Grid Solutions

F35-63 kA

SF_6 Gas-Insulated Substations
145 kV, 63 kA, 4000 A, 60 Hz

With Grid Solutions, a GE Vernova business, you benefit from more than six decades of experience in the design, material selection, development, engineering, manufacturing, and servicing of gas-insulated substations (GIS).

Our F35 GIS meets the challenges of 145 kV networks with a 63 kA short-circuit current and a 4000 A rated current. It is fully qualified according to IEEE standards. It covers all applications: transmission, distribution, infrastructure, and industrial applications and even offshore power generation.

Designed and Tested for American Grids

- Fully IEEE compliant.
- High modularity enables complex layouts in a compact arrangement.
- Single-pole operated circuit breaker available.

High Availability, Reliability, and Operational Safety

- Extensive experience with more than 14,000 F35 bays installed in more than 100 countries.
- Proven pure-spring circuit breaker drives, whose reliability has been recognized by CIGRE experts.
- Innovative gas sealing system enabling very low leakage rates. Tightness improved by more than four times in comparison to the previous generation.
- The current transformer cores are located outside the gas compartment, offering protection against contact with arced gas from the circuit breaker.
- Easily accessible drives and customer interfaces standardized along the product range.

Low Cost of Land and Civil Works

- The most compact 63 kA GIS bay with a width of only 37.8 in/960 mm.

Shortest Site Work

- Bays are completely factory-assembled, wired, and tested before shipment.
- Simple on-site testing thanks to a disconnecting device for the voltage transformers and the surge arresters.
- Voltage transformers with testing functionality are an option.

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Customer Benefits

- Maximum safety
- Compact, modular, and accessible
- Field-proven reliability
- First-class availability
- Compliant with American standards
- Low total cost of ownership
- Smart grid-ready

Digital Native GIS

- Mechanically engineered to reach the accuracy required by advanced monitoring and control solutions
- Digital power sensing using low power instrument transformers

Specifications

GENERAL RATINGS	
Reference electrotechnical standards	IEC/IEEE
Rated voltage	145 kV
Insulating and switching gas	
Withstand voltages	
- Short-duration power-frequency, phase-to-earth / across isolating distance	325 / 375 kV
- Lightning impulse, phase-to-earth / across isolating distance	650 / 750 kVp
Frequency	60 Hz
Continuous current	Up to 4000 A
Short time withstand current and duration	63 kA / 3s
Peak withstand current	170 kAp
Vibrations withstand	IEEE-normalized seismic test at 1.0 g
Installation	Indoor/outdoor
Minimum ambient temperature	-22°F (-30°C)

CIRCUIT BREAKER RATINGS	
First-pole-to-clear factor	1.5 / 1.3
Short-circuit breaking current	63 kA
Short-circuit making current	170 kAp
Operating sequence	O-0.3s-CO-3 min-CO / CO-15s-CO
Drive type (three-phase)	Pure spring
Mechanical endurance	Class M2
Capacitive current switching	Class C2

DISCONNECTOR AND LOW-SPEED EARTHING SWITCH RATINGS	
Capacitive current switching	0.1 A
Bus-transfer current switching capability	1600 A / 10 V
Mechanical endurance	Class M2

MAKE-PROOF EARTHING SWITCH RATINGS	
Making current capability	170 kAp, Class E1
Switching capability - electromagnetic coupling	80 A / 2 kV
Switching capability - electrostatic coupling	2 A / 6 kV
Mechanical endurance	Class M1

Other data available upon request

Gas Data

The functioning of this equipment relies on SF_6, a fluorinated greenhouse gas.

	SF_6
Average mass of gas/mixture in the equipment (kg)*	124
GWP100 of gas/mixture ($C0_2$-equivalent)	24,300
$C0_2$-eq of gas/mixture in the equipment ($t_{co2\text{-}eq}$) *	3,013

**For information purposes only. It varies depending on the GIS configuration considered.*

For more information, visit
gevernova.com/grid-solutions

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