

- The RCD protection of a fire alarm circuit should operate independently of any RCD protection for circuits supplying socket-outlets, mobile equipment used outdoors or bathroom or shower room circuits.

Smoke alarms for a Grade D system are required to have a standby supply with sufficient capacity to power the smoke alarm(s) in the quiescent mode for at least 72 hours (while giving an audible warning of power supply failure), after which there should remain sufficient capacity to provide a fire warning for a further 4 minutes.

The normal supply for smoke alarms in a Grade D system should be derived from the public electricity supply to the dwelling. The mains supply to the smoke alarms should take the form of either:

- an independent circuit at the dwelling's main distribution board, in which case no other electrical equipment should be connected to this circuit (other than a dedicated monitoring device installed to indicate failure of the mains supply to the smoke alarms); or
- a separate electrically protected, regularly used local lighting circuit.

The second option above could provide a solution to a problem where there are no spare ways in the consumer unit to accommodate a separate circuit. In such a situation, a Grade D system wired to a separately electrically protected, regularly used local lighting circuit, could be preferable to a Grade E system.

If smoke alarms are of a type that may be interconnected by wiring, all smoke alarms should be connected on a single final circuit. The standby supply for the smoke alarms may take the form of a primary battery, a secondary battery or a capacitor.

If a dwelling is likely to be subject to deliberate disconnection of the mains supply, and the standby supply is automatically rechargeable, a standby supply with 72 hours duration is usually sufficient. However, in a very few cases, periods of disconnection may exceed 72 hours. In such cases, provision of a standby supply of greater duration should be considered.

11.8 Wiring

In the case of interconnected smoke alarms, circuit design should be such that open or short circuits on the signalling wiring that interconnects the smoke alarms cannot prevent the smoke alarms from functioning individually.

For Grade D and Grade E systems, the mains supply to smoke alarms, and any interconnecting wiring between smoke alarms, may comprise any cable suitable for domestic mains wiring. The cable should be installed in accordance with the relevant recommendations of *BS 7671*. Conductors used for interconnection of