The 5SM6 AFD unit – order now!

<table>
<thead>
<tr>
<th>5SM6011-1 AFD unit (16 A)</th>
<th>miniature circuit breaker 1+N, 6 kA, 1 MW (16 A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Characteristic B</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 10 A</td>
<td>5SY6010-6</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 13 A</td>
<td>5SY6013-6</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 16 A</td>
<td>5SY6016-6</td>
</tr>
</tbody>
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<tr>
<th>5SM6014-2 AFD unit (40 A)</th>
<th>miniature circuit breaker 1+N, 6 kA, 1 TE</th>
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<tr>
<td>Type</td>
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</tr>
<tr>
<td>MCB 1+N, 1 MW 20 A</td>
<td>5SY6020-6</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 25 A</td>
<td>5SY6025-6</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 32 A</td>
<td>5SY6032-6</td>
</tr>
<tr>
<td>MCB 1+N, 1 MW 40 A</td>
<td>5SY6040-6</td>
</tr>
</tbody>
</table>

Compatible busbars (10 mm², cutable):
- Busbar, single-phase, gray (56 MW, 962 mm) 5ST37651
- Busbar, single-phase, blue (56 MW, 962 mm) 5ST37641
- Busbar, 3-phase, gray (58 MW, 1,032 mm) 5ST37501

<table>
<thead>
<tr>
<th>Power supply terminals</th>
</tr>
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<tbody>
<tr>
<td>Power supply terminal 25 mm²</td>
</tr>
<tr>
<td>Power supply terminal 50 mm² long</td>
</tr>
</tbody>
</table>

Matching end caps
- For busbar, single-phase, gray 5ST3766
- For busbar, single-phase, blue 5ST3767
- For busbar, 3-phase, gray 5ST3750

<table>
<thead>
<tr>
<th>5SM6021-1 AFD unit (16 A)</th>
<th>RCBO type A, 6 kA, 30 mA, 2 MW</th>
</tr>
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<tr>
<td>Type</td>
<td>Characteristic B</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 10 A</td>
<td>5SU1356-6KK10</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 13 A</td>
<td>5SU1356-6KK13</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 16 A</td>
<td>5SU1356-6KK16</td>
</tr>
</tbody>
</table>

Compatible busbars (10 mm², cutable):
- Busbar, 2/3-phase, gray (56 MW, 996 mm) 5ST37351
- Busbar, 4-phase, gray (52 MW, 926 mm) 5ST3718

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<tr>
<td>For busbar, 4-phase, gray 5ST3718</td>
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<tr>
<th>5SM6024-2 AFD unit (40 A)</th>
<th>RCBO type A, 6 kA, 30 mA, 2 MW</th>
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<tr>
<td>Type</td>
<td>Characteristic B</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 20 A</td>
<td>5SU1356-6KK20</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 25 A</td>
<td>5SU1356-6KK25</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 32 A</td>
<td>5SU1356-6KK32</td>
</tr>
<tr>
<td>RCBO 1+N, 2 MW 40 A</td>
<td>5SU1356-6KK40</td>
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Compatible busbars (10 mm², cutable):
- Busbar, 2/3-phase, gray (56 MW, 996 mm) 5ST37351
- Busbar, 4-phase, gray (52 MW, 926 mm) 5ST3718

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* Characteristic C is needed for higher starting currents, e.g. for fluorescent lighting in industrial buildings.

Continued: Continuous protection

Electrical fires cost many human lives and major financial losses every year. That’s why it is an urgent need to ensure appropriate protection for electrical installations in buildings. The ideal technical solution for all hazard sources has a name: SENTRON. This consistent portfolio contains all the products necessary to provide reliable protection for people and systems.

An essential component is the 5SM6 arc-fault detection (AFD) unit, which has been available since 2012 and is the only proven technology to protect against fires caused by dangerous serial arcing faults. The new standard IEC 60364-4-42 strongly recommends the installation of AFD units in specific locations of use as the recognized state-of-the-art technology – and with Siemens, the AFD unit is already available for reliable use.
End-to-end protection concept
The Siemens AFD unit offers preventive protection against electrical fires. The protection devices can be flexibly used and are available in two versions, for combined use with miniature circuit breakers (MCBs) or with residual current operated circuit breakers (RCBOs). With the extensive range of accessories, numerous additional functions can be realized quickly and easily.

The AFD unit is part of a consistent, mutually coordinated product portfolio offering comprehensive safety in electrical installations.

State-of-the-art protection
According to the international standard IEC 60364-4-42, AFD units are strongly recommended throughout Europe as the recognized state-of-the-art technology in specific locations of use.

Proven technology
The AFD unit is the first device in the European IEC market to provide protection against serial arcing faults, and has proven itself in many practical applications since it was first introduced.

The 5SM6 AFD unit is available in a new design and in two versions for circuits up to 16 A and 40 A. The patented SIARC detection methodology offers a particularly high level of reliability.

siemens.com/afd-units
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Playing it safe
Highlights
• Preventive fire protection for humans, assets, and plants
• A smart protection concept for modern electrical installations
• Recommended installation of AFD units by IEC 60364-4-42
• Patented SIARC technology from Siemens

Electricity as a cause of fire
Even the slightest faults in electrical installations can have serious consequences. Faulty power cables pose a particular risk. Mechanical stresses or damaged insulations cause dangerous arcing faults, which can lead to fires. About one-third of all building fires are caused by electricity, and approximately 30 percent of these fires can be traced back to defects in the electrical installation itself. The 5SM6 AFD unit prevents electrical fires by identifying faults and safely disconnecting the circuit before the wires overheat.

Electric shock
Function failure
Fire
Electric destruction
Infrastructure
Buildings
Industry

* Consumer fire safety (2009): European statistics and potential fire safety measures

SSM6 AFD unit in combination with S5Y60 MCB.

approx. 25,000
people die in Europe every year due to fires*

about 30% of all fires are caused by electricity*

more than 2 million fires are reported in Europe per year*

2 million of all fires are caused by electricity*

about 30%
people die in Europe every year due to fires*

Electricity as a cause of fire

* Consumer fire safety (2009): European statistics and potential fire safety measures
If an arc occurs in an electrical system or cable as the result of a fault, this is known as an arcing fault. The great heat involved can trigger a fire and have serious impact for people, plants and buildings.

Closing the safety gap

Electrical installation circuits are usually safeguarded by miniature circuit breakers (MCBs) and residual current operated circuit breakers (RCCBs). These are not designed, however, to detect and safely disconnect serial arcing faults and do not offer adequate protection in such cases. This is where the 5SM6 AFD unit comes into play, closing the previous safety gap.

Clearly identifying hazardous arcing faults

Based on the SIARC detection methodology developed and patented by Siemens to record parallel and serial arcing faults, AFD units detect arcing faults by continuously measuring the high-frequency noise of voltage and current for their intensity, duration, and the gaps between them. The signals are analyzed by integrated filters with intelligent software. If anything unusual is detected, the protection device disconnects the circuit in fractions of a second. SIARC reliably distinguishes harmless causes of faults, such as those generated by drills or vacuum cleaners, from dangerous arcs.

Recommended installation of AFD units in locations such as barns, daycare centers, laboratories, and storage areas with flammable materials.

Identifying hazards

<table>
<thead>
<tr>
<th>Highlights</th>
<th>Commonest causes of arcing faults</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reliable disconnection of the circuit if hazardous arcing faults occur</td>
<td>Damaged wire insulation, caused by nails or screws, for example, can lead to insulation faults.</td>
</tr>
<tr>
<td>• Recognition of harmless working arcs that do not require disconnection</td>
<td>UV radiation and rodent damage</td>
</tr>
<tr>
<td>• Recommendations for installation</td>
<td>Loose contacts and connectors</td>
</tr>
<tr>
<td>• Identification of hazards</td>
<td>Bent connectors and cables</td>
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Recommended installation of AFD units in locations such as barns, daycare centers, laboratories, and storage areas with flammable materials.
Recommended installation of AFD units

Devices to provide protection against serial arcing faults have been a requirement for many years in North America. Siemens was the first manufacturer to introduce this technology to the IEC market in 2012 with its 5SM6 AFD unit.

According to the international standard IEC 60364-4-42, AFD units are strongly recommended all over Europe as the recognized state-of-the-art technology in specific locations of use. With the publishing of the standard DIN VDE 0100-420 the installation of AFD units has become mandatory in Germany for many locations.

Advanced preventative protection against fire

RCDs ensure protection against direct and indirect contact in cases of residual currents to ground, or the protection conductor or the occurrence of parallel arcing faults. MCBs provide protection against short-circuits and overloads.

Advanced preventative protection against fire goes a step further in providing protection against serial and parallel arcing faults. This is now achieved by the 5SM6 AFD unit in combination with 5SY MCB or 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. In the event of a fault, the protected circuit is completely disconnected from the mains supply.

The scope of protection offered by the 5SM6 AFD unit is rounded out by an integrated overvoltage release that disconnects when the voltage between phase conductor and neutral conductor exceeds 275 V. Thanks to the combination of the 5SM6 AFD units with MCBs or RCBOs, people and property are reliably protected against possible damage from fires caused by overloads, short-circuits, or arcing faults.

AFD units are to be installed in single-phase AC systems with an operating current no higher than 16 A.
Unanswered questions?
One click and you’re well-informed

Efficient device selection
Two versions of AFD units are available, which can be used with different MCBs (1+N in 1 MW or 2 MW) or RCBOs for rated currents of up to 16 A and up to 40 A. These options give you the opportunity to create many different combinations directly on site to suit your applications, with no need to maintain a large stock of base devices.

Wide range of accessories
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 also enables connection to a higher-level management system.

Easy and time-saving mounting
The 5SM6 AFD units can be connected without difficulty. The MCBs or RCBOs can be mounted quickly and simply by just snapping them onto the mounting rail without the need for tools. For a fast and reliable power supply, the infeed can be implemented via a busbar assembly.

Maximum technical performance
The 5SM6 AFD unit stands out on account of its high level of reliability. Embedded in an application-specific concept, it ensures unique protection in locations such as public buildings, daycare centers, or retirement homes.

Easy product selection
Time-saving mounting – no tools required
Comprehensive accessories provide expanded functionality

Wide range of accessories
Available in a standardized design for RCCBs, MCBs, and RCBOs.

Recommended installation according to
IEC 60364-4-42
- Facilities with deeping accommodations
- Locations with fire-propagating structures, such as high-rises, where a chimney effect can occur
- Branch circuits with a high connected load that supply electrical consumers, e.g. washing machines or dishwashers
- Woodworking industry, paper and textile factories
- Storage areas with flammable materials
- Wooden houses and barns
- Airports
- Railway stations
- National monuments, museums
- Daycare centers*
- Retirement homes*
- Barrier-free apartments*
- Public buildings**
- Laboratories
- Data centers
* To be provided in bedrooms and living spaces
** With irreplaceable goods

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siemens.com/protection-concept

It is time to act!
AFD units are strongly recommended in Europe according to the international standard IEC 60364-4-42 for reliable protection against fires in specific locations of use. In Germany the installation of AFD units has even become mandatory in many locations with the publishing of the standard DIN VDE 0100-420 in February 2016.

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- Technical support
- Support request
- SITRAIN Portal
- Siemens Power Academy
- BF Academy

We support you from the planning stages to commissioning to operation.
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