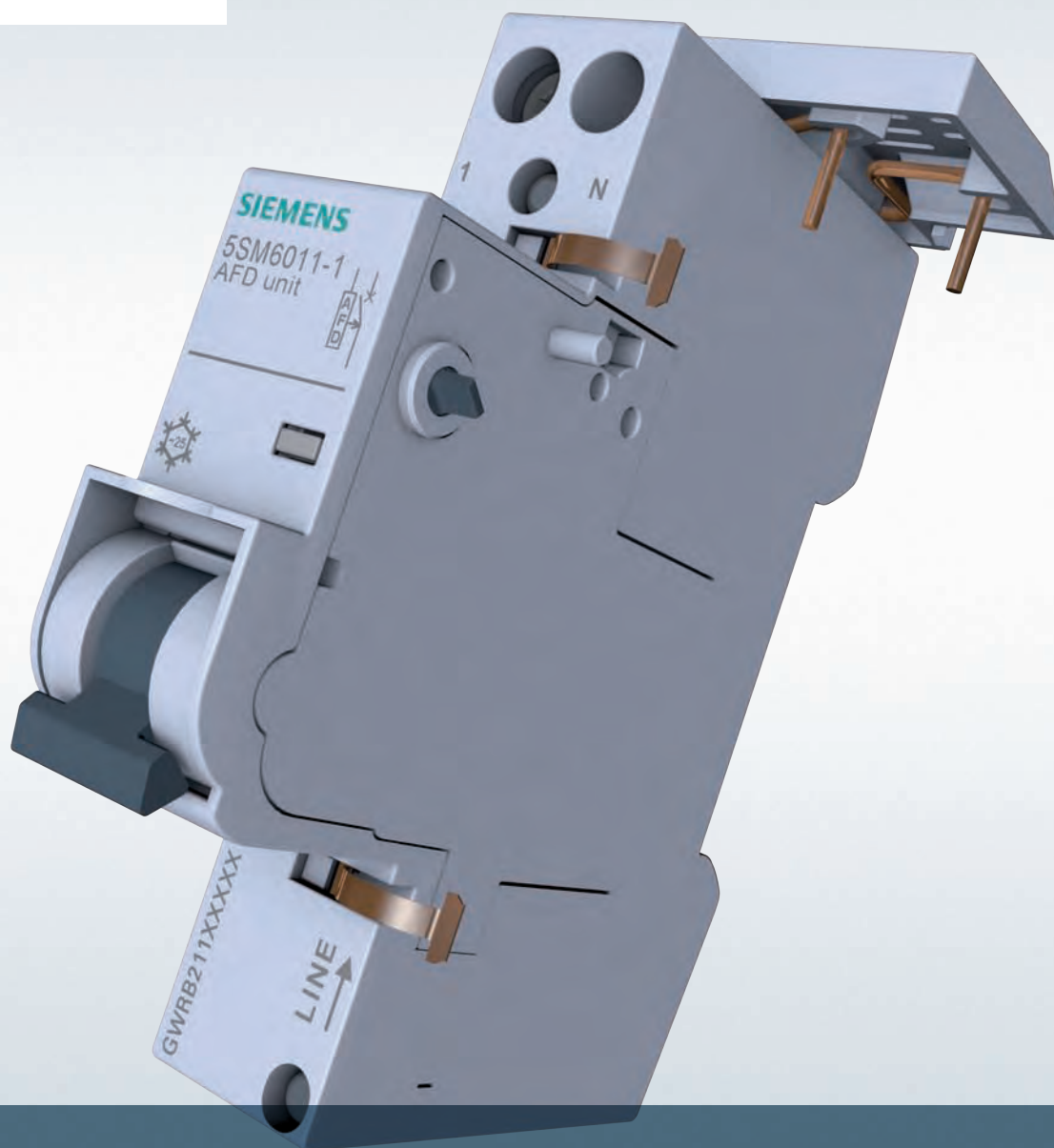


**SIEMENS**



SENTRON

# 5SM6 AFD Units – Advanced Preventative Fire Protection

Comprehensive protection against fires caused by electricity with state-of-the-art technology

Answers for infrastructure and cities.



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## Maximum safety in residential and public buildings

In every building, the electrical installation must be protected against fires caused by electricity. Even a minor electric fault can have serious consequences. With the 5SM6 Arc Fault Detection (AFD) units you will set new standards for reliable protection against fires caused by electricity.



## Early detection of faults in the electrical installation

More than a hundred thousand fires are reported in Europe every year. The figures are shocking: numerous people killed and injured, plus damage to property worth billions. More than a quarter of these fires can be traced back to defects in the electrical installation –

caused for the most part by hazardous arcing faults. Many of these fire hazards, from electric cables to load, can be detected with the 5SM6 AFD units at an early stage, closing the safety gap and protecting human lives, buildings and irreplaceable assets.

# Enhanced safety for people and property

## Hazardous arcing faults as the most frequent cause of fire

Arcing faults are the main cause of damage in electrical installations. They result in particular from insulation faults or from loose contacts in the electrical installation itself and in the equipment connected to it.

## Very high safety thanks to a comprehensive protection concept

AFD units from Siemens offer a maximum of safety, protecting you against potential damage from fires. They unite reliable protection against fires with flexibility in use and combinability with miniature circuit breakers (MCBs) or residual current operated circuit breakers with overcurrent protection (RCBOs) in two different versions. Thanks to additional accessories from the MCB portfolio such as auxiliary switches or fault signal contacts, further functions can also be performed. It is thus possible for example to report the tripping to a central control room.

## Flexible use in all residential and non-residential buildings

The use of AFD units is recommended in residential buildings, public buildings, libraries, museums and premises with a fire risk.

## It pays to use reliable technology and high quality

The 5SM6 AFD units are based on technology in UL-standard which has been tried and tested over many years. They also distinguish themselves with easy and time-saving installation. Choose the best protection for your buildings and equipment and make use of our experience for your safety. Siemens – your expert partner for advanced preventative protection against fire will be glad to help you!

### Highlights

- Versatile use in residential and non-residential buildings
- Sophisticated protection concept against arcing faults
- High quality thanks to service-proven technology
- Quick and safe installation

Read the QR code with your QR code reader.



With our comprehensive protection concept, highest safety can be accomplished in all buildings.

# Protection against parallel and serial arcing faults

## Highlights

- Closing of the previous safety gap
- Reliable disconnection of the electric circuit when hazardous arcing faults occur
- Protection of people, plants and assets
- Comprehensive preventative protection against fires in new installations as well as in existing plants

## Possible causes of electricity-induced fires and sources of danger

When an abnormal arc occurs in an electrical plant or cable, we talk of an arcing fault. Caused by loose contacts or insulation faults, the arcing fault does not necessarily have serious consequences, but it can ignite a fire and thus have a severe impact on people, plants and buildings.

## Reliably closing the previous safety gap

Electrical installation circuits are usually protected by means of miniature circuit breakers (MCBs) and residual current operated circuit breakers (RCCBs). However, these devices are not designed to detect arcing faults and do not provide adequate protection from them. This is where the 5SM6 AFD units come into their own, closing the previous safety gap.

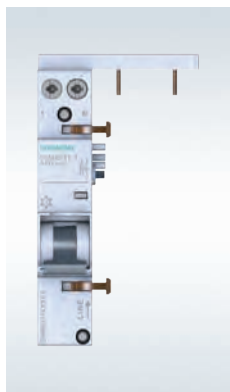
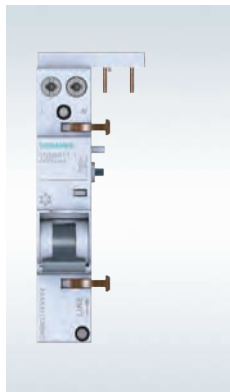
## Reliable identification of operational arcing and hazardous arcing faults

The 5SM6 AFD units distinguish reliably between operational arcing, for example on power drills or vacuum cleaners, and hazardous arcing faults. They only switch-off if a hazardous arcing fault occurs.

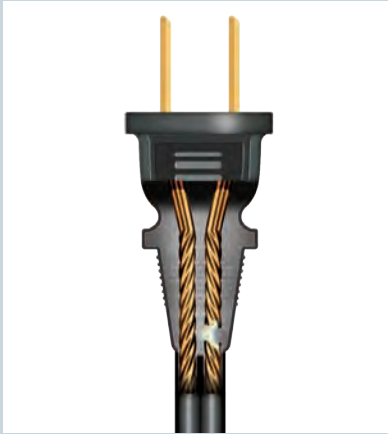


## Comprehensive preventative fire protection for every electrical installation

The 5SM6 AFD units are recommended for new installations as well as for existing and older plants. There is a high risk of hazardous arcing faults particularly in older electrical installations. The reasons for these arcing faults are many and varied, as can be seen on the opposite page.


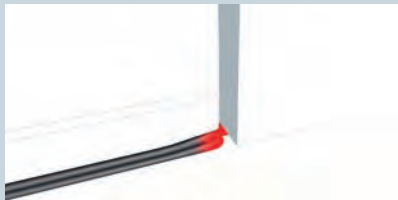




The 5SM6 AFD units are available in two versions. In combination with an MCB (1MW/2MW) or RCBO (2MW), they reliably protect every electrical power distribution system.



## Origins of parallel and serial arcing faults

Serial arcing faults	Parallel arcing faults	
 <p data-bbox="172 824 359 853">Break in a conductor.</p>	 <p data-bbox="603 824 970 880">Contact between a phase and the neutral conductor.</p>	 <p data-bbox="1042 824 1345 880">Contact between a phase and the protective conductor.</p>

## Most frequent causes of arcing faults

Defective wire insulation	Crushed cables	Broken cables
 <p data-bbox="172 1337 547 1417">Defective wire insulation, which has been damaged by nails and screws for example, can result in insulation faults.</p>	 <p data-bbox="603 1337 1002 1444">Cables which are routed through open windows or doors can, when the latter are closed, be crushed in a way that arcing faults occur due to the damaged insulation.</p>	 <p data-bbox="1042 1337 1396 1469">Another source of risk are cables which break because they are bent with too tight a radius during installation. Too tightly fastened clips can damage the wire insulation as well.</p>
UV radiation and rodents	Loose contacts and terminals	Kinks in connectors and cables
 <p data-bbox="172 1845 547 1926">Outdoors, insulation faults are frequently the result of UV radiation from sunlight or damage caused by rodents.</p>	 <p data-bbox="603 1845 991 2031">Hazardous arcing faults can occur in poorly installed switches or socket-outlets and their claw fasteners. Similarly they can be caused by damaged cables and loose contacts downstream of the socket-outlet, e.g. in multiple sockets or in the equipment connected to the outlets.</p>	 <p data-bbox="1042 1845 1422 1953">Arcing faults can also arise when cables or connectors are crushed or jammed when, for example, furniture is moved around without care.</p>

# Optimum protection thanks to 5SM6 AFD units

## Highlights

- Established technology
- Reliable tripping in the event of a fault
- Comprehensive protection concept based on an application-related combination of devices
- Integrated overvoltage protection release for enhanced safety for people and assets

## Current introduction of the service-proven technology on the IEC market

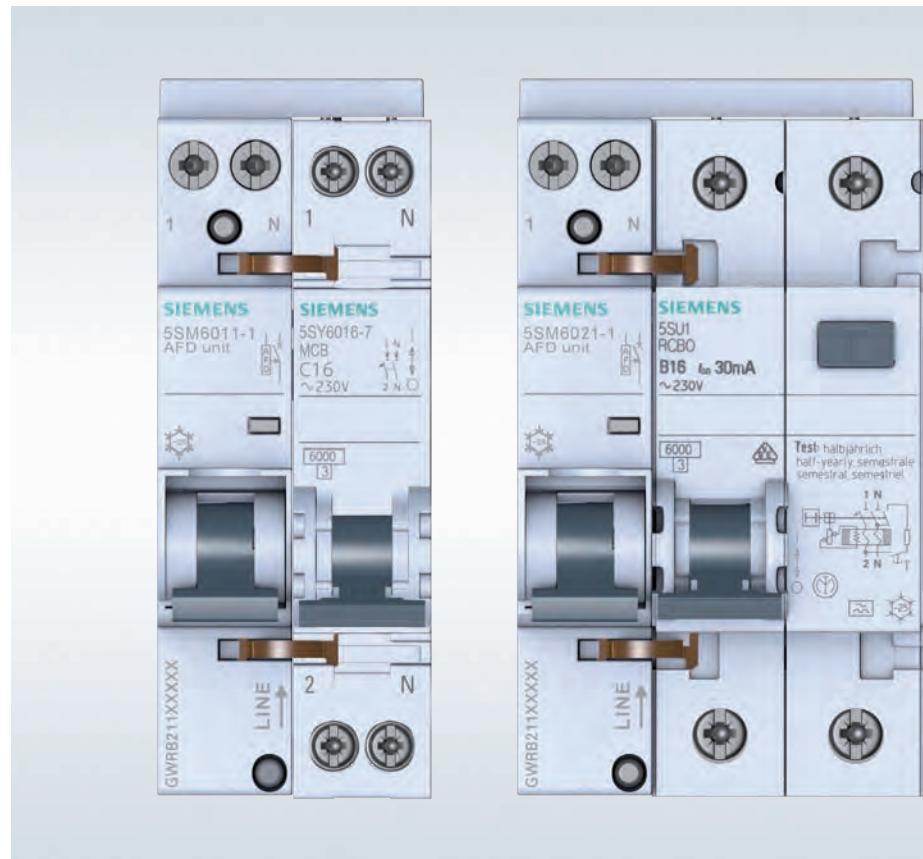
In North America, detectors for arcing faults have long been specified in the standards and are widely used. With its 5SM6 AFD units, Siemens is currently pioneering the introduction of this technology on the IEC market so that customers here can also benefit from comprehensive protection. Extensive laboratory and field tests ensure that sources of operational interference such as power drills, dimmers and vacuum cleaners are reliably distinguished from hazardous arcing faults.

## Advanced preventative protection against fire

The residual current protective devices already in use ensure protection against fire and protection in case of direct and against indirect contact. Miniature circuit breakers offer protection against short

circuits and overload. Advanced preventative protection against fire goes a step further in providing protection against serial and parallel arcing faults. It is achieved by the 5SM6 AFD unit in combination with a 5SY MCB or a 5SU1 RCBO. The combination with the MCB is used together with an upstream RCCB, while the combination with the RCBO is used in all other applications. As a result, all poles of the fused circuit are disconnected from the network in the event of a fault. Its integrated overvoltage protection release, which switches off safely at a voltage of more than 275 V between phase and neutral conductor, completes the scope of protection of the 5SM6 AFD units. Thanks to the combination of the 5SM6 AFD units with an MCB or an RCBO, people and property are reliably protected against possible damage from fire caused by overload, short circuits or arcing faults.

The 5SM6 AFD units are combined with an MCB or RCBO according to the configuration of the electrical installation and offer maximum protection for people as well as for plants and equipment.







With advanced preventative protection against fire, every electrical installation is reliably protected against the hazards of electricity-induced fires.

Closing of the safety gap on the IEC market with proven UL-standard technology		
Type of fault	Protection according to IEC standard	Protection according to UL standard
<b>Serial</b> 		
<b>Parallel Phase-Neutral/ Phase-Phase</b> 		
<b>Parallel Phase-Protective conductor</b> 		
	AFDD Arc fault detection device MCB Miniature circuit breaker RCD Residual current protective device	AFCI Arc fault circuit interruptor MCB Miniature circuit breaker RCD Residual current protective device

# Easy installation of the device combinations

## Highlights

- Easy product selection
- Time-saving installation without tools
- Expanded functionality thanks to comprehensive accessories
- Marginal stock keeping

### Efficient device selection and stock keeping

There are two versions of AFD units which can be used in different combinations with various MCBs (1+N in 1MW or 2MW) or RCBOs with 16 A rated current. Product selection is therefore easier, while the stock levels needed to cover all applications are very low.

### A wide variety of accessories can be combined as required

Whether auxiliary switches or fault signal contacts, the 5SM6 AFD units can be combined as required with many different auxiliary components from the familiar portfolio of 5SY MCBs and 5SU1 RCBOs. This makes it possible to connect to a higher-level management system, for example.

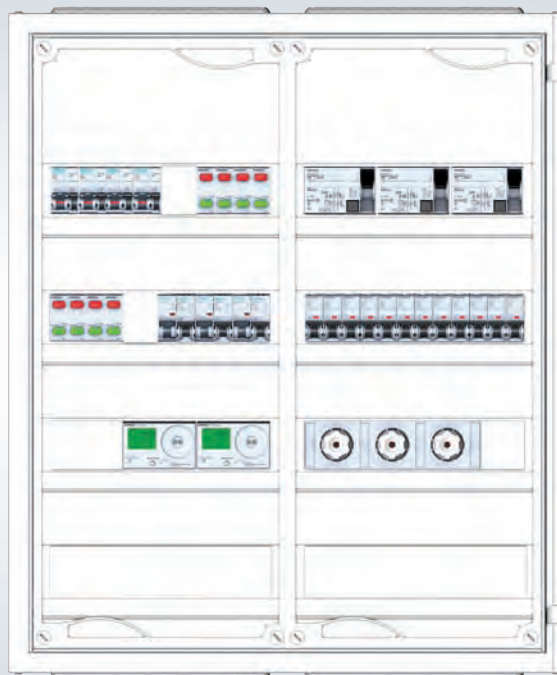
### Easy and time-saving installation through direct plug-on mounting

The 5SM6 AFD units can be installed easily and quickly. The MCBs or RCBOs are attached quickly without tools and are easily mounted on the standard mounting rail. For a quick and safe power supply, the infeed can be directed via a busbar assembly.

### Top technical standards for protection against fire

With the 5SM6 AFD units you can count on top quality and reliability. Embedded in an application-specific concept, they ensure unique protection in all residential and non-residential buildings. As a globally present systems manufacturer with a broad, innovative range of products and accessories, we are your preferred partner for professional preventative protection against fire.

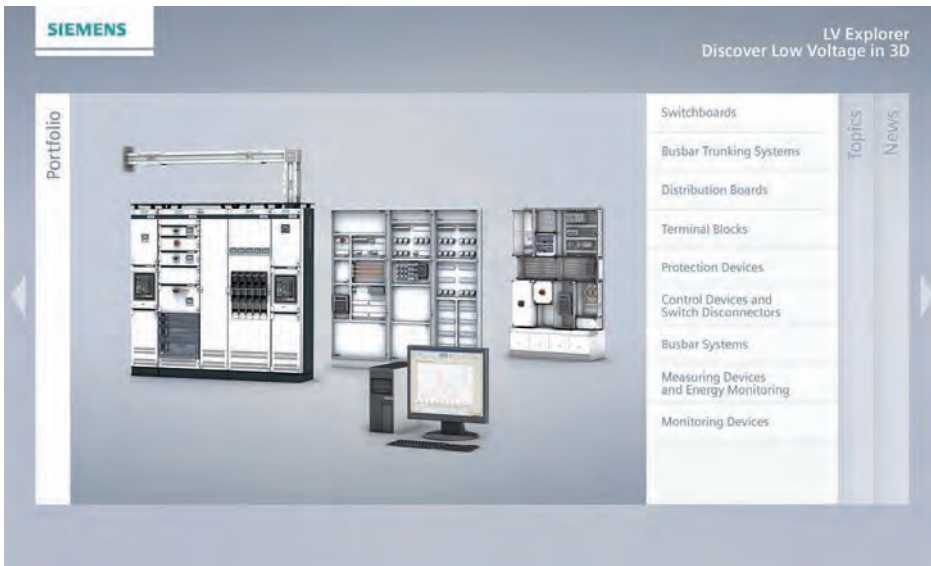
The 5SM6 AFD units can be integrated in any distribution board – whether in an existing plant or a new installation.



The LED of the 5SM6 AFD units displays the operating state and the reason for a switch-off. Its state-of-the-art self-testing function checks the functional state of the device continuously and switches off if a fault is detected.

# Any questions? One click – well-informed

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