AFDD+
Range brochure

*Live*Safe

Technology to protect what matters

Electrical circuit protection for low voltage residential and light commercial installations

EATON
Powering Business Worldwide

People, assets, property and your reputation are all things that matter to you. You can protect them all with EATON electrical safety systems for low-voltage residential and light commercial installations.

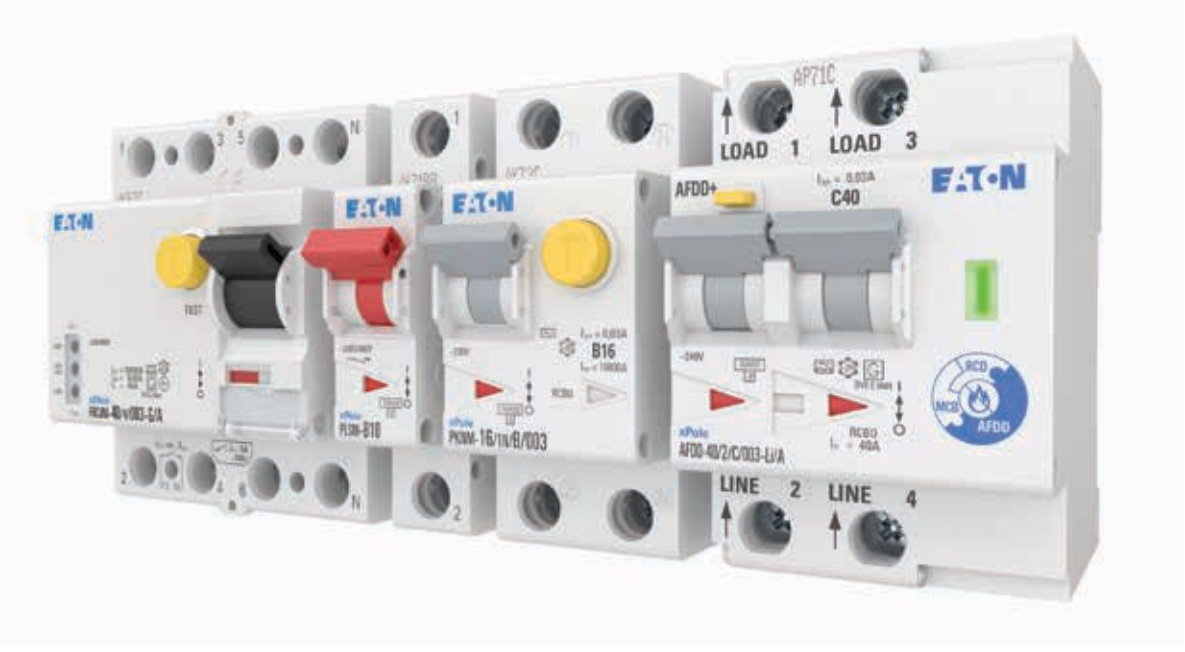
EATON offers state-of-the-art protection devices to protect against all types of fault currents.

Protect against short circuits and overcurrents with an EATON Miniature Circuit Breaker (MCB). Protect against earth fault currents – to prevent electric shock – with an EATON Residual Current Circuit Breaker (RCCB). Or combine both functions in the EATON Residual Current operated circuit Breaker with Overcurrent protection (RCBO).

Now Eaton also provides the highest level of advanced protection in end circuits, adding arc fault detection to the RCBO functionality, in a revolutionary all-in-one Arc Fault Detection Device (AFDD+).

Additional digital features increase the sensitivity and robustness of the protection devices, and the availability of installations and systems.

The EATON electrical safety range has everything you need, to protect what matters.



Types of fault

The following types of fault can lead to severe hazard and danger.

Overcurrents

A moderate increase in current which does not immediately damage the wiring but results in a thermal overload over time. May increase over a period or almost instantaneously jump to a steady state current.

Typical causes

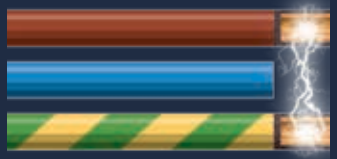
- Insulation defects
- Breakdowns between phases
- Breakdowns between phase and neutral

Short circuit currents

Faults with very low impedance and very high currents which can be up to 20 times the nominal current.

Typical causes

- Phase and neutral short-circuiting over very low impedance, due to:
  - Insulation breakdown
  - Mechanical damage to wiring
  - Water



Fault currents

High or low impedance faults between phase and earth. They can result in very low leakage and fault currents, either much lower than nominal current or in very high currents.

Typical causes

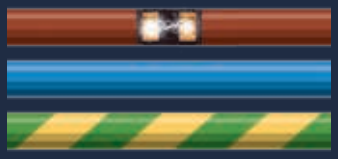
- Changes in insulation and insulation resistance, due to:
  - Humidity
  - Aging
  - Mechanical stress
  - Dust
  - Dirt etc.

Arc fault currents

Typically at nominal current or just below, and therefore difficult to detect. Small arcs can grow over time as insulation is increasingly damaged. Identified by high frequency noise and breakdown of the fault current close to the zero-crossing of the driving voltage.

Typical causes

Broken or squashed wires leading to an arc continually or intermittently burning and damaging insulation.



Serial arc faults – the most common. Originate from a fault across the phase or neutral. Only detectable by AFDD+.

Parallel arc faults – originate from a fault between phase and neutral. Total current in the circuit increases depending on load impedance and fault impedance.

2,000,000

FIRES REPORTED IN EUROPE EACH YEAR

90%

OF FIRES IN EU HAPPEN IN BUILDINGS

Effects of faults

Loss of power

Usually caused by very high overcurrents destroying wiring, installation devices or busbars. MCBs are designed to protect wiring against short circuits and overcurrents in low voltage residential installations.

Loss of life, property and assets

Electricity is a recognized ignition source for a number of fire hazards. Many fault currents are detectable, but serial and parallel arc faults were undetectable until the invention of the AFDD.

Electric shock can cause fatal injuries and loss of life. RCDs are the most important devices for protection against electric shock. Protection devices which can detect and disconnect high frequency fault currents are increasingly important, as electronic devices with integrated electronic inverters become more common.

Combined with digital arc fault detection technology, the EATON AFDD+ minimizes the risk of electrically ignited fire hazard, and provides protection against loss of power, property, assets and life.

PEOPLE ARE KILLED BY FIRE IN EUROPE EVERY YEAR

11 **PER DAY**

70,000

PEOPLE ARE HOSPITALIZED IN EUROPE EACH YEAR DUE TO SEVERE FIRE INJURIES

€126,000,000,000

IS EATEN UP BY FIRE DAMAGE EACH YEAR *(1% OF EUROPEAN GDP!!!)* *SOURCE: FIRE SAFE EUROPE*

IN EUROPE MORE THAN 25% OF FIRES ARE IGNITED BY ELECTRICAL FAILURE

SOURCE: GENEVA ASSOCIATION, RISK AND INSURANCE ECONOMICS

How protection has evolved

It was in 1957 that F&G (which later became part of Eaton) filed a patent for its first Residual Current Circuit Breaker (RCCB) device. Now, 60 years later, the latest Eaton Arc Fault Detection Device is the most recent development in an ever-evolving range of Eaton circuit protection solutions.

Miniature Circuit Breaker (MCB)

Shortening of the load path via a very low impedance path is a recognizable fault cause. Circuit breakers prevent the problem by detecting the high fault current and quickly interrupting it. MCBs combine current-dependent overcurrents protection with very fast current independent short circuits protection.

Residual Current Circuit Breaker (RCCB)

Earth leakage currents exhibit serious threats for humans and can cause ventricular fibrillation of the heart. RCCBs detect asymmetric and unbalanced fault currents and disconnects the circuit. RCCBs protect against electric shock and provide a very basic fire protection capability. Digital RCCBs were introduced in 2009 providing additional safety features and higher functionality.

Residual Current Circuit Breaker with Overcurrent Protection (RCBO)

RCBOs provide protection against high short circuit currents and protection against electric shocks caused by low leakage currents in one device to increase safety.

Arc Fault Detection Device (AFDD+)

A new device combining short circuit and fault current protection capability from RCBOs with an AFDD (arc fault detection device), the next generation of detection technology. AFDD+ applies an algorithm in the integrated electronic circuit to ensure sensitive detection of fault currents, which indicates the presence of dangerous arc faults.

The next step in the evolution of protection

The EATON AFDD+ is not simply a development of devices that already exist. It is the next step in the evolution of protection devices, incorporating the benefits of digitalization.

A complete range of devices, that offer protection for people, property and assets including the next step in protection - prevention against electrically ignited fires caused by serial and parallel arcs.

People

The use of electricity and the operation of electrical installation should not result in any risk to people or assets. By continually devising new and innovative protection devices, EATON is striving to protect people's lifes.

Property and assets

Property and other assets require protection against electrically-ignited fire hazards, to prevent damage, loss and financial consequences.

NEW

MCB	RCCB	RCBO	AFDD+
			Arc fault protection
Short circuit & overcurrent protection	Earth fault current protection	Earth fault current protection	Earth fault current protection
		Short circuit & overcurrent protection	Short circuit & overcurrent protection
Basic fire protection	Basic fire protection	Increased fire protection	Enhanced fire protection
-	Shock prevention	Shock prevention	Shock prevention

PROTECTION ↑

FUNCTIONALITY →

MCBs

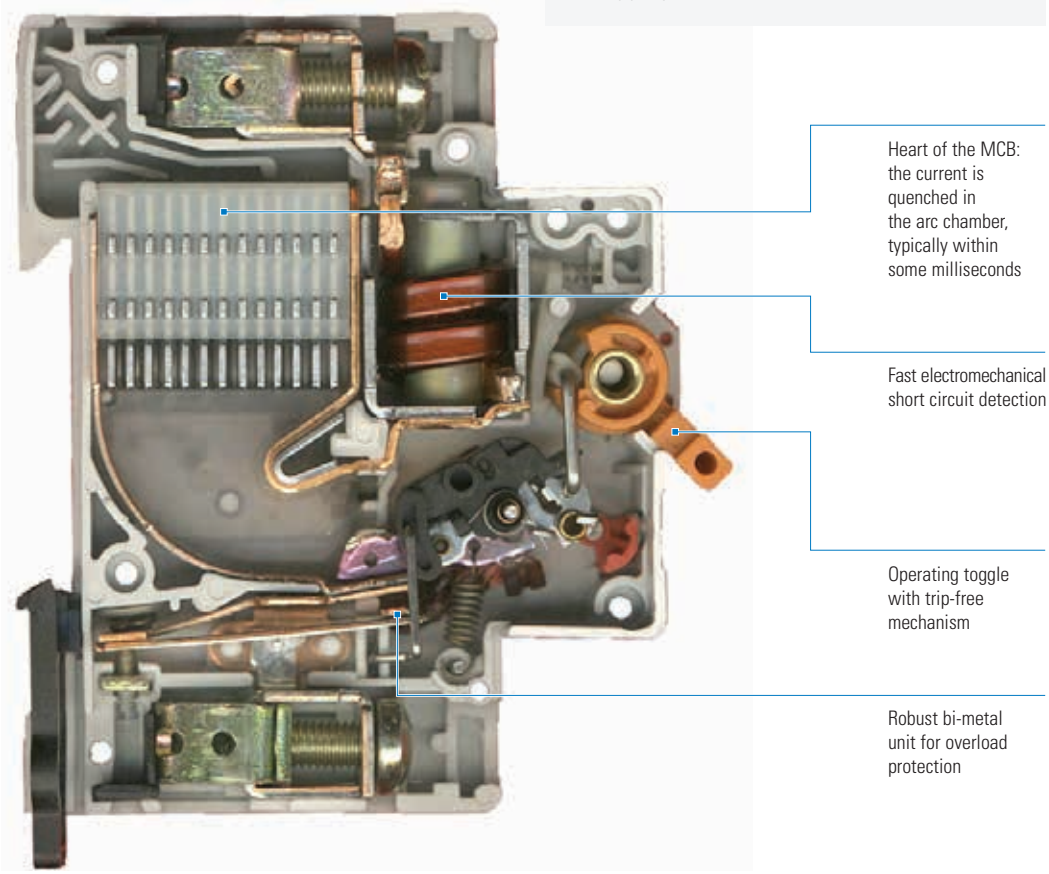
Miniature Circuit Breakers (MCBs) are used in almost every electrical installation to protect against short circuits and overcurrents.

Overload currents can cause hazardous dissipation of high energy along the wire, leading to its heating and destruction. MCBs combine relatively slow, current-dependent, overcurrent protection and very fast, current independent short circuit protection.

Eaton offers a broad range of MCBs with the following characteristics:

- Rated current: 0,16A up to 125A
- Configuration: 1, 1+N, 2, 3, 3+N, 4
- Rated breaking capacity: 4,5kA up to 25kA
- Tripping characteristics: B, C, D, K, S, Z

Eaton MCB - Robust and Reliable Protection



RCDs

Since the widespread application of RCDs in the 1960s, the number of injuries from electric shock has declined dramatically.

1957

Gottfried Biegelmeier pioneered the development of time-delayed tripping and secured the first patent for an applicable residual current circuit breaker (RCCB). He had recognized the need to disconnect fault currents by detecting unbalanced currents and found a reliable way to realize this in protection devices. Biegelmeier was chief technical officer of Felten & Guillaume, which later became part of Eaton, and is recognised as the father of the RCD for the robust tripping mechanism he invented.

EATON is the world's leading manufacturer of digital protection devices, and the first to offer RCDs with digital features that provide higher levels of functionality and availability.

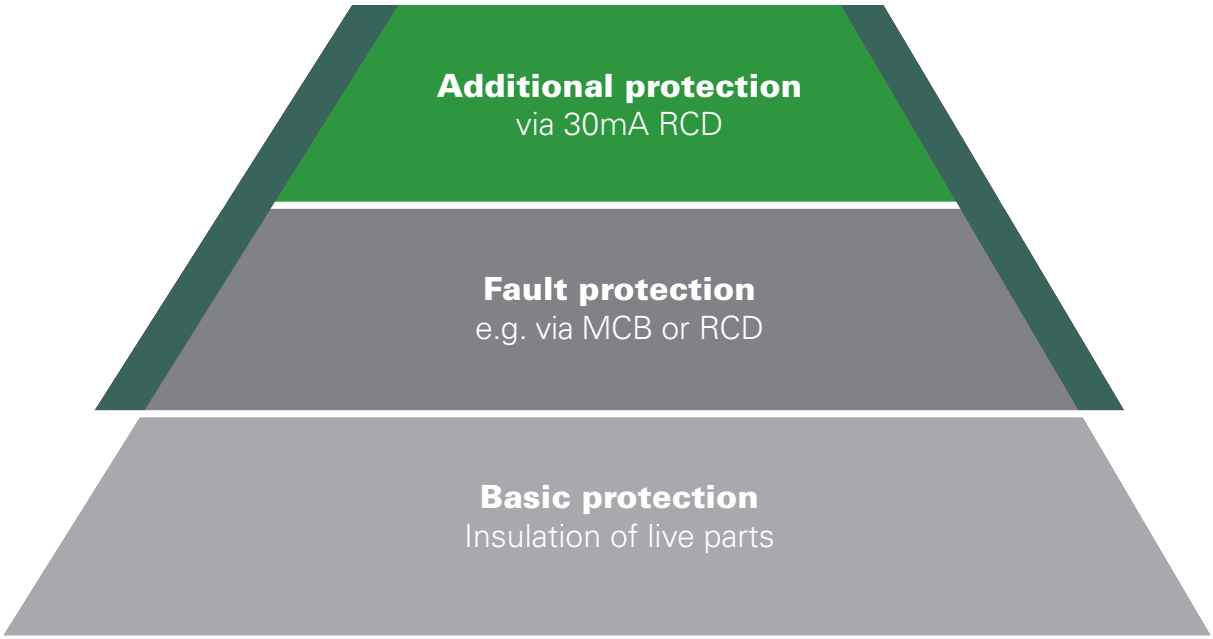
The requirements for protection against electric shock are set out in IEC 61140:
Hazardous live parts shall not be accessible and accessible
Conductive parts shall not be hazardous

This requirement needs to apply under:

Normal condition	**Protection against direct contact**
Single fault condition	**Protection against indirect contact**

The requirement is the foundation for three very important protection schemes:

Basic protection:	Insulation of live parts (class II equipment, cable insulation, barriers or enclosures)
Fault protection:	e.g. automatic disconnection of the power and the fault
Additional protection:	Residual current protection device, 30mA for socket outlets.



Choosing your EATON RCD

B+

To achieve COMPREHENSIVE safety

Full Type B safety level + increased sensitivity to frequencies up to 20kHz for fire protection with a maximum tripping value of 420mA.

- Fire danger areas, motors driven by three-phase inverters with very high frequency e.g. agricultural applications, farms, fuel station
- Superior protection against thermal hazards and reduction of the risk of electrically ignited fires due to leakage currents

B/ Bfq

To manage ALL-ROUND safety

Full type F safety level + detection of smooth DC currents.

- Installations with electronic loads with 50/60 Hz e.g. residential PV applications, electric car charging, hospitals, medical centres
- Type Bfq is less sensitive for higher frequencies and better suited for industrial premises
- Provides all-round protection for various applications and occurring waveforms according to IEC/EN 62423

F

To ensure ADVANCED safety

Full type A safety level + detection of fault currents with frequency mixtures up to 1kHz. Smooth DC currents up to 10mA do not influence detection.

- Speed controlled appliances e.g. household appliances like washing machine, dishwasher, washer dryer
- Provides the advanced operator protection where circuits with electronic loads are used

A

To perform in STANDARD applications

Full type AC safety level + detection of pulsating DC residual currents. Smooth DC currents up to 6mA do not influence detection.

- Home appliances where pulsating DC residual currents may occur e.g. loads with electronics or rectifiers like ventilator/fans, food processor, LED/energy saving lamp
- Typical in most of today's applications

AC

To provide MINIMUM* requirements

Detects alternating residual currents only.

- Basic home appliances e.g. oven, lights, iron
- Minimum requirements in most countries in residential application - higher level of safety is recommended

Time delayed tripping in surge sensitivity environment
- min 10 ms time delay

Selectivity to downstream RCDs
- min 40 ms time delay

* Depends on the local wiring regulations, please check your local regulations

Fault currents protection

Residual Current Circuit Breakers are mandatory to provide additional protection against electric shock for socket outlets and are often applied for fault protection.

RCCBs are applied in the root of an installation or additionally in specific branches/circuits where a special fault current characteristic is needed. RCCBs are available for residual currents from 10mA to 500mA and above, delayed and no-delay tripping, and with selective characteristics.

EATON Digital RCCBs

Combining protection with digital features, EATON Digital RCCBs are unique – providing maximum circuit status information together with increased protection and availability.

The devices continually measure the residual current value in real time, and use the results to drive local warning LEDs and remote warning potential-free outputs.

This allows time to resolve developing problems before they lead to interruptions or failures. System status is always available at a glance, which can save money by preventing out-of-hours service call-outs. The mandatory test intervals can be reduced to just once a year.

System availability is enhanced by the shorter time-delayed tripping characteristic of the digital protection devices, and the optimized tripping thresholds. These ensure that brief malfunctions do not cause nuisance tripping and loss of system availability.

The digital RCCBs are equipped with a voltage-independent protection function and digital features. EATON Digital RCCBs are available as Types A, B, Bfq and B+.

Eaton offers a broad range of RCCBs with the following characteristics:

- Rated current: 16A up to 125A
- Configuration: 1+N & 3+N
- Rated tripping current: 10mA up to 500Ma
- Sensitivity: AC, A, F, B, Bfq, B+
- Tripping behavior: Instantaneous, short-time delayed, selective

Digital RCCB LEDs and their meaning

Red

When the red LED lights up, the leakage current is already higher than 50 percent of the nominal fault current. Therefore the system is in a critical status - the digital RCCB only trips when the fault current continues to increase.

Yellow

The yellow LED shows a residule current in the ambit of 30 to 50 percent of the nominal fault current. Before the system is shut down, professional countermeasures can be taken.

Green

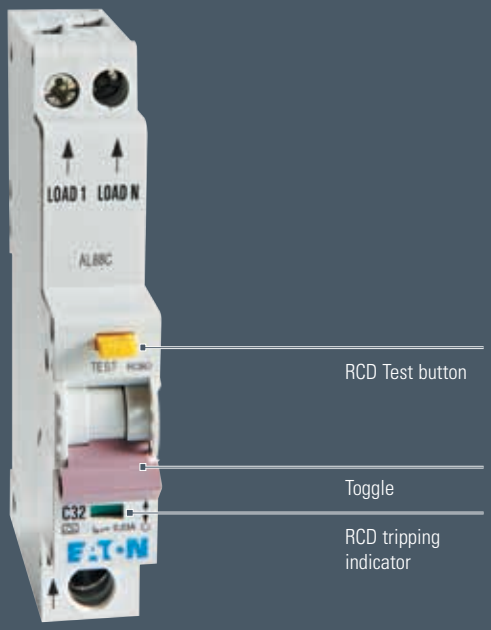
If the current flow in the system to ground is in the ambit from 0 to 30 percent of the nominal fault current, the green LED indicates the proper status.

Short circuits, overcurrents and residual fault currents protection – RCBOs

The Residual Current Circuit Breaker with Over Current Protection is a compact combination of short circuits, overcurrents and residual fault currents protection, ideally suited to fault and additional protection in individual end circuits.

End users benefit from RCBOs compared with the MCB/RCCB combination in the case of an earth fault, when only the particular circuit will trip so other circuits are not left without power. This also makes earth fault finding easier.

Different residual current characteristics enable the optimal protection for the specific applications. RCBOs are available for residual fault currents from 10mA to 300mA, delayed and no-delay tripping, with different sensitivities and breaking capacities.



EATON offers a broad range of RCBOs which are available as line voltage dependent and independent devices with the following characteristics:

• Rated current:	2A up to 40A
• Configuration:	1+N, 2, 3, 3+N
• Rated breaking capacity:	4,5kA up to 10kA
• Rated tripping current:	10mA up to 300mA
• Tripping characteristics:	B, C
• Sensitivity:	AC, A
• Tripping behavior:	Instantaneous, short-time delayed

Electrically-ignited fire hazard protection – AFDD+

As described in IEC 62606, AFDD allow the detection and disconnection of hidden arc faults that can cause severe damage. Only an AFDD can detect and disconnect serial and parallel arc faults in electric installations.

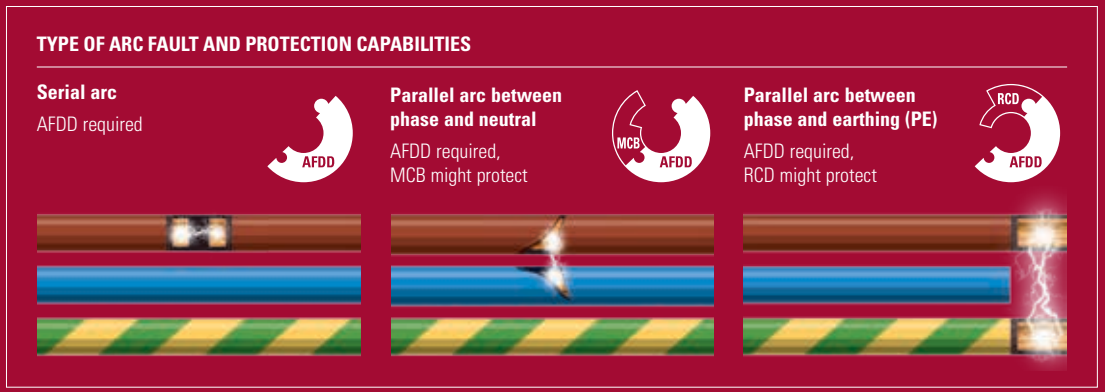
To also reduce the risk when dealing with electricity in end circuits, AFDD is the missing link which needs to be implemented with short circuit & overcurrent and earth fault protection. Eaton's AFDD+ is the industry's first protection device that provides these three levels of protection in one device.

Earth fault currents
Detected via balance transformer

Short circuit & overcurrents
Thermal & magnetic detection

Serial & parallel arc fault
Digital arc fault detection

Protection according to the IEC 62606



Electrically-ignited fires are a hidden but significant threat only recently beginning to be addressed.

Arc faults, which occur out of sight within installations, have the potential to ignite fires and cause enormous damage. Statistics show that the source of over 25% of fires is an electrical system.

What?

Serial Arc Fault

- Occurs when there is an interruption of conduction
- Can go undetected for long period of time

Parallel Arc Fault

- Originates from a fault between phase and neutral
- Total current in the circuit increases

Where?

Arc faults can occur in:

- Cables or wires
- Fixed installations
- Cables of directly connected devices or devices connected via sockets

When?

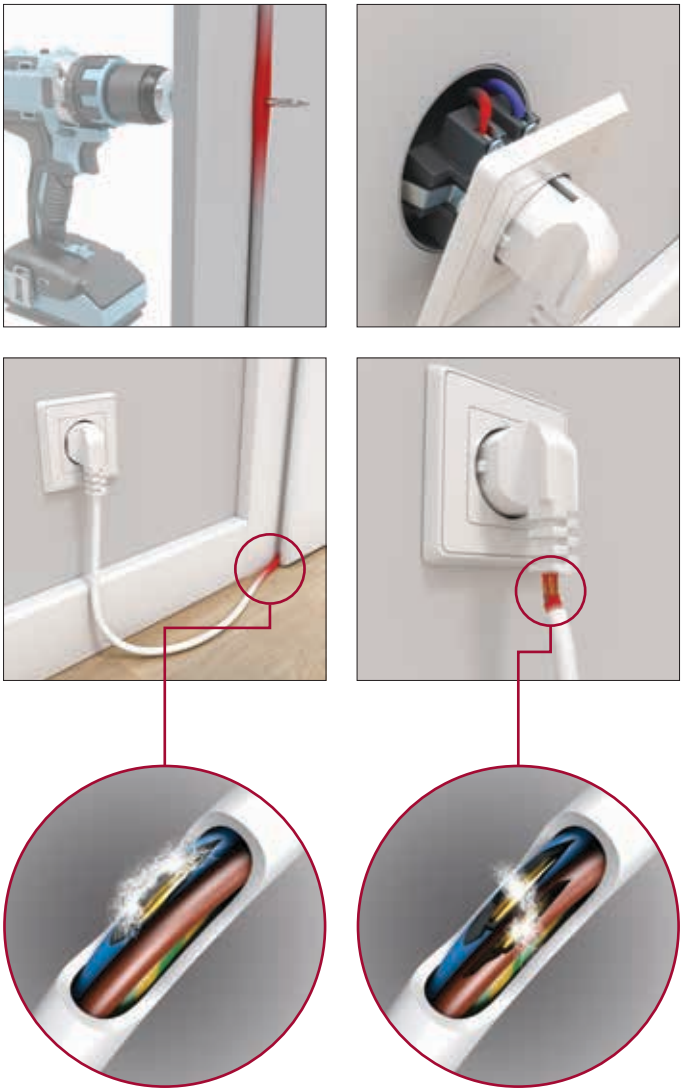
Arc faults occur when:

- Wires are faulty or damaged, due to:
  - external influences
  - ageing
- Terminal connections are loose

Why?

The most frequent causes of arc faults are:

- Crushed wires
- Damage to wire insulation caused by nails, screws etc.
- Ageing installations
- Broken cables or interruptions in a wire
- UV rays
- Pets and rodent bites
- Loose contacts and connections
- Bent plugs and wires
- Wires are treated carelessly or exposed to stress



How it works

An AFDD+ uses embedded processing and smart evaluation of current signals, to provide sensitive detection of fault currents, combined with avoidance of nuisance tripping.

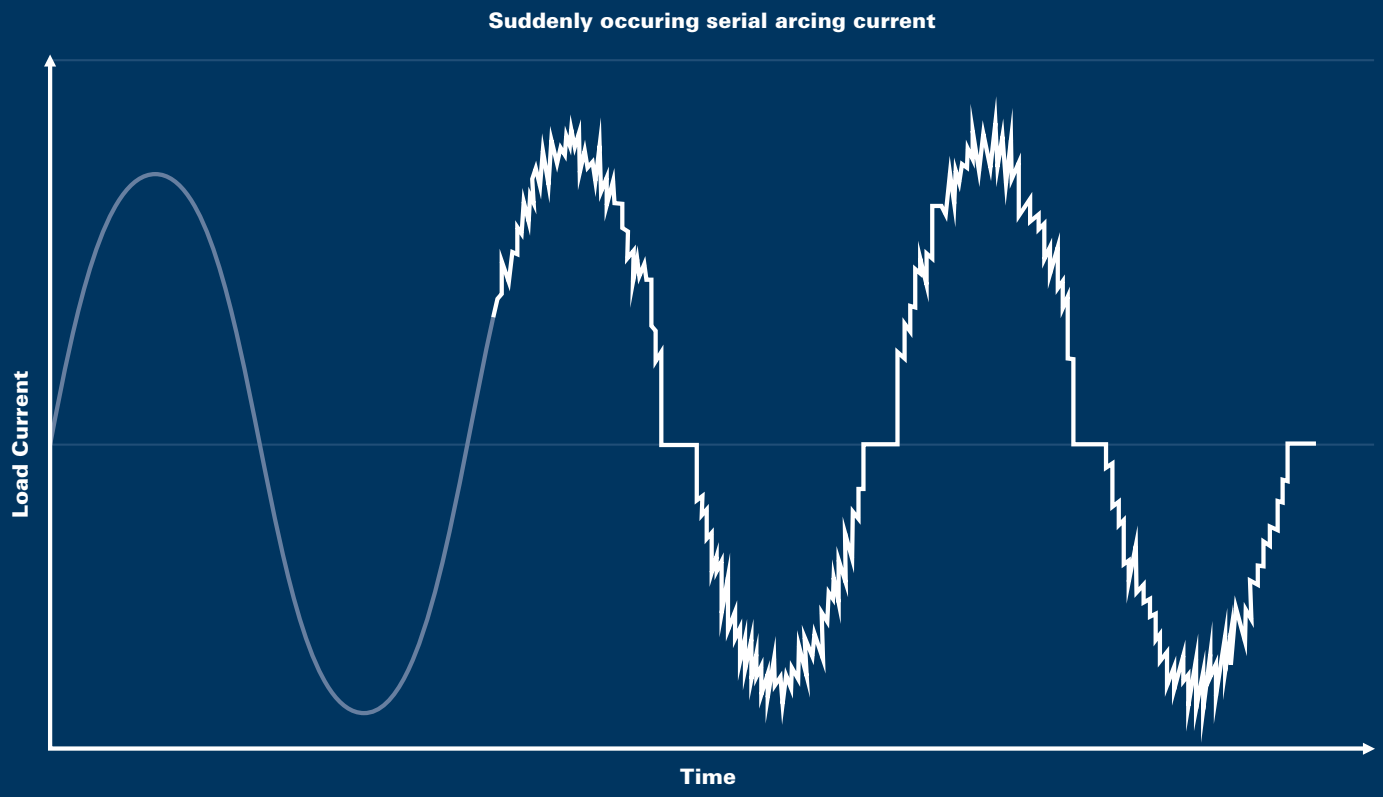
When an arc fault occurs it has unique and readily identifiable characteristics. These are:

- high-frequency noise within the fault current and
- a breakdown of the fault current, close to the zero-crossing of the driving voltage

The EATON AFDD+ uses these characteristics to detect arc fault and at the same time to prevent nuisance tripping. Detection is achieved using digital technology with embedded processing to monitor the wire for specific frequencies, and through smart evaluation of the fault currents.

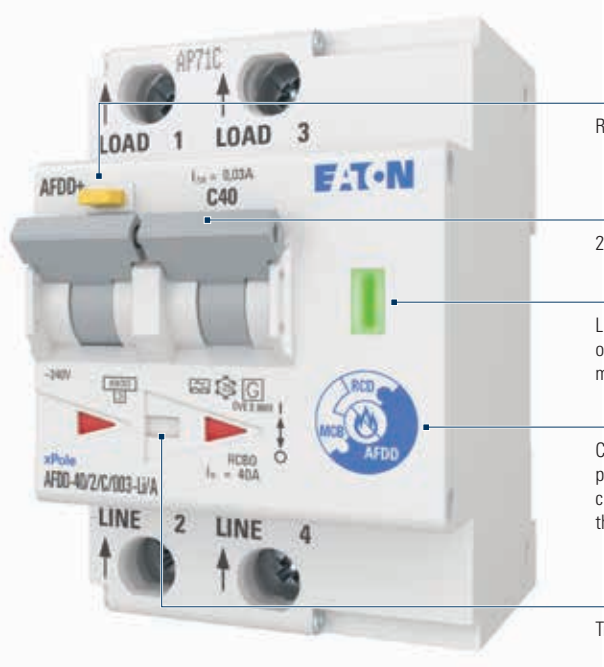
Avoiding arc fault masking

Power line communication can cause intense signals that mask the noise generated by arc faults. The EATON AFDD+ has been developed to ensure this does not interfere with its detection capability.



Status and tripping information

1 The LED indicator displays the status and the type of arc fault (serial or parallel) that tripped the device, which can be important for a fault finding.



RCD Test button

2 pole toggle

LED – AFDD status or tripping reason monitor

Comprehensive fire protection in end circuit only with this SIGNET

Tripping indicator

AFDD status

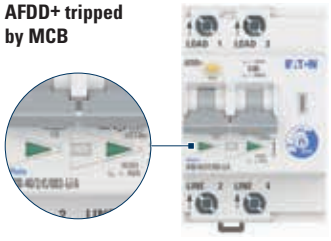
OK

Call an electrician (when toggle is in "up" position)

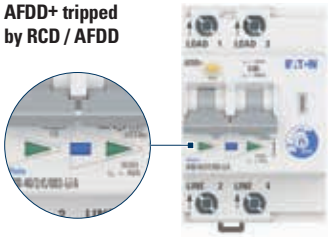
Call an electrician (after the reset)

2 When the AFDD+ trips, the tripping indicator shows which function tripped the device.

AFDD+ tripped by MCB

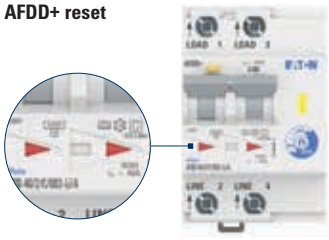


AFDD+ tripped by RCD / AFDD



3 After reset the tripping reason can be recalled and will be shown by a blinking LED. The LED indicator displays the status and detailed fault.

AFDD+ reset



Blinking LED

- **x 1** - serial arc
- **x 2** - dimmed serial arc
- **x 3** - parallel arc
- **x 4** - overvoltage
- **x 5** - overheating
- **x 6** - call an electrician

Extended protection for people, property and assets

Protection against electrical hazards has evolved and improved to arrive at today's state-of-the-art EATON solutions.

Money-saving

Billions of dollars are lost because of fires. The AFDD+ makes a definite and significant contribution to reducing this loss, by offering installers for the first time a single compact device which not only increases safety but also reduces the risk of fire hazards.

Time-saving

Easy to operate and with no assembly required, the EATON AFDD+ is a fully integrated device, resistant to nuisance tripping, with sensitivity above the requirements of the product standard.

In case of an earth fault, having all protection in one device makes fault finding easier. And, as the AFDD+ provides tripping reason indicators, you, as a professional electrician, know immediately what to look for.

End User Convenience

In the case of any (earth) fault, only the circuit that caused the fault will trip so other circuits will remain powered.

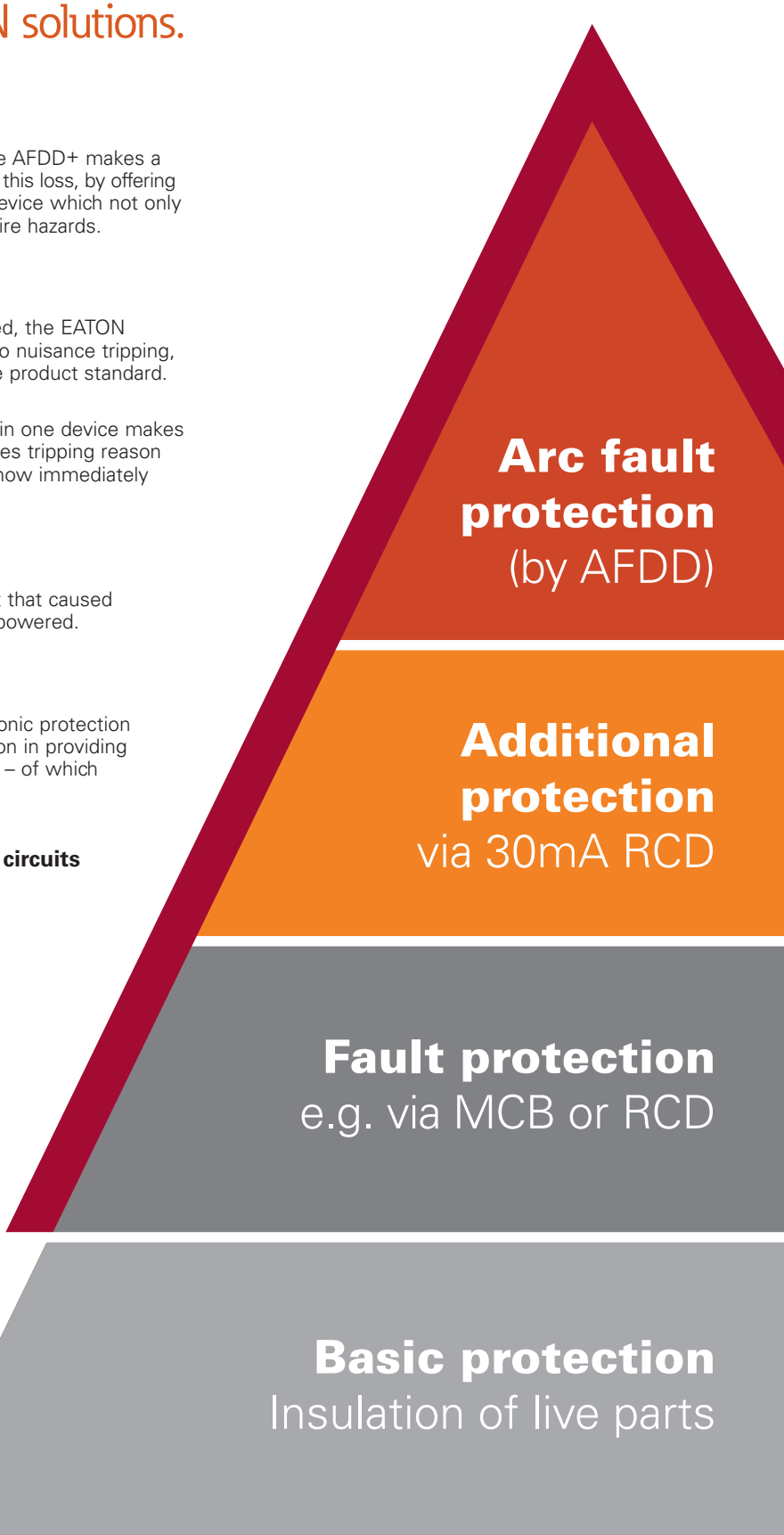
Market-leading

EATON's long experience in developing electronic protection devices ensures the company's leading position in providing reliable and safe electronic protection devices – of which the AFDD+ is the latest in a long line.

Comprehensive protection in final end circuits

The AFDD+ provides threefold protection in the end circuits, in one compact device

ARC FAULT PROTECTION
+ ADDITIONAL PROTECTION
+ FAULT PROTECTION

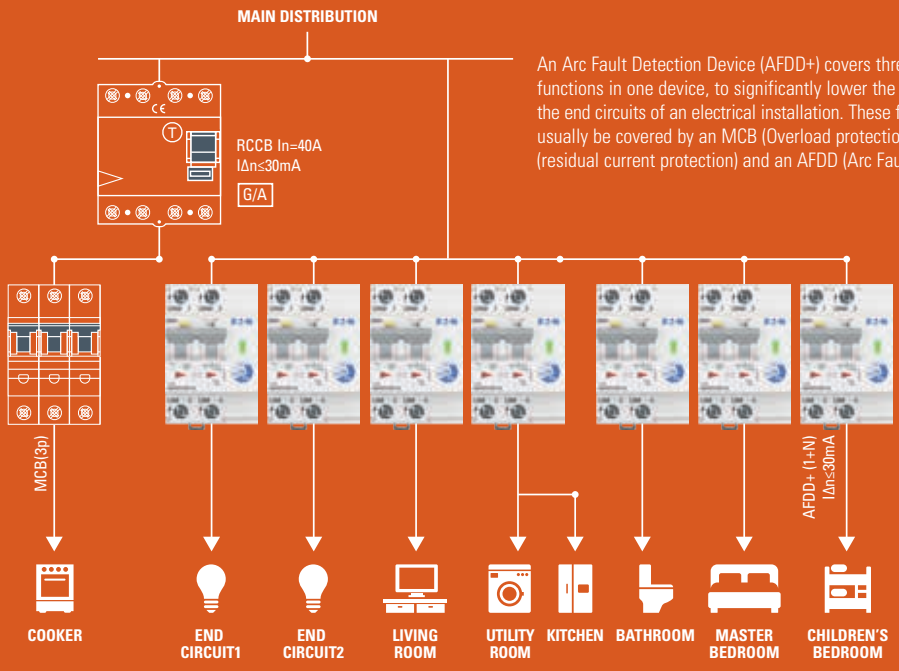


EATON's extended protection concept reduces the remaining risk in low voltage electrical installations.

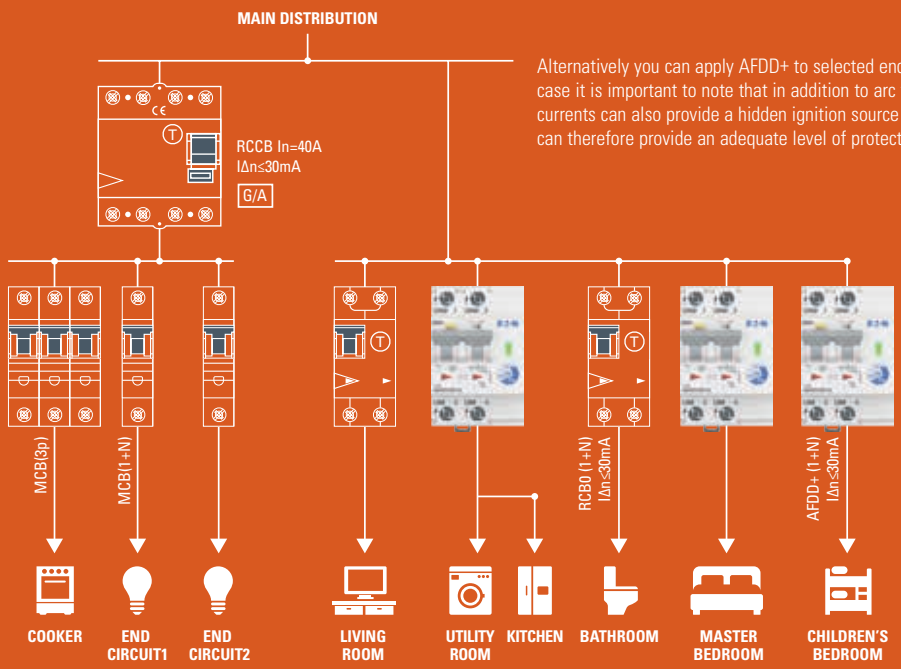
Choose your level of protection according to your needs

The most comprehensive protection can be achieved by installing AFDD+ for every end circuit.

However you can instead apply AFDD+ to most important selected end circuits. In this case it is important to note that in addition to arc faults, leakage currents can also provide a hidden ignition source for fire. In this situation a type B characteristic RCD needs to be added as a complementary measure in the root, to reduce the overall fire risk. Moreover selective type RCDs (type S; 100mA, 300mA) are well suited to detecting leakage currents.



An Arc Fault Detection Device (AFDD+) covers three essential functions in one device, to significantly lower the risk of fires in the end circuits of an electrical installation. These functions would usually be covered by an MCB (Overload protection), an RCD (residual current protection) and an AFDD (Arc Fault protection).



Alternatively you can apply AFDD+ to selected end circuits. In this case it is important to note that in addition to arc faults, leakage currents can also provide a hidden ignition source for fire. RCBOs can therefore provide an adequate level of protection.

Electric Fire Protective Device,
Arc Fault Protection AFDD+, 2-pole

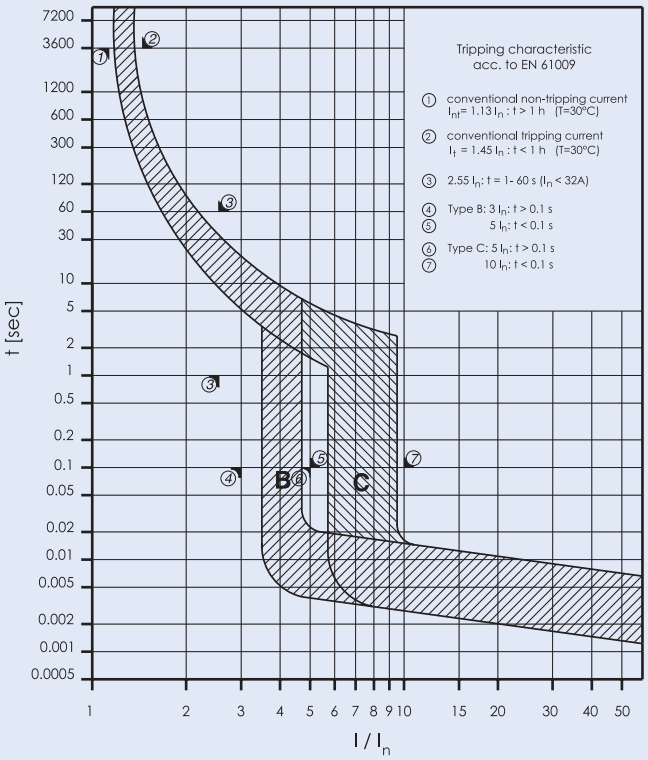
Detects and quenches arc faults in final circuits

- Fully combined with residual current circuit breaker (RCCB) and miniature circuit breaker (MCB)
- Safely detects arcs in cable length up to 70 meter
- Variable installation of N either left or right
- Rated currents from 10 to 40 A
- Tripped indication: MCB, RCCB or AFDD
- LED indication for arc faults
- Permanent self-monitoring
- Overvoltage and overheat monitoring
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- 10 and 30 mA rated residual currents
- Tripping characteristics B, C
- Rated breaking capacity up to 10 kA

Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
Auxiliary switch	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Switching interlock	IS/SPE-1TE	101911
Busbars: ZV-SS; ZV-L1/N; ZV-L2/L3; ZV-ADP; ZV-AE		

Tripping Characteristic AFDD+, Characteristics B and C



Technical Data

Electrical

Design according to	IEC/EN 62606, IEC/EN 61009
Current test marks as printed onto the device	
Tripping	
Line-voltage-independent (8/20µs)	instantaneous 250A
	surge-current-proof
Rated voltage U_e	240 V AC; 50 Hz
Operational voltage range	170-264 V
Rated tripping current $I_{\Delta n}$	10, 30 mA
Rated non-tripping current $I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity	AC and pulsating DC
Selectivity class	3
Rated breaking capacity	
AFDD 10-25A	10 kA
AFDD 32-40A	6 kA
Rated current	10 - 40 A
Rated peak withstand voltage U_{imp}	4 kV (1.2/50µs)
Rated fault breaking capacity $I_{\Delta m}$	
EN 61009	3 kA
IEC 61009	10-16 A: 3 kA
	20-40 A: 500 A

Arc fault tripping times after load current (acc. to IEC/EN62606):

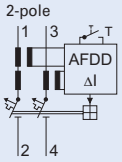
Load current (A)	Tripping time (s)
≤ 2.5	<1
5	<0.5
10	<0.25
16	<0.15
32	<0.12
40	<0.12

Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance	electrical comp.	≥ 4,000 switching operations
	mechanical comp.	≥ 20,000 switching operations

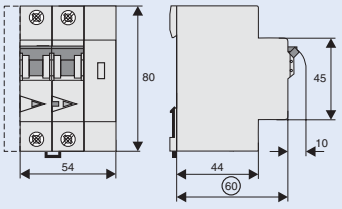
Mechanical

Frame size	45 mm
Device height	80 mm
Device width	54 mm (3MU)
Mounting	3-position DIN rail clip, permits removal from existing busbar system
Upper and lower terminals	open mouthed/lift terminals
Terminal protection	finger and hand touch safe, DGUV VS3, EN 50274
Terminal capacity	1 - 25 mm²
Busbar thickness	0.8 - 2 mm
Degree of protection switch	IP20
Degree of protection, built-in	IP40
Tripping temperature	-25°C to +40°C
Storage- and transport temperature	-35°C to +60°C
Resistance to climatic conditions	acc. to IEC/EN 61009

Connection diagram



Dimensions (mm)



Short Circuit Selectivity AFDD+ 10-20A towards Neozed[1] / Diazed[2] / NH00[3]

Short circuit currents in kA, Rated currents of fuses in A

Short circuit selectivity **AFDD+** towards fuse link **Neozed** [1]

AFDD+	Neozed [1]									
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**
B10	<0,5	0,5	0,9	2	2,3	3,7	8	10	10	10
B13	<0,5	0,5	0,8	1,7	1,9	3	6	10	10	10
B16		0,5	0,7	1,5	1,7	2,4	4,4	6,8	10	10
B20			0,7	1,4	1,5	2,2	3,9	6	9,2	10
C10	<0,5	0,5	0,8	1,7	1,9	3	6,1	10	10	10
C13	<0,5	0,5	0,7	1,6	1,8	2,8	5,5	9,5	10	10
C16		<0,5	0,7	1,3	1,5	2,2	4	6,2	10	10
C20			0,6	1,3	1,4	2,1	3,7	5,6	8,5	10

Short circuit selectivity **AFDD+** towards fuse link **Diazed** [2]

AFDD+	Diazed [2]								
	16	**20**	**25**	**32**	**35**	**50**	**63**	**80**	**100**
B10	<0,5	0,5	0,9	1,8	2,9	5,6	10	10	10
B13	<0,5	0,5	0,8	1,5	2,4	4,5	10	10	10
B16		0,5	0,8	1,3	2	3,4	8	10	10
B20			0,7	1,3	1,9	3,1	7,1	10	10
C10	<0,5	0,5	0,8	1,5	2,4	4,4	10	10	10
C13	<0,5	0,5	0,8	1,4	2,3	4,2	10	10	10
C16		<0,5	0,7	1,2	1,9	3,2	7,6	10	10
C20			0,7	1,2	1,8	2,9	6,5	9,7	10

Short circuit selectivity **AFDD+** towards fuse link **NH00** [3]

AFDD+	NH00 [3]											
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
B10	<0,5	<0,5	0,8	1,5	2,3	3,2	5,7	9,1	10	10	10	10
B13	<0,5	<0,5	0,8	1,3	1,9	2,7	4,4	6,5	10	10	10	10
B16		<0,5	0,7	1,1	1,6	2,2	3,4	4,8	8	10	10	10
B20			0,6	1	1,4	2	3,1	4,3	7	10	10	10
C10	<0,5	<0,5	0,7	1,3	1,9	2,7	4,5	6,9	10	10	10	10
C13	<0,5	<0,5	0,7	1,2	1,8	2,5	4,1	6,1	10	10	10	10
C16		<0,5	0,6	1	1,5	2	3,1	4,4	7,5	10	10	10
C20			0,6	0,9	1,4	1,9	2,9	4,1	6,5	10	10	10

no selectivity

[1] Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V
[2] Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V
[3] Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Short Circuit Selectivity AFDD+ 25-40A towards Neozed[1] / Diazed[2] / NH00[3]

Short circuit currents in kA, Rated currents of fuses in A

Short circuit selectivity **AFDD+** towards fuse link **Neozed** [1]

AFDD+	Neozed [1]									
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**
B25				1,2	1,3	1,8	3,1	4,7	6	6
B32					1,2	1,7	2,7	3,8	5,5	6
B40						1,3	1,7	2,2	2,7	4,2
C25				1,1	1,3	1,8	2,8	3,9	5,6	6
C32					1,2	1,7	2,6	3,6	5,1	6
C40						1,3	1,9	3,3	3,2	5,8

Short circuit selectivity **AFDD+** towards fuse link **Diazed** [1]

AFDD+	Diazed [2]								
	16	**20**	**25**	**32**	**35**	**50**	**63**	**80**	**100**
B25				1,1	1,5	2,4	5,5	6	6
B32					1,4	2,1	4,3	6	6
B40						1,4	2,4	2,9	5,1
C25				1,1	1,5	2,3	4,4	6	6
C32					1,4	2,2	4,1	5,6	6
C40						1,6	2,8	3,6	6

Short circuit selectivity **AFDD+** towards fuse link **NH00** [3]

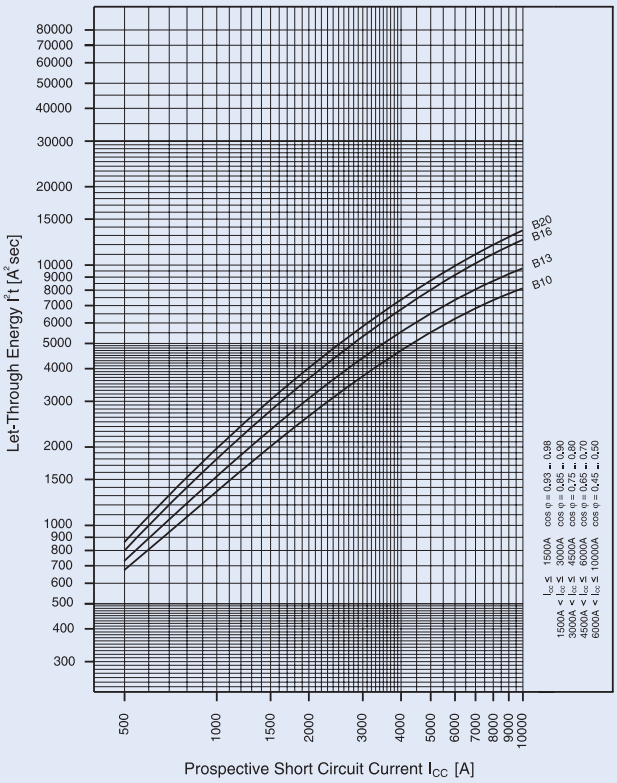
AFDD+	NH00 [3]											
	16	**20**	**25**	**32**	**35**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
B25				0,9	1,2	1,6	2,4	3,4	5,5	6	6	6
B32					1,1	1,4	2,1	2,9	4,3	6	6	6
B40							1,4	1,9	2,8	4,1	6	6
C25				0,9	1,2	1,6	2,3	3	4,6	6	6	6
C32					1,1	1,5	2,1	2,8	4,3	6	6	6
C40							1,5	2,1	3,1	5,4	6	6

no selectivity

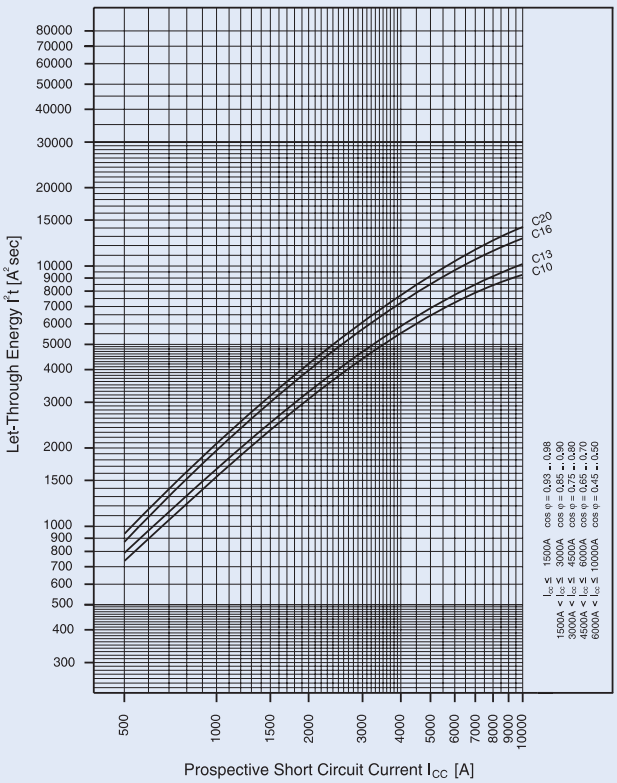
[1] Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V
[2] Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V
[3] Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

Let-through Energy AFDD+

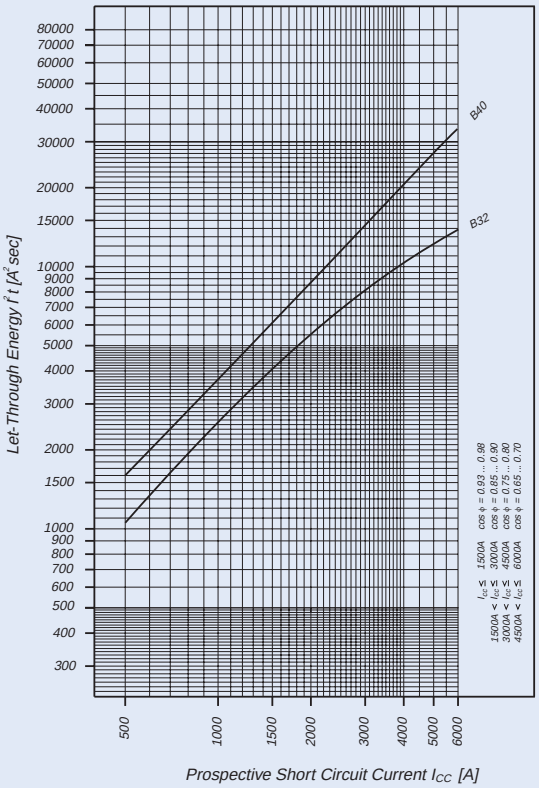
Let-through energy **AFDD+**, characteristic B, 2-pole, 10-20 A



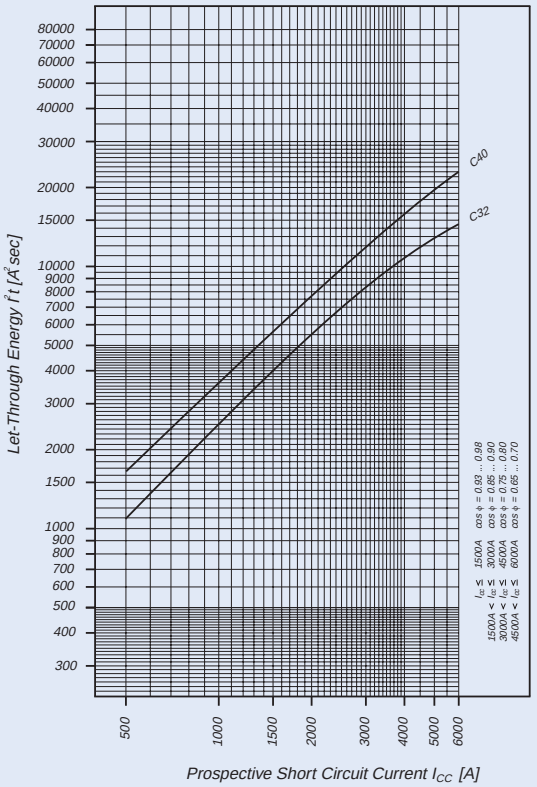
Let-through energy **AFDD+**, characteristic C, 2-pole, 10-20 A



Let-through energy **AFDD+**, characteristic B, 2-pole, 32-40 A



Let-through energy **AFDD+**, characteristic C, 2-pole, 32-40 A



sg06416

Electric Fire Protective Device, Arc Fault Protection AFDD+

10 kA, 2-pole

Short-time delayed, pulsed-current-sensitive, Type A

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
10/0.01	AFDD-10/2/B/001-Li/A	187166	1/40
13/0.01	AFDD-13/2/B/001-Li/A	187178	1/40
15OL/0.01	AFDD-15/2/B/001-Li/A-OL*	187190	1/40
16/0.01	AFDD-16/2/B/001-Li/A	187202	1/40
10/0.03	AFDD-10/2/B/003-Li/A	187169	1/40
13/0.03	AFDD-13/2/B/003-Li/A	187181	1/40
15OL/0.03	AFDD-15/2/B/003-Li/A-OL*	187193	1/40
16/0.03	AFDD-16/2/B/003-Li/A	187205	1/40
20OL/0.03	AFDD-20/2/B/003-Li/A-OL*	187214	1/40
20/0.03	AFDD-20/2/B/003-Li/A	187220	1/40
25/0.03	AFDD-25/2/B/003-Li/A	187226	1/40
Characteristic C			
10/0.01	AFDD-10/2/C/001-Li/A	187172	1/40
13/0.01	AFDD-13/2/C/001-Li/A	187184	1/40
15OL/0.01	AFDD-15/2/C/001-Li/A-OL*	187196	1/40
16/0.01	AFDD-16/2/C/001-Li/A	187208	1/40
10/0.03	AFDD-10/2/C/003-Li/A	187175	1/40
13/0.03	AFDD-13/2/C/003-Li/A	187187	1/40
15OL/0.03	AFDD-15/2/C/003-Li/A-OL*	187199	1/40
16/0.03	AFDD-16/2/C/003-Li/A	187211	1/40
20OL/0.03	AFDD-20/2/C/003-Li/A-OL*	187217	1/40
20/0.03	AFDD-20/2/C/003-Li/A	187223	1/40
25/0.03	AFDD-25/2/C/003-Li/A	187229	1/40

Electric Fire Protective Device, Arc Fault Protection AFDD+

6 kA, 2-pole

Short-time delayed, pulsed-current-sensitive, Type A

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
32/0.03	AFDD-32/2/B/003-Li/A	187232	1/40
40/0.03	AFDD-40/2/B/003-Li/A	187238	1/40
Characteristic C			
32/0.03	AFDD-32/2/C/003-Li/A	187235	1/40
40/0.03	AFDD-40/2/C/003-Li/A	187241	1/40

* Only applicable for Norway

sg06416

Electric Fire Protective Device, Arc Fault Protection AFDD+

10 kA, 2-pole

Non-delayed, pulsed-current-sensitive, Type A

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
10/0.01	AFDD-10/2/B/001-A	187165	1/40
13/0.01	AFDD-13/2/B/001-A	187177	1/40
15OL/0.01	AFDD-15/2/B/001-A-OL*	187189	1/40
16/0.01	AFDD-16/2/B/001-A	187201	1/40
10/0.03	AFDD-10/2/B/003-A	187168	1/40
13/0.03	AFDD-13/2/B/003-A	187180	1/40
15OL/0.03	AFDD-15/2/B/003-A-OL*	187192	1/40
16/0.03	AFDD-16/2/B/003-A	187204	1/40
20OL/0.03	AFDD-20/2/B/003-A-OL*	187213	1/40
20/0.03	AFDD-20/2/B/003-A	187219	1/40
25/0.03	AFDD-25/2/B/003-A	187225	1/40
Characteristic C			
10/0.01	AFDD-10/2/C/001-A	187171	1/40
13/0.01	AFDD-13/2/C/001-A	187183	1/40
15OL/0.01	AFDD-15/2/C/001-A-OL*	187195	1/40
16/0.01	AFDD-16/2/C/001-A	187207	1/40
10/0.03	AFDD-10/2/C/003-A	187174	1/40
13/0.03	AFDD-13/2/C/003-A	187186	1/40
15OL/0.03	AFDD-15/2/C/003-A-OL*	187198	1/40
16/0.03	AFDD-16/2/C/003-A	187210	1/40
20OL/0.03	AFDD-20/2/C/003-A-OL*	187216	1/40
20/0.03	AFDD-20/2/C/003-A	187222	1/40
25/0.03	AFDD-25/2/C/003-A	187228	1/40

Electric Fire Protective Device, Arc Fault Protection AFDD+

6 kA, 2-pole

Non-delayed, pulsed-current-sensitive, Type A

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
32/0.03	AFDD-32/2/B/003-A	187231	1/40
40/0.03	AFDD-40/2/B/003-A	187237	1/40
Characteristic C			
32/0.03	AFDD-32/2/C/003-A	187234	1/40
40/0.03	AFDD-40/2/C/003-A	187240	1/40

* Only applicable for Norway

sg06416

Electric Fire Protective Device, Arc Fault Protection AFDD+

10 kA, 2-pole

Non-delayed, alternating-current-sensitive, Type AC**

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
10/0.01	AFDD-10/2/B/001	187164	1/40
13/0.01	AFDD-13/2/B/001	187176	1/40
15OL/0.01	AFDD-15/2/B/001-OL*	187188	1/40
16/0.01	AFDD-16/2/B/001	187200	1/40
10/0.03	AFDD-10/2/B/003	187167	1/40
13/0.03	AFDD-13/2/B/003	187179	1/40
15OL/0.03	AFDD-15/2/B/003-OL*	187191	1/40
16/0.03	AFDD-16/2/B/003	187203	1/40
20OL/0.03	AFDD-20/2/B/003-OL*	187212	1/40
20/0.03	AFDD-20/2/B/003	187218	1/40
25/0.03	AFDD-25/2/B/003	187224	1/40
Characteristic C			
10/0.01	AFDD-10/2/C/001	187170	1/40
13/0.01	AFDD-13/2/C/001	187182	1/40
15OL/0.01	AFDD-15/2/C/001-OL*	187194	1/40
16/0.01	AFDD-16/2/C/001	187206	1/40
10/0.03	AFDD-10/2/C/003	187173	1/40
13/0.03	AFDD-13/2/C/003	187185	1/40
15OL/0.03	AFDD-15/2/C/003-OL*	187197	1/40
16/0.03	AFDD-16/2/C/003	187209	1/40
20OL/0.03	AFDD-20/2/C/003-OL*	187215	1/40
20/0.03	AFDD-20/2/C/003	187221	1/40
25/0.03	AFDD-25/2/C/003	187227	1/40

Electric Fire Protective Device, Arc Fault Protection AFDD+

6 kA, 2-pole

Non-delayed, alternating-current-sensitive, Type AC

$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
Characteristic B			
32/0.03	AFDD-32/2/B/003	187230	1/40
40/0.03	AFDD-40/2/B/003	187236	1/40
Characteristic C			
32/0.03	AFDD-32/2/C/003	187233	1/40
40/0.03	AFDD-40/2/C/003	187239	1/40

* Only applicable for Norway

** Application of AC type in not allowed in every country, this depends on local wiring regulations. Please check your local standards.

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Publication No. BR003012EN / CSSC-893
February 2018

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