

Medium-Voltage Switchgear

Product information for five ABB medium-voltage switchgear products

This sheet covers three air-insulated primary switchgear lines and two gas-insulated secondary distribution lines.

UniGear ZS1, **ZS2** and **ZS3.2** are metal-clad, withdrawable panels for 24, 36 and 40.5 kV systems. **SafeRing** is a compact ring main unit and **SafePlus** a modular gas-insulated switchgear, both with sealed SF6 tanks.

At a glance

Product	Insulation	Rated voltage	Rated current	Short-circuit rating
UniGear ZS1	Air	Up to 24 kV	Up to 4,000 A*	Up to 50 kA (63 kA single busbar)*
UniGear ZS2	Air	Up to 36 kV	2,500 to 3,150 A**	31.5 kA, 3 s
UniGear ZS3.2	Air	Up to 40.5 kV; 48 kV on request	Up to 3,150 A	31.5 kA, 4 s (40 kA on request)***
SafeRing	SF6 gas	12 to 24 kV; 36 / 40.5 kV version	630 A (switch-fuse up to 200 A)	16 to 25 kA (20 kA at 36 kV)
SafePlus	SF6 gas	12 to 24 kV; 36 / 40.5 kV version	630 A; breaker modules 630 or 1,250 A	16 to 25 kA (20 kA at 36 kV)

Common features

- Metal-enclosed switchgear designed to IEC 62271-200, with internal arc tested versions
- UniGear: air-insulated, withdrawable vacuum or SF6 circuit-breakers, front access and segregated compartments
- SafeRing and SafePlus: sealed stainless-steel SF6 tanks, IP67, with a common operating interface
- UniGear suits primary distribution and industrial substations; SafeRing and SafePlus suit secondary distribution and ring networks

Product profiles

ABB UniGear ZS1

Air-insulated medium-voltage switchgear, up to 24 kV

ABB's air-insulated, arc-resistant, metal-clad switchgear for primary distribution. It is built as withdrawable panels with three segregated compartments (breaker, busbar and cable) and front access.

- Voltage classes of 7.2, 12, 17.5 and 24 kV; panel widths of 500, 650, 800 and 1,000 mm
- Single busbar, double busbar (back-to-back) and double-level arrangements
- Internal arc classification IAC A-FLR; loss of service continuity LSC2B, partition class PM
- Vacuum (VD4) and SF6 (HD4) circuit-breakers, V-Contact vacuum contactors and switch-disconnectors
- Complies with IEC 62271-200; also certified to CSA, GB/DL and GOST variants

ABB UniGear ZS2

Air-insulated medium-voltage switchgear, up to 36 kV

The 36 kV member of the UniGear family, for primary distribution at higher voltage with the same front-access, three-compartment design as the ZS1.

- Rated voltage 36 kV; power-frequency withstand 70 kV, lightning impulse 170 kV
- Short-time withstand 31.5 kA, peak 80 kA; internal arc 31.5 kA for 1 s (IAC AF-LR, LSC2B)
- Panel width 1,000 or 1,200 mm; height 2,310 mm (2,662 mm with arc gas duct)
- Vacuum (VD4) or SF6 (HD4) circuit-breakers
- Integrated REF542plus protection and control unit; optional optical arc detection (TVOC)

ABB UniGear ZS3.2

Air-insulated medium-voltage switchgear, 40.5 kV (48 kV on request)

The highest-voltage UniGear, a metal-clad, withdrawable design with vacuum circuit-breakers for 36 and 40.5 kV networks.

- Power-frequency withstand up to 95 kV, lightning impulse up to 185 kV
- Rated current up to 3,150 A; 2,500 A at 55 °C with forced ventilation
- Peak withstand 80 kA (100 kA on request); internal arc 31.5 kA for 1 s
- Vacuum circuit-breakers (VD4) on withdrawable carriages; mechanical and electrical interlocks
- Designed to IEC 62271-200; enclosure IP4X

ABB SafeRing

Gas-insulated compact Ring Main Unit (RMU)

A sealed, SF6-insulated ring main unit for secondary distribution, supplied in standard fixed configurations of 2 to 4 functions.

- Standard modules: C (cable switch), F (switch-fuse), V (vacuum circuit-breaker) and De (direct cable connection)
- Configurations such as CCF, CCV, CCCV, CCFF and CCVV
- Welded stainless-steel gas tank, IP67, design life over 30 years, leakage below 0.1% per year
- Internal arc tested to IEC 62271-200 (up to 25 kA for 1 s at 24 kV)
- Same operating interface as SafePlus; for substations, wind farms and industrial sites

ABB SafePlus

Modular gas-insulated switchgear

The modular counterpart of SafeRing: the same sealed technology, but with freely selectable modules and external busbars for extension.

- Up to 5 modules per SF6 tank, with external busbars for unlimited extension
- Modules include cable, switch-fuse, vacuum breaker, sectionalizers, earthing and metering
- Each standard module is 325 mm wide; heights of 1,336 mm or 1,100 mm; depth 765 mm****
- High-duty 20 and 25 kA breaker and sectionalizer variants
- Stainless-steel sealed tank, IP67; ambient -25 to +40 C, altitude up to 1,500 m

Notes and sources

* ABB's current UniGear ZS1 web page lists up to 4,000 A and, for single busbar, up to 63 kA at 24 kV; an older catalogue gives 3,150 A and 31.5 kA at 24 kV (up to 4,000 A and 50 kA at 12 to 17.5 kV). Ratings depend on voltage class and configuration.

** The older ZS2 catalogue lists 2,500 A (3,150 A on request); ABB's current portfolio page lists up to 3,150 A.

*** ABB lists the ZS3.2 at up to 40.5 kV with 48 kV on request; panel width is 1,200 mm in older documents and 1,400 mm in the current catalogue.

**** SafeRing and SafePlus ratings are from ABB's 12/24 kV and 36 kV catalogues; ratings vary by voltage class and module. Dimensions apply to the 12/24 kV versions.

Compiled from ABB catalogues, brochures and product pages for UniGear ZS1, ZS2 and ZS3.2 and for SafeRing and SafePlus. Confirm against the current ABB catalogue before quoting or ordering.