excess of 5mA are considered dangerous.

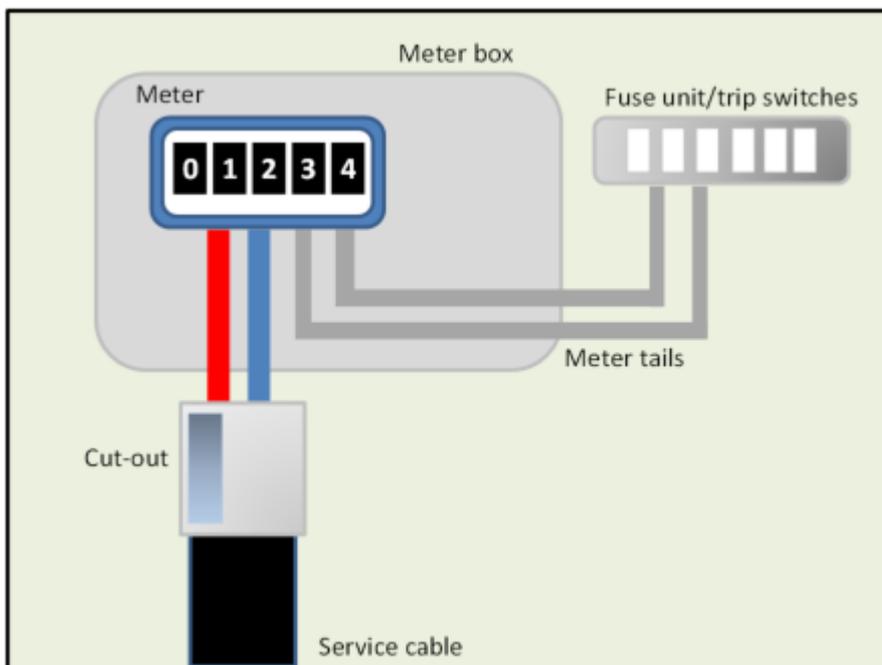


Figure 1: A conventional domestic supply intake - diagram courtesy of London Fire Brigade

The power supply to domestic properties has two methods of isolating internal power circuits.

1. Main fuse (cut-out) - before the meter
2. Fuse unit and trip switches - after the meter

The main fuse belongs to the electricity supplier and is sealed to prevent tampering. Removal of this fuse could be carried out by fire and rescue service personnel in extreme circumstances. Due to the possibility of small quantities of asbestos being present in older fuses, appropriate personal protective equipment (PPE) and respiratory protective equipment (RPE) should be worn.

Fuse units (known as consumer units) will have a range of different fuses and trip switches

depending on the age of the property/wiring. Operating the main switch will disconnect the installation from the electricity supplier's system, but it must be remembered that the incoming supply from the distribution system will remain live.

Socket outlets for power supplies are normally connected to ring circuits, where the conductors are looped and the circuit protective conductor loops are connected to the neutral and earth blocks respectively. It is common for one ring circuit or main to serve one floor, with each subsequent floor being served by a further circuit.

Ovens, immersion heaters and shower circuits are separately run and fused in the consumer unit.

Lighting circuits also operate on a loop system but they are more complex because a switch needs to be provided at a point remote from the light fitting. Due to the complexity of internal wiring, no wiring convention can be given as standard.

Although not permitted under current electrical regulations, electrical installations at domestic properties could have been subject to enthusiastic DIY or deliberate alterations, which follow no recognised wiring conventions.

Isolation of circuits can be achieved by isolating all circuits at the consumer unit. Depending on the size of the property, there may be more than one consumer unit.

At some incidents, where the damage to the structure is particularly severe, utility services will need to isolate the power supply at the cut-out fuse or further down the supply line.

Power supplies can be isolated quickly at the consumer unit once it has been located. You do not need to be a trained electrician to undertake this function; however, caution should be exercised. Most domestic premises will have the consumer unit in a conventional location, such as under the stairs or in a garage.

Hazards (for further information refer to National Operational Guidance: Utilities and fuel)

- High risk of electrocution
- Cable entanglement in the property

References and further reading

www.emfs.info/sources/substations/