

The single module AFDD has landed.



THIS SMALL DEVICE PREVENTS ELECTRICAL FIRES

CRABTREE SINGLE MODULE AFDD

Arc Fault Detection Devices (AFDDs) might be new to the UK wiring regs, but that doesn't mean they're not of crucial importance. In a recent survey on the technology, the majority of respondents agreed that AFDDs can help to prevent electrical fires.

Here's everything that you need to know before your next installation.

What is an arc fault?

It's a fault in the electrical installation that produces sustained arcing (in or between conductors). This could be caused by insulation faults, damaged cables, defective connections or faulty leads to appliances. Arc faults cause overheating and ignite flammable materials.

What are the benefits of using AFDDs?

AFDDs detect and disconnect dangerous arc faults, which would otherwise go unnoticed by older technologies, such as circuit breakers and RCDs. AFDDs fit into consumer units, just like MCBs. Using AFDDs reassures you that your installation is fully compliant, (but to a higher standard than before the 18th Edition became effective).

Are AFDDs proven?

AFDDs have been tested using the same process that brought about RCDs and RCBOs. This process is robust and recognised by British, European and International electrical standards organisations. The USA, Australia and many EU countries require AFDDs to be used in certain installations and locations, which are very similar to those listed in the 18th Edition.

Do AFDDs nuisance trip?

In short, no. Each AFDD will respond to the characteristics present on the AFDD protected circuit. The product standard (BS EN 62606) includes a range of tests to ensure that AFDDs will not respond to expected "operational sparking" which occurs in equipment such as vacuum cleaners, washing machines, switches & dimmers. These are not arc faults.

Do AFDDs work on ring circuits?

Yes, AFDDs detect dangerous arcing faults on ring circuits, spurs, radials and leads whatever the mode of connection. However, if a ring circuit is broken, the ring becomes two radial circuits that are at the same electrical potential. The power flows both ways and there is no arc. No arc means no arc fault, which means no trip.

How do I test an AFDD?

Crabtree AFDDs carry out a self-test function when initially powered up and the AFDD repeats this self-test function regularly. They also have a test button (just like an RCD or RCBO), which you can use during the initial verification or EICR. Model certificates now include AFDDs among the devices listed, with space for test results.

How easy is it to find a fault?

The process is broadly the same as for an RCD or MCB. There are also colours on the indicator to diagnose the type of fault that has occurred.

Will I need to install a larger consumer unit?

No, a larger consumer unit is not necessary. In fact, you can sometimes use a smaller consumer unit because there is no need for separate RCDs.

What do the guidelines say?

The 18th Edition of the wiring regulations outlines the need to protect against the dangers of high temperatures, arcing, burning and ignition of fire. We've outlined some of the key information you need to know.



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What is an AFDD RCBO?

Crabtree AFDD RCBO devices are the same size as an MCB yet they include three integral technologies:

1. MCB technology to protect against overcurrent and short circuit
2. RCD technology to protect against electric shock
3. AFDD technology to protect against arc faults that can cause fires

This means they cater for all of the circuit protection requirements and the additional fire protection recommendations of the 18th Edition

Can AFDDs be retrofitted to existing installations

Yes, Crabtree Starbreaker AFDDs can be retrofitted in all Starbreaker consumer units.

The Crabtree Single Module AFDD is half the size of its predecessor and combines the benefits of AFDD, MCB and RCD technology in one. Talk to a Crabtree engineer before your next installation.

Chapter 13 (Fundamental Principles):

The requirements of this chapter are intended to provide for the safety of persons, livestock and property against the dangers and damage which may arise in the reasonable use of electrical installations.

Regulations 131.1 lists several risks. The following applies:

In electrical installations risk of injury may result from:

- Shock currents
- Excessive temperatures likely to cause burns, fires and other injurious effects
- Arcing or burning, likely to cause blinding effects, excessive pressure and or toxic gases

In addition, Regulations 131.3.1 states:

The electrical installation shall be so arranged that the risk of ignition of flammable materials due to high temperature or electric arc is minimised.

421.1.1 deals with protection against fire caused by electrical equipment:

Persons, livestock and property shall be protected against the harmful effects of heat or fire which may be generated or propagated in electrical installations.

NOTE 1: Harmful effects of heat or fire may be caused by:

- Failure of electrical equipment such as protective devices, switchgear, thermostats, temperature limiters, seals of cable penetrations and wiring systems
- Overcurrent
- Insulation faults or arcs, sparks and high temperature particles

421.1.7 deals directly with AFDDs:

Arc Fault Detection Devices conforming to BS EN62606 are recommended as a means of providing additional protection against fire caused by arc faults in AC final circuits.

421.1.7 provides several examples of locations where AFDDs can be used:

- Premises with sleeping accommodation
- Premises containing flammable materials such as barns or workshops
- Premises made using combustible materials such as wooden buildings
- Properties which easily propagate fire such as high-rise buildings
- Premises containing priceless, impossible to replace goods such as museums

Important: The term 'recommended' means there is scope for choice whether or not to comply. If a decision is made not to follow the recommendations, that decision should be justified by the user of the standard.

To find out more, visit: www.electrium.co.uk/crabtree

For full details use BS7671:
2018 IET Wiring Regulations 18th Edition.

Contact a Crabtree Sales Engineer.