



When sparks fly

# The fire protection switch DAFDD



- » Combination device with three functions: RCCB + MCB + AFD
- » Protection against residual currents, short-circuits, overcurrent and arc faults
- » Continuous self-monitoring of the AFD unit
- » Also available as a short-time delayed version

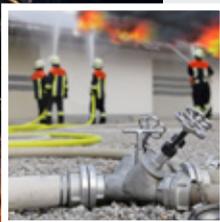
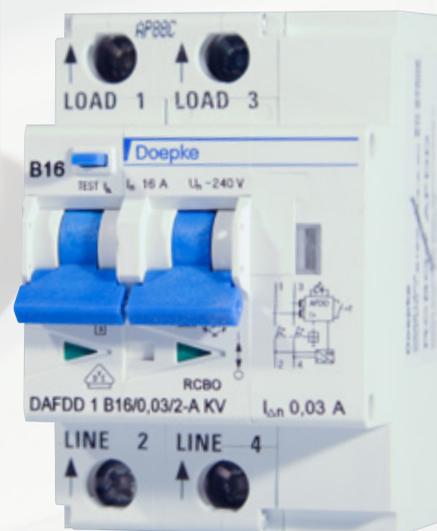


## Compact: three in one

Our fire protection switches are combination devices consisting of fault current switch/MCB (RCBO) plus arc fault detection.

The RCBO, also known as residual current circuit-breakers, conform to the provisions of EN 61009 and are proven to protect against fault currents (personal protection), short-circuits and overloads (system protection).

There is now an additional module which also offers protection against arc faults. It detects high-frequency arc faults as per the requirements of DIN EN 62606.



### Term definitions

RCBO	Residual current operated circuit-breaker with overcurrent protection
AFDD	Arc fault detection device
AFD unit	Arc fault detection unit

### Key message of DIN EN 62606

#### General requirements of arc fault detection devices:

The devices are intended to limit the risks of a fire in consumer circuits associated with fixed installations due to arc current faults that present the risk of a fire being ignited under certain circumstances in the case of a continuous arc.

## What is an arc?

Arcs also occur for operational reasons, e.g. when opening and closing mechanical contacts. Arcs are known to occur in this context and can be managed. If they occur unintentionally, they are referred to as arc faults. AFDDs have the task of protecting electrical installations from fires caused by arc faults. They provide support and additional

protection alongside residual current circuit breakers and miniature circuit-breakers – proven protective devices. They close a previously unnoticed gap in the security of our fixed electrical installations.

What makes arc faults dangerous? Even if there is only minor damage to conducting

lines, arc faults can occur. Serial arc faults may not be detected by RCBOs under certain circumstances. This means that arcs may continue to occur unnoticed in this area thus creating thermal stress and causing changes in the surrounding

material. In the worst case, the previously small arcs can lead to a devastating fire. Electrical fires often only occur days or months after the initial arc fault. Fires do not necessarily have to be caused by external influences as elec-

trical installations also age. This means damage to the insulation caused by changes in the characteristics of materials, such as plastics becoming brittle or reduction in clamping forces, can lead to weak points in the installation.

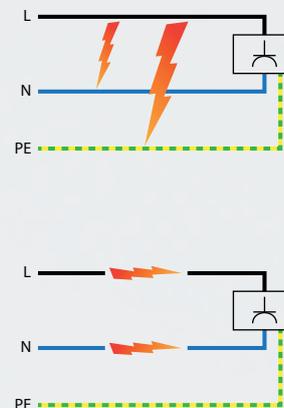
## Parallel and serial arc faults

### Parallel arc faults

- » These occur between line conductors and earth or protective conductors,
- » between two line conductors,
- » or between line and neutral conductors and can also be detected by miniature circuit-breakers and residual current circuit-breakers.

### Serial arc faults

- » These occur in a conductor and are not detected by miniature circuit-breakers and residual current circuit-breakers.



## Application areas as per DIN VDE 0100 Part 420:2016-2

Arc fault detection devices (AFDDs) are required in final circuits of single-phase AC voltage converters with  $I_n \leq 16$  A for:

Common rooms and bedrooms in:

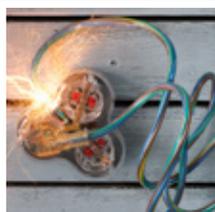
- » Nurseries
- » Old people's homes
- » Accessible housing as per DIN 18040-2

Rooms and locations at risk of fire:

- » Due to processed or stored materials
- » With flammable building materials
- » Where irreplaceable goods may be put at risk

## Advantages of DAFDDs at a glance

- » Fault current, overcurrent protection and arc fault switch-off in one device
- » Integrated overvoltage protection (> 270 V)
- » Compact design in three small module widths
- » Separate displays for each protective function
- » AFD fault cause is displayed by LED blinking sequence
- » AFD fault cause is stored and can be retrieved multiple times
- » Overcurrent protection available in characteristic B and C
- » Residual current circuit-breaker Type A and Type A KV (slow-blow)
- » Reduced fire risk in fixed installations



## Explanation of error code display

display blinks ...	color	meaning	
glows continuously	green	normal operation	
1x	yellow	serial arc fault	
2x	yellow	dimmer fault	
3x	yellow	parallel arc fault	
4x	yellow	overvoltage	
5x	yellow	temperature	
6x continuously	yellow yellow/red	internal fault	

# Doepke

Schaltgeräte GmbH

Stellmacherstrasse 11  
26506 Norden, Germany

Tel. +49 (0)4931 1806 0  
Fax +49 (0)4931 1806 101  
Email: info@doepke.de  
www.doepke.de

