

3AV1 blue circuit-breakers

Your solution for a CO₂-neutral footprint

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Vacuum technology – the next generation of high-voltage circuit-breakers

The outstanding technical performance and low lifecycle cost of vacuum circuit-breakers make this solution the preferred technology in power networks up to 52 kV. Based on 40 years of experience producing medium-voltage vacuum interrupters and more than 5.5 million delivered units, Siemens has introduced this proven technology to high-voltage power networks at 72.5 kV. The new member of our circuit-breaker family meets the same high quality standards as our SF₆ portfolio:

- Reliable making and breaking capabilities
- Excellent interrupting performance at rated nominal current and rated short-circuit current throughout the lifespan of the breaker
- High-performance and maintenance-free operating mechanism (class M2)
- Highest availability and length of operation

Siemens circuit-breakers are designed using a well-proven modular platform concept. The operating mechanism, control system, base frame, kinematic chain, and insulator designs are based on decades of manufacturing and operating experience.

This successful concept has been implemented in our new generation of high-voltage circuit-breakers with vacuum technology, which is now being extended to 145 kV level.

These circuit-breakers are the right choice for future projects and a wide range of applications.

Field experience

Prototypes of the new Siemens high-voltage vacuum circuit-breakers have already been installed in European power networks. A number of utilities are operating the 3AV1 prototypes in their systems and are sharing operating and field experience with us. In fact, several thousand switching operations have already been performed successfully in the field.

Siemens ensures the highest quality standards and offers customers the highest degree of security for their energy supplies.

All Siemens circuit-breakers are tested in accordance with IEC 62271-100: for example, a complete type test of the latest IEC version is available for the 72.5 kV live tank vacuum circuit-breaker.



Vacuum interrupters for 72.5 kV and 145 kV

Rated voltage	kV	72.5	145*
Number of interrupter units per pole		1	1
Rated normal current, up to	A	2,500	3,150
Rated short-time withstand current, up to	kA	31.5	40
Rated short-circuit breaking current, up to	kA	31.5	40
Rated frequency	Hz	50	50/60
Rated power-frequency withstand voltage	kV	140	275
Rated lightning impulse withstand voltage	kV	325	650
Rated duration of short-circuit	s	3	3
Rated peak withstand current (2.7 p.u.)	kA	85	108
First-pole-to-clear factor	p.u.	1.5/1.3	1.5/1.3
Capacitive voltage factor	p.u.	1.4	1.4
Temperature range	°C	-30 up to +55	-60 up to +55
Maintenance after		25 years	25 years
Insulating medium		Clean air	Clean air

All values in accordance with IEC; other values on request

*prototype

Efficiency

- Maintenance-free for 25 years
- Service-free even with frequent breaking operations
- Minimized effort for gas handling

Performance

- High number of short-circuit interruptions
- Two-cycle current interruption

Sustainability

- Vacuum interruption
- CO₂-neutral insulation gas
- Beneficial CO₂ footprint

Reliability

- 40 years of experience in vacuum switching technology
- Perfect for low-temperature applications



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