



# 3AV1 Blue Circuit Breaker™

Your clean air live tank circuit breaker with  
zero F-gases and zero global warming potential

[siemens-energy.com/blue-products](https://www.siemens-energy.com/blue-products)

**SIEMENS**  
ENERGY

## Vacuum technology – Sustainable high-voltage circuit breakers

The outstanding technical performance and low lifecycle cost of vacuum circuit breakers make this solution the preferred technology in medium-voltage 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 Energy has introduced this proven technology to high-voltage power networks up to 145 kV.

The new member of our circuit breaker family meets the same high-quality standards as our SF<sub>6</sub> portfolio:

- Reliable making and breaking capabilities
- High-performance and maintenance-free operating mechanism (class M2)
- Highest availability and lowest maintenance efforts

Moreover, it has a number of features superior to SF<sub>6</sub> circuit-breakers. These include 30 full short-circuit current interruptions, 10,000 rated current interruptions, optional 2-cycle current interruption, full performance down to –60°C ambient temperature, and maintenance-free interrupter unit during its lifetime.

Siemens Energy 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 the 145 kV level.

This circuit breaker is the right choice for future projects and a wide range of applications.



Siemens Energy Blue products go beyond the common standards

### Zero greenhouse gases

- Greenhouse- and F-gas free insulation
- No CO<sub>2</sub>e emissions

### Zero global warming potential (GWP)

- No F-gas regulated – reporting, training, frequent density checks
- Minimized effort for gas handling during operation and end of life (no gas recycling)

### Zero impact on environment, health & safety (EHS)

- No toxic insulation gas, no toxic decomposition products
- No special safety measures required

### Full performance & reliability

- High number of short-circuit and rated current interruptions
- Two-cycle current interruption
- More than 10 years of experience in high-voltage vacuum switching applications
- Perfect for lowest temperature applications

**LET'S MAKE TOMORROW DIFFERENT TODAY!**

## Operational experience

Siemens Energy has had prototypes of the high-voltage vacuum circuit breakers operating in a number of European utilities since 2010. In fact, several thousand switching operations have already been performed successfully in the field.

The 3AV1 vacuum circuit breaker has been in series production and in operation since 2017 with more than 150 units delivered worldwide.

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

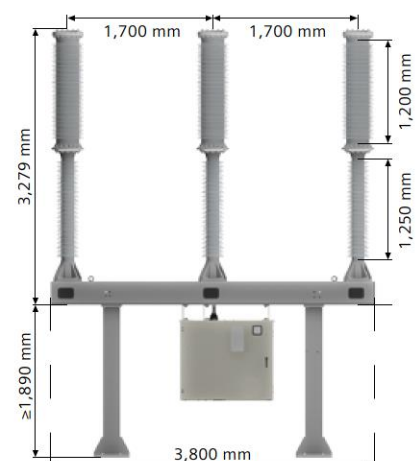
The 3AV1 circuit breakers are tested in accordance with IEC 62271-100, -110, -310.

All Blue products - circuit Breakers, GIS and instrument transformers - are based on the identical interrupting and insulation technology for easy operation and service.

Rated voltage	3AV1 Blue 145 kV*	vs. SF <sub>6</sub> breaker 145 kV
No. of operations at rated short-circuit breaking current (40 kA)	30	10 - 12
No. of interrupter units per pole	1	1
No. of operations at rated normal current (3,150 A)	10,000	6,000
Rated break time	3 cycles and 2 cycles	3 cycles
Rated normal current, up to	3,150 A	3,150 A
Rated short-time withstand current, up to	40 kA	40 kA
Rated short-circuit breaking current, up to	40 kA	40 kA
Rated frequency	50/60 Hz	50/60 Hz
Rated power-frequency withstand voltage	275 kV	275 kV
Rated lightning impulse withstand voltage	650 kV	650 kV
Rated duration of short-circuit	3 s	3 s
Rated peak withstand current (2.7 p.u.)	108 kA	108 kA
First-pole-to-clear factor	1.5 / 1.3 p.u.	1.5 / 1.3 p.u.
Capacitive voltage factor	1.4 p.u.	1.4 p.u.
Temperature range	-60 up to +55 °C	-30 up to +55 °C
Maintenance schedule	12 years: visual inspection and checks; up to 10,000 operations at 3,150 A	12 years: visual inspection and checks; 25 years: maintenance; up to 6,000 operations at 3,150 A
Insulating medium	clean air	SF <sub>6</sub>
Mass of fluorinated greenhouse gases / mass of CO <sub>2</sub> equivalent	0 kg / 0 t	6.4 kg / 150 t

All values in accordance with IEC; other values on request

\*on request as 145 kV 60 Hz circuit switcher in acc. with IEEE/ANSI



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