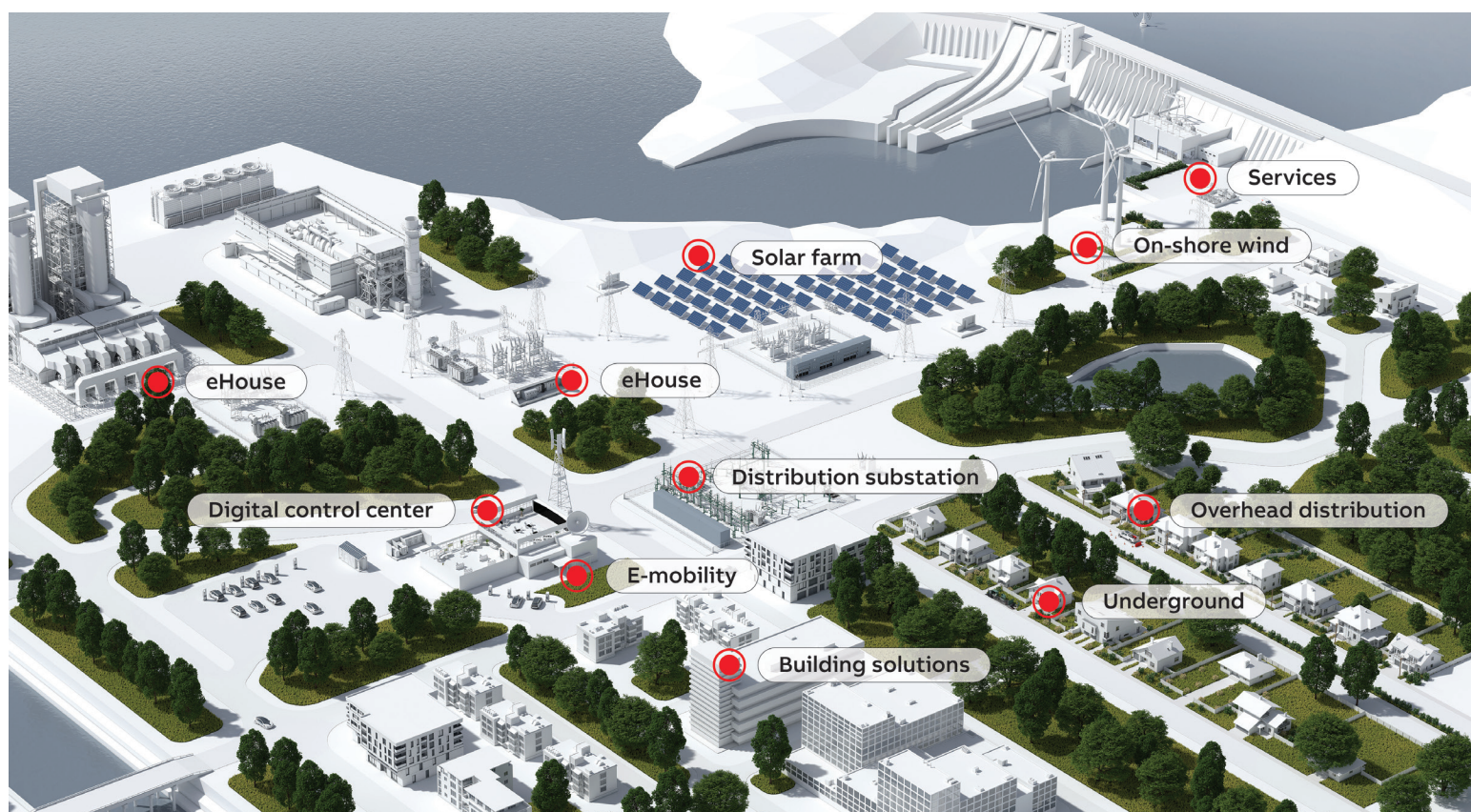


PRODUCTS AND SERVICES OVERVIEW

Utilities

Safe, smart and sustainable solutions for Canada



- Grid availability
- Grid safety
- Grid reliability
- Electrifying force for a brighter grid future

ABB technologies are at the forefront of a major shift towards a more flexible, interactive, and automated grid that will effectively manage the increasing supply-and-demand-side and complexities of the Canadian utilities landscape.

From enabling digital substations to building a more resilient grid, ABB offers a range of product and service solutions to:

- Simplify operations**
- Improve grid-compliant renewable power production**
- Maximize asset management efficiency**



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Digital Substation Products

Relion protection relays

Relion REX610



REX610 is a freely configurable all-in-one protection relay that covers the full range of basic power distribution applications, without forgoing simplicity. The small number of variants translates into easy ordering, set up, use and maintenance. Rich in functionality, with a fully modular hardware unlocking all available functionality, REX610 represents both a flexible and cost-effective choice.

- Rich in functionality – covering the full range of basic utility applications
- Modular and scalable design for easy customization with easy addition, removal and replacement of modules
- Pure plug-and-play solution with modular hardware unlocking all available functionality
- IEC 61850-compliant communication and interoperability between substation automation devices
- New functionality continuously accessible via firmware updates
- Modifications possible throughout the product life cycle with modular and scalable design
- Tailor-made retrofit adapter for smooth replacement of SPACOM with REX610 relays
- Web-based data-sharing and backup service with access to firmware updates as optional add-on–ABB Ability™ Backup Management for electrical systems, Data Care

Relion 601 Series



601 provides basic protection and control for feeder and motor applications. It is very compact, easy to install and engineer, having a built-in test function. It has a very wide auxiliary voltage range with a universal power supply module, reducing the variants needed. 603 is a current transformer powered numerical feeder protection relay including overcurrent and ground-fault protection.

- Overcurrent, ground-fault, phase-discontinuity, negative-phase sequence and thermal-overload protections, inrush current detection, circuit-breaker control, reclosing and measurement
- Preconfigured functionality facilitates easy and fast commissioning
- Universal power supply 24-265 V AC/DC
- Configurable binary inputs/outputs using local HMI or communication interface
- Specific variant with site selectable CT selection (1 or 5A), Boolean logic and timers
- Site selectable Modbus and IEC 60870-5-103 protocols

Relion 615 Series



The protection relay line provides protection and control for a complete range of applications including feeder, line differential, transformer, voltage, busbar, capacitor bank, motor, generator and interconnection protection as well as automatic voltage regulation for on-load tap changers. The 615 series offers a high functionality level in a compact format.

- Ethernet and serial communication
- Drawout design
- Web-browser base user interface
- Arc flash detection (AFD)
- Large graphical display for showing customizable Single Line Diagrams, accessible either locally or through a web browser-based HMI
- Supports native IEC 61850 Editions 1 and 2, including redundancy HSR and PRP, GOOSE messaging and IEC 61850-9-2 LE for less wiring and supervised communication
- Supports Modbus and DNP3 communication protocols and for different time synchronization methods, including high-accuracy time synchronization via IEEE 1588 V2 Precision Time Protocol
- Advanced ground fault protection, including transient protection to detect faults in any cable and overhead network
- Ring-lug terminals for all inputs and outputs
- Cable fault detection
- Extensive life cycle services, including training, customer support, maintenance and modernization

Digital Substation Products

Relion protection relays and Digital Substation Products

Relion 620 Series



The protection relay line provides protection and control for a complete range of applications including feeder protection, transformer protection including automatic voltage regulation for an on-load tap changer, voltage protection, busbar protection and motor protection including motor differential protection. The wider case of the relay enables a high number of binary inputs and outputs and control of several circuit breakers.

- Ethernet and serial communication
- Drawout design
- Web-browser base user interface
- Arc flash detection (AFD)
- Programmable push buttons
- Large graphical display for showing customizable Single Line Diagrams, accessible either locally or through a web browser-based HMI
- Supports native IEC 61850 Editions 1 and 2, including redundancy HSR and PRP, GOOSE messaging and IEC 61850-9-2 LE for less wiring and supervised communication
- Supports Modbus and DNP3 communication protocols and for different time synchronization methods, including high-accuracy time synchronization via IEEE 1588 V2 Precision Time Protocol
- Advanced ground fault protection, including transient protection to detect faults in any cable and overhead network
- Ring-lug terminals for all inputs and outputs
- Cable fault detection
- Extensive life cycle services, including training, customer support, maintenance and modernization

Relion REX640



REX640 is a powerful all-in-one protection and control relay for use in advanced power distribution and generation applications with unmatched flexibility available during the complete life cycle of the device. The detached local HMI, introducing color touch screen, offers an innovative user interface providing information about the process status in an unseen clear and user-friendly manner. The pages in the local HMI can be fully customized for the specific needs at hand.

- Freely configurable relay for flexible tailoring to application-specific requirements
- IEC 61850 Edition 1 and Edition 2 - certified by DNV/GL (KEMA) – with redundancy support based on HSR and PRP
- Ability to receive four streams of sampled measured values (SMVs) and send one via IEC 61850-9-2 LE-based process bus communication
- Synchronizer functionality for both generator and non-generator breakers
- Four supervised arc sensor inputs, either loop or lens-type
- Centralized account management with role-based access control
- Relative humidity in installation location up to 95%, non-condensing
- Extensive life cycle services, including training, customer support, maintenance and modernization

SSC600, Centralized protection and control



ABB Ability™ Smart Substation Control and Protection for electrical systems SSC600 centralizes all protection and control functionality into one single device on distribution substation level for minimal engineering, station-wide visibility and optimal process management. Combining SSC600 with merging units creates an IEC 61850-compliant centralized protection and control solution. The modular software can be flexibly modified for the entire lifetime of the digital substation and allows SSC600 to change with the evolving grid. SSC600 builds on ABB's solid and proven technological foundation manifested in the renowned Relion® protection and control family of relays.

- Easy and efficient process management with station-wide process visibility
- Extensive application coverage with one device for flexibility and optimal cost-effectiveness
- IEC 61850-compliant communication and interoperability between substation automation devices
- Centralized protection and control in one single device for up to 30 feeder, motor and transformer bays
- Comprehensive Web HMI (human-machine interface) including station-wide HMI functionalities
- Disturbance recordings for the entire substation
- IEC 61850-3-certified with inbuilt redundancy and self-supervision
- Extensive digital services throughout the substation's entire lifecycle

Digital Substation Products

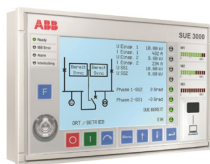
SMU615



SMU615 is a dedicated substation merging unit intended for measuring current and voltage signals from the instrument transformers and merging them into the standard digital output format that other devices can further use for various power system protection application purposes. Dedicated merging unit for IEC 61850 process bus applications

- Communication capabilities with redundant Ethernet solutions - HSR and PRP
- Innovative, safe, cost and energy-saving measuring technology option with a digital interface, making it possible to connect ABB sensors to the IEC 61850-9-2 LE-based process bus
- IEEE 1588 V2 for high-accuracy time synchronization and maximum benefit of substation-level Ethernet communication
- Simplicity with no excess functions included – ready configured for acting as a merging unit in the power system
- Easy-to-use web browser-based HMI
- Compact size and withdrawable plug-in unit design for swift installation and testing

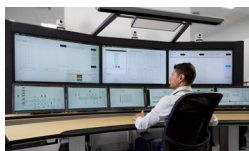
SUE 3000



The SUE 3000 High Speed Transfer Device guarantees an optimum safeguarding of energy supply. The device ensures the continued supply to the consumer through automatic transferring to a stand-by feeder and protects the subsidiary process from expensive stoppage times. Can be supplied as a High-Speed Transfer System (30ms HSTS) incl. initiation units REF542plus and vacuum circuit breakers VM1-T.

- Configuration with two or three circuit-breakers
- Four different configurable motor bus transfer modes
- Permanent supervision of involved incomers, busbars and circuit breakers
- Integrated disturbance recorder and watchdog self-monitoring

ABB ZEE600



The ABB Ability™ Electrification Monitoring and Control for distribution networks, ABB zenon Electrification Edition - ZEE600 fulfills the role of a seamless integrator of diverse devices such as ABB and 3rd party make protection relays, meters, substation equipment condition monitoring units, Programmable Logic Controllers (PLC) and Remote Terminal Units (RTUs), deployed in digital electrification solutions.

- Collects, analyzes, visualizes and manages data
- Provides valuable process insights for better decisions
- Minimizes downtime
- Optimizes energy efficiency
- Fast, dependable, agile automation
- Maximum data security and powerful reporting
- Easy and seamless integration
- Global service and support
- Fully supports communication standards and protocols such as IEC 61850, Modbus, Profinet, Profibus and other open / proprietary protocols.
- Supports IEC 62349 Parallel-Redundancy Protocol (PRP) to handle and resolve identical communication messages from two separate LAN networks.

FT switches



ABB Flexitest™ switches, types FT-1 (10 pole, rear connected), FT-1F (10 pole, front connected), FT-1X (10 pole, extended terminals, rear connected), FT-14 (14 pole, rear connected), and associated Test Plugs, provide a safe, simple, fast and reliable method to isolate, test, and service installed equipment without disturbing the system.

- Safe and convenient, as all measurements and tests can be performed at the front of the switchboard
- Fast and reliable — when test plugs are used, any number of circuits may be tested in rapid succession
- Test switches can be assembled in a variety of different arrangements to match customer requirements, ensuring maximum flexibility
- Unauthorized access is prevented, ensuring security
- Proven quality with over 50 years of reliable field application
- 24/7 technical and application engineering support
- Integrated safety features such as coil supervision function and decoupling function
- Flexible bus protocol communication concept (IEC 61850-8-1, IEC 60870-5-103, Ethernet interface, ModBUS TCP, ModBUS RTU, Profibus DP, SPA)

Digital Substation Products

REA system



A fast and selectively operating arc fault mitigation system for air-insulated low voltage and medium voltage switchgears to protect human lives, prevent or reduce asset damage and allow smooth power restoration. REA arc fault protection is based on optical detection of the intense light of an arc fault or on detection of light secured with detection of simultaneous phase or neutral overcurrent.

- Enables redundant, instantaneous and fail-safe arc fault protection
- On detection of an arc fault, the REA system trips via high speed trip outputs in less than 2.5 ms all circuit breakers that feed the fault zone.
- Arc flash detection (AFD) based on fiber-optic light sensors
- Integrated fast overcurrent detection to secure nuisance-free trip decision
- Fiber-optic sensors can be used as supervised fiber loops or radial fibers, also lens type sensors available

RIO600



RIO600 Remote I/O unit is designed to expand the digital and analog I/O of ABB's Relion® protection relays. The unit allows maximum I/O flexibility and provides seamless IEC 61850 connectivity between the substation binary and analogue signals. Compared to a traditional fully hard-wired substation, a solution using RIO600 helps in simplifying and decreasing the wiring inside the substation by digitizing the hardwired signals.

- Web-browser-based human machine interface (HMI) for access to substation devices.
- IEC 61850 and Modbus TCP station bus to extend the protection and control applications
- Fast real-time communication between protection and control relays and physical inputs/outputs
- Wide set of different I/O options
- Flexible applications with Fault Passage Indication (FPI) functionality for grid automation applications
- State-of-the-art directional ground fault indication reaching high sensitivity required in compensated networks
- Fulfills IEC 61850 communication performance requirement (Type 1A, class P1)

ARG600



The wireless gateway ARG600 provides monitoring and control of field devices over a wireless cellular network from a central location. The gateway offers industrial quality connectivity for DNP3.0 protocol and Modbus-based protocols, in addition to TCP/IP-based protocols.

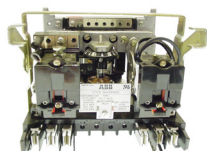
- Industrial grade TCP/IP router: Several serial and TCP/IP based field devices can be integrated into a central supervisory and control system (SCADA)
- Ideal for retrofitting – allows the user to extend the life cycle of existing serial-based substation devices
- Remote access to field devices means less site visits for operations and maintenance
- Optimizing the cost of communication by using public cellular networks
- Possibility to upgrade from existing legacy private radio system to a high bandwidth cellular network-based solution. This allows you to fully maximize usage of the existing application. For example, video surveillance traffic can now be integrated into the same system.

Pre-configured matching unit



Serving as a direct replacement for ABB legacy relays, the PCMU and REF615R is the ideal solution to mitigate risks, limit downtime and save costs on relay upgrades. It offers a reliable, seamless upgrade due to the risk reduction only a wire-alike solution can provide.

Electromechanical relays



Electromechanical relays are key components in new applications where reliable operation is essential, in harsh environments or in existing installations where an exact replacement is required.

Outdoor Products

R-MAG® Dead Tank Breaker



The ABB R-MAG® combines the unique benefits of vacuum interrupter technology with a state-of-the-art magnetic actuator with limited moving parts. This field-proven design leads to higher operational safety, reliability, and availability, eliminating maintenance activities on springs or motors in the operating mechanism.

- 15/27/38 kV
- Up to 200 kV BIL
- Up to 3700 A continuous current for 15.5 kV
- Up to 2,000 A continuous current for 27-38 kV
- Up to 40 kA Interrupting current for 38 kV
- Operating temperature -50°C to +70°C
- Rated for 10,000 operations
- ABB best in class vacuum interrupters rated for 30,000 operations
- Easy installation and integration
- Full five years warranty
- Enclosures: painted mild steel, stainless steel, NEMA 3R, NEMA 4, Arc-Resistant

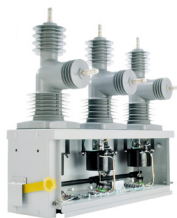
OVB-SDB and OVB-VBF Live Tank Breakers



ABB live tank circuit breakers are designed to bring together the superiority of vacuum interruption inside “sealed for life” poles, with the reliability of a long-life spring mechanism inside a weather-proof cabinet. Product robustness combined with simple design ensures high performance in stressful environments.

- Up to 40.5 kV
- Up to 195 kV BIL
- Up to 2,500 A continuous current
- Up to 31.5 kA Interrupting current
- Operating temperature -40°C to +45°C
- Rated for 10,000 operations
- ABB best in class vacuum interrupters rated for 30,000 operations
- C2 class capacitor current switching back-to-back up to 750 A
- Easy installation and integration

GridShield® Triple-Single Phase Recloser



Performance of the high voltage unit is guaranteed even in heavy-polluted environment, thanks to the highest creepage distance on the market and the Hydrophobic Cycloaliphatic Epoxy (HCEP), the best available on the market insulating material of the poles, shedding water, and reducing the probability of flashover. Modular design as single tank or as individual tank with various mounting options.

- 15/27/38 kV
- Up to 170 kV BIL
- Up to 1,200 A continuous current
- Up to 16 kA Interrupting Current
- Current measurement accuracy $\pm 1\%$
- 10,000 operations
- ABB best in class vacuum interrupters rated for 30,000 operations
- Mean time to failure (MTTF) 10,000 years
- Rigorous environmental testing at KIPTS lab
- Highest creepage distance on the market
- HCEP material – best in class for outdoor use
- Single and three-phase tripping capability
- Multiple recloser controller compatibility (ABB, SEL, Beckwith, GE)
- Easy installation and integration

Outdoor Products

OVR Three Phase Recloser



Simple, reliable yet intelligent solution for most advanced customer needs. Equipped with ABB Relion® RER615 state of the art intelligent electronic controller, providing high-end relay features and offering IEC61850 native communication with GOOSE messaging capabilities and backward compatibility with Modbus, IEC60870-104 and DNP3.0 communication to connect to SCADA. Equipped with advanced smart grid features and future proof design.

- 15/27/38 kV
- Up to 170 kV BIL
- Up to 1200 A continuous current
- Up to 16 kA Interrupting Current
- 10,000 operations
- ABB best in class vacuum interrupters rated for 30,000 operations
- Highest creepage distance on the market
- HCEP material – best in class for outdoor use
- Easy installation and integration

Eagle – Self-Powered Single-Phase Vacuum Recloser



Safe, smart and reliable solution for most advanced customer needs. Design can be especially suitable for high vegetation areas with fire mitigation needs. To increase reliability and savings from momentary distribution system faults this recloser incorporates two main design concepts: 1) No Arcing Design and 2) Battery-Free Design. The Eagle considers no arcing during installation, closing, or opening. It utilizes self-powered and battery-free design. No need to have physical wire connection with the recloser, no special tools are required either, - all settings can be done through WiFi and web interface.

- 15/27 kV
- 125 kV BIL
- 200 A continuous current
- 8 kA Interrupting Current
- 3 reclosing shots
- Rated for 10,000 operations
- ABB best in class vacuum interrupters rated for 30,000 operations
- HCEP material – best in class for outdoor use
- Easy installation and integration
- Interruption in Vacuum
- Self-Powered
- No Battery – No Maintenance
- “No Arcing” Design
- Integrated Electronics
- Encrypted Wireless Communication
- Double Insulator Mounting
- Platform independent user interface
- Future SCADA communication option

Elastimold™ reclosers

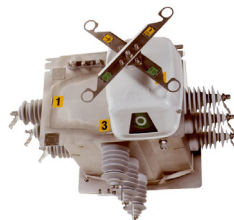


ABB's Elastimold™ solid dielectric reclosers are built for the evolving smart grid with integral load-side voltage sensors and provision to add optional source-side voltage sensors. These reclosers stand up to harsh environments, featuring proven solid dielectric and silicone insulation with improved weatherability and UV performance. The modular design allows for fast and easy field upgrades and retrofits. The three-phase model weighs 30% less than typical reclosers, making it easier and safer to install, while the single-phase model has a pole-rotation mounting bracket for easier installation. Triple-single-phase configurations are also available. A simple, maintenance-free magnetic actuator mechanism increases reliability, and 360° position indicator provides easy visibility from ground level.

- Up to 38 kV

Outdoor Products

Sectos SF6 Insulated Load Break Switch



The main active part is enclosed in a stainless steel SF6 tank and the state-of-the-art operating mechanism is sealed to guarantee reliable operation even in the most demanding climatic conditions including corrosive atmospheres, snow, and ice. It ranges from basic manual unit to a tele-controlled fully automated motorized version with ABB REC615 Relion® relay, current and voltage measurements, and SCADA integration.

- 12/24 kV
- 125 kV BIL
- 630 A continuous current
- 12.5 kA/s (3s) short time withstand current
- 31.5 kA peak withstand current
- 5,000 mechanical close/open operations for the switch
- 2,000 mechanical close/open operations for the grounding switch
- 400 load break operations under the rated current
- Manual or motorized operations
- Can be equipped with surge arresters, current and voltage transformers
- Corrosion protection design, stainless steel, and polyurethane coating
- Operating temperature -40°C to +60°C

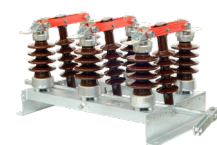
NPS Air Insulated Load Break Switch



Modular design minimizes logistics and storage costs, allowing late customization and integration, while ensuring simple and fast maintenance or replacement of parts, e.g. the arching chamber. The NPS ranges from the basic manual unit to a fully automated motorized version with grounding switches, current measurement, SCADA integration and smart grid features. It provides visible break to disconnect or sectionalize feeders and branches.

- 24/36 kV
- Up to 200 kV BIL
- 630 A continuous current
- 16 kA/s rated short circuit withstand current
- 31.5 kA peak withstand current
- 2,000 mechanical close/open operations for the switch
- 100 load break operations (C/O cycles) under the rated current
- Manual or motorized operations
- Can be equipped with grounding switches, surge arresters and current measurement

ON Medium Voltage Outdoor Disconnectors



Simple and compact solution to provide reliable visual break for medium voltage networks. ABB ON switches can be operated either manually or by electric motor, which can be remotely controlled. Can be provided as one or three phase solutions for no-load isolation or sectionalizing of distribution networks. Optional ground switches can be provided on either side of ON switch for grounding of previously disconnected electrical network.

- Up to 36 kV
- Up to 195 kV BIL
- Up to 2,000 A continuous current
- Rated for 1,000 operations
- Compact design
- Single or three-phase operation
- Operation in both vertical and horizontal mounting positions
- Manual or motorized operation
- Available with grounding switches on both sides
- Vertical break opening
- Can work as sectionalizer
- Operating temperature -50°C to +40°C

Outdoor Products

AutoLink and WiAutolink Cutout Mount Electronic Sectionalizer



This smart device automatically isolates the faulted grid section when a permanent fault occurs; in such case, the units can be re-set without the need for special tools and quickly put back in service. In case of temporary fault, the electronic sectionalizer allows the upstream recloser or reclosing breaker to clear the fault without isolating the circuit. Electronic sectionalizer can be used as a single or three-phase solution.

- 15 kV, 27 kV, 38 kV
- Up to 170 kV BIL
- Up to 200A continuous current
- Actuating current 3 A to 215 A
- Resettable counter 1- 4 shots
- Works with upstream recloser
- Can operate as single or three phase unit
- Detects inrush to avoid incorrect trip
- Independent of the time-current curve
- WiFi communication
- Integrated Electronics
- Site resettable and programmable
- No need to replace the trip device after its operation
- Easy installation with flexible mounting options
- Mounted on cutout base
- Easily programmable

ICX and NCX Fuse Cutouts and LBU-II Fuse Cutout with Load Break Capability

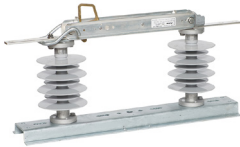


The full portfolio includes an interchangeable (ICX) design, a non-interchangeable (NCX) ABB proprietary design with double venting capability, and a load break version (LBU). ABB fuse cutouts are designed to perform without fail even in stressful environments, including extreme cold/hot, heavy pollution and coastal applications. Load break LBU-II cutout can switch currents as high as 300 A at 15 kV and 50 A at 27 kV.

- 7.8 kV, 15 kV, 15/27 kV, 38 kV
- Up to 180 kV BIL
- 100 A and 200 A continuous current
- 300 A disconnect blade
- Various types of insulators available: silicone rubber, polymer concrete, porcelain
- All ICX 100 A and 200 A fuse tubes are available with an optional kick-out spring
- LBU-II fault interrupting capability (not load break) up to 20,000 A RMS
- LBU-II can be also utilized at capacitor banks, transformer bank switching, sectionalizing, riser pole application
- ABB cutouts can be offered with arrester combinations

Outdoor Products

Single Phase Overhead Disconnect Switches



Lightweight, yet robust ABB switches provides ease and safety for transport and installation, as well as reliability over the product lifetime by not carrying current in the lower hinge. Hook stick operated, advanced design ensures the switch will open as needed, even after significant exposure in highly contaminated environments. Anti-corrosion materials ideal for the harshest environments.

DCD – single phase disconnect switch

- 15 kV, 27 kV, 38 kV
- Up to 150 kV BIL
- 600 A and 900 A continuous current
- 65 kA peak withstand current
- Blade stop: No stop/90°/160°



RBD – by-pass disconnect switch

- 15 kV, 27 kV, 38 kV
- Up to 150 kV BIL
- 600 A and 900 A continuous current
- 65 kA peak withstand current
- Blade stop: No stop/90°/160°



SID – single insulator disconnect switch

- 15kV, 27kV, 38kV
- Up to 170 kV BIL
- 600 A and 900 A continuous current
- 65 kA peak withstand current
- Blade stop: No stop/90°/160°



LSID – SID switch with self-contained load break chamber capable to interrupt up to 600A

- 15/27kV
- Up to 150 kV BIL
- 600 A and 900 A continuous current
- 65 kA peak withstand current
- Blade stop: No stop/90°/160°



ITD – inline tension disconnect switch

- 15 kV, 27 kV, 38 kV
- Up to 200 kV BIL
- 600 A and 900 A continuous current
- 65 kA peak withstand current
- Blade stop: 90°/160°

Indoor Products

Medium Voltage IEC Indoor Vacuum Breakers – VD4 and VM1



VD4 and VM1 medium voltage circuit breakers use vacuum interrupters embedded in poles. This construction method makes the poles particularly sturdy and protects the interrupter from shocks, dust and condensation. VM1's magnetic drive activates the moving contacts of the interrupters and integrates all the functions of a traditional drive.

VD4: Modular spring-operated mechanical actuator ensuring easy operation even without auxiliary supply

- 30,000 mechanical operations on most ratings
- Rated at up to up to 40.5 kV, 4,000 A, 63 kA.

VM1: Medium voltage circuit breakers with a magnetic actuating mechanism for primary distribution up to 24 kV, 3150 A (4,000*), 50 kA.

- Magnetic actuator controlled by electronic board and storing capacitors
- 30,000 mechanical operations on all the ratings

Medium Voltage IEC Indoor SF6 Gas Breakers – HD4



HD4 breakers are used in electrical distribution for control and protection of cables, overhead lines, transformer and distribution substations, motors, transformers, generators and capacitor banks. Thanks to the SF6 autopuffer breaking technique, the HD4 circuit breakers do not generate operating overvoltages, and are therefore also highly suitable for retrofitting, upgrading and enlarging older installations where the insulating materials for the motor, cable, etc. may be particularly sensitive to dielectric stresses.

- Rated at up to 40.5 kV, 3600 A, 50 kA
- Unique ABB quenching technique to ensure smooth switching operations
- Ideal for all applications (eg, capacitor bank switching, marine, GOST)
- Fully interchangeable (both for overall dimensions and electrical diagrams) with ABB VD4 circuit breaker
- Sealed-for-life SF6 poles with the unique ABB auto-puffer quenching technique joining the advantages of "puffer" and "self-blast"
- Spring-operated mechanical actuator ensuring easy operation even without auxiliary supply
- Pressure switch on request to continuously monitor the status of the interrupting device

Medium Voltage IEC Indoor Cassettes and Frames – PowerCube



Medium voltage preassembled units to be used as components for primary distribution air-insulated switchgear, cassettes to modules with complete apparatus and cable access compartments.

- Rated at up to 36 kV, 4,000 A, 50 kA
- Arc proof doors up to 50kA, and pretested and assembled interlocks between apparatus and PowerCube units
- Variety of units available, from circuit breakers to contactors (including contactors with a reduced footprint of 400 mm) or measurement with one or two VT trucks to risers and service truck solutions

Medium Voltage ANSI Indoor Vacuum Breakers – ADVAC and AMVAC



The ADVAC and AMVAC series is a complete line of ANSI-rated vacuum circuit breakers with a spring-charged and magnetic actuated mechanisms offering power distribution system customers the advantages of the latest technology with a modular design that is easily maintainable.

ADVAC

- 5 kV to 15 kV heavy duty breaker rated at 1,200 A to 3,000 A continuous current and 25 kA to 63 kA interrupting current
- 38 kV class breaker rated for 2,000A continuous current, 31.5 kA with 10,000 M2 Class mechanical operations

AMVAC

- Rated at up to 15 kV, 3,000 A, 50 kA and 27 kV, 2,000 A, 25 kA
- Low-maintenance magnetic actuator mechanism and electronic controller
- Standard five-year warranty available on AMVAC breakers

Indoor Products

Medium Voltage Indoor ANSI L-Frames



OEM switchgear components are manufactured to meet current medium voltage industry standards. The designs are UL recognized, providing a modular building block approach for installation into new and existing switchgear configurations. They are used with ADVAC and AMVAC circuit breakers.

Ratings up to:

- 15 kV, 3,000 A, and 63 kA
- 27 kV, 2,000A, and 25 kA
- 38 kV, 2,000 A, and 31.5 kA

DC High Speed Circuit Breakers – Gerapid



Gerapid high speed DC circuit breakers are single-pole circuit breakers designed for use in high energy, high reliability DC power distribution systems. They are suitable for protection of mains and semiconductors (converters/rectifiers) in railway and industrial applications. Feeder circuit breakers and rectifier circuit breakers are available with operating currents up to 8,000 ADC and operating voltages up to 3,600 VDC. They have a very high interruption capacity combined with a current limiting characteristic.

Innovative materials, superior circuit breaking capacity and outstanding dielectric performance ensure service continuity and protection during adverse system events. The technology and quality of these circuit breakers produce high reliability, extended maintenance intervals and uncomplicated serviceability for all fixed installations.

- Ratings up to 8,000 A and 3,600 Vdc (800 Vdc, ANSI)
- IEC 60947-2, EN50123-2, and ANSI C37.14 Certifications
- Solenoid drive (integral control unit, mechanically latched, no auxiliary power required to keep contacts closed)

Medium Voltage Generator Circuit Breakers – VD4G and ADVAC G



Based on the well-proven and highly reliable VD4 and ADVAC platforms with over 1,000,000 installations since 1986, the VD4G and ADVAC G product families are tested to meet the most stringent IEEE and IEC requirements for generator applications as per IEC/IEEE 62271-37-013.

VD4G and ADVAC G are capable of interrupting currents with delayed zero crossings that may occur in the event of faults that are fed from the generator, or faults during synchronization with the high voltage grid. Their interrupting technology enables the withstanding of severe transient recovery voltages (TRV) to protect critical equipment. They have excellent duty in terms of maximum number of switching operations and require little maintenance for maximum uptime.

- Ratings up to 15 kV, 4,000 A, and 63 kA for generators up to 100 MVA
- Vacuum interrupters embedded in poles for protection against humidity, shock and dust
- Completely type-tested in accordance to the latest IEEE/IEC 62271-37-013 standards

Medium Voltage IEC/CSA Indoor Air Insulated Switches – NAL/NALF



The NAL switches and NALF switches with fuse bases have a compact, modular design and broad functionality. The rated voltages are up to 38.5 kV, rated currents up to 1,250 A and rated short-circuit withstand up to 40 kA.

- High number of breaking operations at rated current value
- Available Earthing switch with making capacity
- Wide range of operating temperatures
- Available with CSA certification directly from the factory

Indoor Products

Medium Voltage ANSI Indoor Load Break Switches – VersaRupter



The VersaRupter switch-disconnector uses a puffer and nozzle system to efficiently extinguish the arc of full-load interruptions, voltage up to 38 kV, current up to 1200 A.

- High number (100 c/o) of breaking operations at rated current value
- Fault-closing rated current asymmetrical up to 61 kA
- Rated short-circuit withstand current up to 40 kA
- Earthing switch with making capacity

Medium Voltage SF6 Gas Insulated Load Break Switch – GSec



Three-position gas insulated switch disconnecter for: secondary distribution switchgear, feeders, transformer protection and ring networks. Incoming/outgoing panels with CBs or in combination with fuses.

- Ratings up to 24 kV, 800 A, and 25 kA
- High number (100 c/o) of breaking operations at rated current 630A value
- Tested for use at low temperatures and type-approved for naval applications
- May be installed in narrow 375 mm panels
- Three positions in one structure: LINE – OPEN – EARTH

Ultra-Fast Earthing Switch – UFES



The Ultra-Fast Earthing Switch UFES is a safe and effective combination of specific arc detection relays and an associated arc quenching device consisting of the so-called primary switching elements (PSE). In case of an internal arc fault the arc detection relay trips the UFES PSE, which initiate a three-phase earthing to break the arc voltage immediately.

- Arc flash extinction in less than 4 ms, 20 times faster compared to standard arc protection
- Arc detection by means of optical sensors and current measurement
- Available for switchgear ratings up to 40.5 kV and 100 kA
- Easy integration into new and existing low- and medium-voltage systems

Medium Voltage IEC Indoor Fuses



Medium voltage IEC current limiting and expulsion fuses suitable for the protection of distribution transformers, voltage transformers, capacitor banks, motor circuits and installations with other switching apparatus.

- Special design optimized for type of application
- Two fuse housing materials are applicable – porcelain and resin-fiberglass
- Application: indoor and outdoor

Hi-Tech™ current-limiting fuses



Hi-Tech™ is an industry brand of current-limiting fuses with advanced designs to provide superior protection in small, cost efficient form factors to optimize value, reliability and reduce system life cycle costs. With fault clearing capabilities in less than one-half cycle, Hi-Tech current limiting fuses reduce the let through energy, thereby significantly reducing stress on equipment and increasing safety. One hundred percent factory tested and sealed, rugged machined-brass end caps and patented damage sensors are just a few benefits. ABB now offers the Hi-Tech Valiant™ full-range current-limiting fuse for fire mitigation. This new fuse incorporates over 20 years of field tested Hi-Tech full-range fuse technology combined with a new visual indicating mechanism. The Hi-Tech Valiant current-limiting fuse's special construction contains the explosive fragments that could otherwise be emitted during fuse operation – fragments that could fall on dry vegetation and ignite a wildfire.

Medium Voltage IEC Indoor Contactors

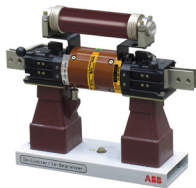


ConVac vacuum contactors are suitable to switch motors and to control electrical circuits, for a wide variety of applications where high number of operations are required. They are suitable to operate motors, transformers, capacitor banks and fitted with proper fuses, for circuits with fault levels up to 50kA.

- Lower chopping current, increasing motors and transformers lifetime and lowering costs
- Rated at up to 12 kV, 400 A to 800 A, 6 kA to 12.5 kV unfused; 50 kA with SCPD (normal fuses)
- One multi-standard free-standing product for 12 kV: suitable for IEC62271-106, UL347 and CSA C22.2 standards

Indoor Products

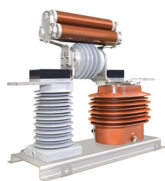
Fault Current Limiter (FCL)



ABB's fault current limiters, Is-Limiter and FC-Protector are the efficient solution for short-circuit current challenges in newly installed and existing electrical networks.

- Increase uptime and redundancy of power distribution systems
- Solving short circuit challenges by minimal integration cost in green and brownfield projects
- Plug and play installation for indoor and outdoor applications
- Available as loose components or a panel solution with minimal footprint
- Available for standard to complex applications (e.g. extended tripping criteria coordination of several FCLs in one system)
- FCL portfolio covering low-and medium-voltage ratings up to 40.5 kV

FC-Protector®



Unique standard and compact fault current limiter for indoor and outdoor use allows fast and easy integration into new and existing systems, resolving short-circuit challenges.

Medium Voltage DS1 Capacitor Switch



DS1 is the first synchronous switch isolated in dry air specifically devised and designed for capacitor banks. The perfect combination, regulated by the electronic control unit, between the semiconductors and synchronism with the network allows to increase reliability and efficiency and prolongs the life of components.

- Up to 17.5 kV, 630 A, 20 kA
- Up to 50,000 close-open operations
- Integrated control unit for synchronization and switch diagnostics

Medium Voltage Arc Furnace Breakers – VD4-AF1



New vacuum circuit breaker with servomotor actuation and controlled switching technology.

- Rated up to 38 kV, 2500 A, 31.5 kA and up to 150,000 operations with extremely low inrush
- Enables increased lifespan of transformers by more than 10% in
- Reduction of hazards due to improved protection range
- Up to 5-to-10-times higher endurance performance than the market standard
- Eliminated compensation losses up to 10% to increase power quality
- Cost saving by as much as 20%
- Designed for transformers protection
- Elimination of inrush limiting reactors and resistances, leading to significant cost and space savings

Medium Voltage Capacitor Switching Breaker – VD4-CS



VD4-CS is the unique solution based on new vacuum interrupter technology to support reactive power compensation applications.

- Up to 5-times higher performance than the market standard with 10,000 operations
- Cost saving by as much as 20%
- Enables increased lifespan of capacitors by more than 10% in thanks to predictive health indication
- Designed for capacitor banks
- Rated up to 38 kV, 1250 A, 31.5 kA and 10,000 maintenance-free operations
- Noise-free operations
- Embedded advanced diagnostics

Indoor and Outdoor Instrument Transformers and Sensors

Outdoor Instrument Transformers and Sensors



ABB has one of the widest global portfolios of instrument transformers and sensors to be used for revenue and non-revenue measurement applications, control and protection applications and for auxiliary power when needed. The hydrophobic surface properties of HCEP (Hydrophobic Cycloaliphatic Epoxy) insulators ensure highly reliable performance in highly polluted, wet or humid environments. All the instrument transformers and sensors are designed and manufactured to achieve superior performances.

Medium Voltage Indoor Sensors



ABB sensors offer a state-of-the-art way of providing the current and voltage signals which are needed for the protection and measurement of medium-voltage power systems. The output signal is linear over the whole measuring range. ABB sensors open-up numerous advantages and benefits for their users such as fast and easy design process, quick delivery time, minimized cost during the life cycle, flexibility, safety, and reliability. ABB sensors product portfolio has more than 17 product families and 52 different product variants, including UL certified sensor solutions covering various applications from primary to secondary air and gas insulated switchgear.

ABB MV sensors are compatible with ABB Relion relays and select third party relays which support voltage sensors according to IEC 61869-11 standards.

Indoor Instrument Transformers and Sensors

Medium Voltage Indoor Combined Sensors



ABB's medium voltage combined sensors integrate current and voltage measurements into one compact device. Current measurements are based on the principle of Rogowski coil and voltage measurements are based on resistive or capacitive dividers. These sensors are non-saturable and linear over the whole measuring range. ABB's combined sensors are suitable for both measuring and protection purposes. Ratings are available up to 3200 A and 40.5 kV.

Applications

- Primary and secondary air insulated switchgear
- Secondary gas insulated switchgear
- Suitable for new installations

Medium Voltage Indoor Instrument Transformers



Traditional Instrument transformers with typical applications in medium voltage circuit breakers and power transformers complying to IEEE standards.

- Offering a broad selection of instrument transformers ranging from 600 V to 48 kV
- Designed for service in medium voltage metal-clad switchgear and used for metering, relaying, or control power.
- Single, double, and tapped secondary designs with two accuracy and thermal rating options.

Medium Voltage Indoor Current Sensors



ABB's current sensors are based on the principle of Rogowski coil. The sensor consists of an air-core winding and immune to any risk of saturation as it has no ferromagnetic core. It is linear over the whole measuring range. The output signal is a voltage, which is proportional to the derivative of the current. A digital integration of this voltage is carried out by protection relay and gives the measured current. Current sensors are suitable for both measuring and protection purposes. Ratings are available up to 4,000A and accuracy class up to 0.5/5P630.

Applications

- Primary and secondary air insulated switchgear
- Primary and secondary gas insulated switchgear
- Suitable for new installations as well as for retrofit purposes

Medium Voltage Indoor Voltage Sensors



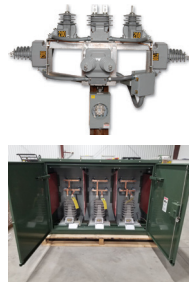
ABB's MV voltage sensors are based on resistive or capacitive divider technology. These sensors are non-saturable and linear over the whole measuring range. The output signal is a voltage, which is proportional to the primary voltage. These voltage sensors are suitable for both measuring and protection purposes. Ratings are available up to 24 kV and accuracy class 0.5/3P.

Applications

- Primary and secondary air insulated switchgear
- Primary and secondary gas insulated switchgear
- Suitable for new installations as well as for retrofit purposes

Outdoor Instrument Transformers, Sensors and Indicators

PMU (primary metering unit) 5–34.5 kV



Primary metering units are designed for three-phase primary metering in pole-mounted or pad-mounted applications. They consist of medium voltage current transformers (CTs), voltage transformers (VTs) or combination transformers (CT/VTs) that have a smaller footprint and fewer connection points for easier installation. Pole-mounted PMUs are mounted on an aluminum frame, and pad-mounted PMUs are mounted inside a steel cabinet.

Outdoor Instrument Transformers and Sensors

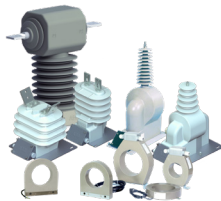


ABB has one of the widest global portfolios of instrument transformers and sensors to be used for revenue and non-revenue measurement applications, control, and protection applications and for auxiliary power when needed. The hydrophobic surface properties of Hydrophobic Cycloaliphatic Epoxy (HCEP) ensures highly reliable performance in wet, humid, as well as highly polluted environments. Benefits of HCEP:

- Less wetting of surface
- Better reliability due to lower leakage currents
- Lower flash-over probability
- Superior arc track, ozone and ultraviolet-resistive properties while maintaining physical strength
- Improved life expectancy due to less erosion
- Self-cleaning with superior performance in polluted or coastal environments.
- Water runs off the sheds and mitigates the potential to form ice

All instrument transformers and sensors are designed and manufactured to achieve superior performance.

Outdoor Current, Voltage and Combined Transformers



ABB outdoor instrument transformers has wide family of products covering various voltage levels and includes KOR, KON and CTR current transformers, VOG, VOY, VOZ, TJO, VOL and TDO voltage transformers, as well as combined current and voltage instrument transformers type CVC. All types of transformers are cast with best-in-class HCEP insulating material. Instrument transformers fulfill requirements of many global standards including: IEEE, IEC and CSA.

- ABB offers a broad selection of instrument transformers ranging from 6 kV to 52 kV and current ratings from 5 A up to 3,000 A.
- Transformers are designed for service for medium voltage protection and metering or combined applications.
- Available, single, double, and tapped secondary designs with two accuracy and thermal rating options.

Voltage transformer are available with ABB ResiVolt™ technology designed to withstand challenging environments where very fast transient (VFT) overvoltages are present.

Current transformers are available with AccuRange® high accuracy and extended range technology for metering applications to provide higher accuracy performance over a much wider range than standard current transformers.

Heavy Duty Outdoor Instrument Transformers



ABB family of CTR current transformers are designed to work in outdoor conditions in highest voltage for equipment up to 52 kV and rated primary currents up to 3,000 A. To comply with higher short circuit level of the applications, it is designed to withstand 60kA for 1 second short circuit thermal currents. Below are listed other benefits that contribute to the reliable operation of CTR transformers in extreme conditions:

- Wide range options with creepage distance
- Solid dielectric design with best-in-class HCEP insulation material
- Epoxy terminal block provided with lead seal lock to ensure IP55 protection
- Same design covers single- and two-phase applications
- Easy to install and commission

Outdoor Instrument Transformers, Sensors and Indicators

Outdoor Current, Voltage and Combined Sensors

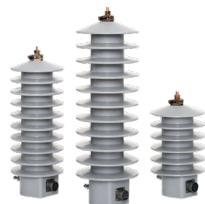


ABB offers a variety of sensors for grid modernization applications, providing utilities and other customers with increased reliability and efficiency. Sensors, also known as electronic instrument transformers or low-power passive instrument transformers, provide many key benefits over traditional instrument transformers. Some of these benefits include the following:

- Reduced chances of failure
- Reduced weight and footprint
- More linear response, including when harmonics are present
- Simplified installation, combination sensors can even be live mounted
- Maintains accuracy over a wide range providing flexibility toward varying load flow
- Can often be retrofitted in existing structures with new relays
- Standardization of sensor selection (one sensor covering wide range of ratings)
- Improved inventory management
- Change-out flexibility

Our portfolio includes current KLS and VKS sensors current sensors, VLS voltage sensors, and WLS and VCS combination sensors from DistribuSense™ sensor portfolio.

ABB also offers a compact Rogowski coil indoor sensors for use over bushing or bus, and indoor voltage sensors designed for use as line post insulators or for standalone use.

DistribuSense™ current, voltage and combination outdoor sensors
For installation on 15–34.5 kV overhead lines



DistribuSense sensors offer lighter weight, greater safety, easier installation, more reliability and better linear response to a wide range of varying loads when compared to traditional instrument transformers. They are ideal for grid modernization applications and provide utilities with improved visibility, reliability and grid efficiency.

Outdoor/Indoor Passive Voltage Indicator



The VisiVolt™ Passive voltage indicator can be used in outdoor and indoor applications to reliably indicate voltage presence in medium voltage systems from 3kV to 36kV. VisiVolt™ indicators are equipped with LCD technology that has the advantage of being able to operate at a very broad temperature range -40° C to +85° C. Innovative passive voltage indicating technology represents cost effective solution to broadly introduce indicators with an active warning of voltage presence in the systems where they were not available up to now. This will greatly increase safety and considerably reduce potential of serious accidents.

Switchgear – Medium voltage

ZX family of gas-insulated arc-resistant switchgear



Combining modern vacuum interrupter technology with a lowpressure SF6 gas insulation, all primary components inside the SF6 cabinets are maintenance-free during their lifetime, making the ZX family ideal for harsh, aggressive environments with a space-saving compact design.

- 15 - 40.5 kV

SafePlus secondary gas-insulated switchgear



SafePlus is a metal-enclosed compact switchgear system for distribution applications from 6 to 40.5 kV. The switchgear offers a unique flexibility due to its extendibility and the possible combination of fully modular and semi-modular configurations.

The switchgear is type tested according to ANSI/IEEE C37.20.3, C37.58, C37.54, and UL listed. It is rated 38 kV, 20 kA, 600 A, nonarc resistant. Available panels include cable switch, vacuum circuit breaker and air-insulated cable riser.

- 6–40.5 kV

SafeGear® air-insulated arc-resistant metalclad switchgear



SafeGear's arc-resistant construction maximizes protection for equipment and personnel. SafeGear HD is the "high-duty" version of SafeGear, specifically designed for interruption and arc fault ratings of 63 kA. These products provide a superior solution for increased worker safety with enhanced reliability and ease of use. SafeGear and SafeGear HD are available as digital switchgear and with 24x7 asset health monitoring, Switchgear™. Digital switchgear offers enhanced safety, simplicity by design and reduced operational costs.

- 5–15 kV

Elastimold™ solid dielectric switchgear



Elastimold™ solid dielectric switchgear provides compelling value for pad-mount, riser-pole and vault applications. Maintenance-free vacuum and molded EPDM solid dielectric insulation offer more than 50 years of field-proven performance, and all components are sealed and fully submersible. With no oil or gas involved, there is no leakage and no maintenance required. Dead-front construction eliminates exposure to live components, and the optional Tru-Break® visible break module ensures that the circuit is dead and isolated. The non-position-sensitive switchgear features a compact and lightweight design that fits into tight vaults and is modular for combining molded vacuum switches and interrupters in an unlimited number of ways and configurations.

- Up to 38 kV

Low voltage Switchgear and MCC

ReliaGear® LV SG



ReliaGear® LV SG is to meet the ever-expanding needs of the marketplace with the flexibility to scale for tomorrow, while proving improved safety, more reliability, and helping save time and money.

Built to ANSI standards, ReliaGear LV SG incorporates the best of both worlds: cutting-edge “All-in-one” Emax2 air circuit breakers with Ekip trip unit technology, all integrated into the proven AKD switchgear platform. It features an optimized footprint that fits into a smaller area for the most common configurations. E1.2 Emax frame provides a 15-inch minimum four-high stack width.

- Up to 600Vac, 5000A, 100kA

MNS-SG

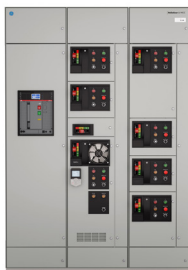


The MNS-SG Low Voltage Arc-Resistant, metal enclosed, drawout Switchgear is industrial-duty equipment built to ANSI/NEMA/UL/CSA standards and designed to provide superior power distribution and protection with Emax 2® circuit breakers.

The MNS-SG Arc-Resistant offers excellent flexibility due to the modularity of both the electrical and mechanical design.

- Up to 5000A (bus), 4000A (breaker), 600Vac, 85kA

ReliaGear® LV MCC



ReliaGear® LV MCC provides a safer, smarter, and more sustainable means to protect and control motors by featuring SACE® Tmax® XT breaker technology, UMC 100.3 motor protection relays, and the ACS580 family of variable frequency drives.

ReliaGear® LV MCC product line features standard and arc flash mitigation (AFM) units. AFM units, with retractable stabs, are designed to help reduce the likelihood of exposure to electrical shock and the potential of internal arcing faults occurring during maintenance.

- Up to 600Vac, 3200A, 65kA, size 5 Starters and VFDs

MNS-MCC



Designed for the highest degree of safety, ease of installation and maintenance, reliability and flexibility, the MNS-MCC provides users with maximum uptime. Its unique “Multifunctional wall” and “fault free zone” design provides highest standard of arc flash protection for low voltage motor control centers. The MNS-MCC provides industry-leading features and afford operators the highest degree of safety and efficiency while performing both normal and maintenance operations.

- Up to 600Vac, 4000A, 65kA, arc-resistant 2B

Load interrupter switches

Medium voltage – Breakmaster



The Breakmaster metal-enclosed load interrupter switch provides dependable, economical load switching and protection for medium voltage circuit applications. Used mainly as a primary or secondary disconnect switch for transformers, the variety of configurations in which Breakmaster is available also make it useful for specific distribution needs.

- 2.4 kV through 15 kV in 600 A or 1200 A load interrupting ratings

Medium voltage – Breakmaster V



For facilities concerned with arc flash safety standards, Breakmaster V provides reduced arc flash incident energy levels for customers on their existing medium voltage equipment.

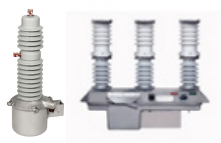
- With vacuum circuit breaker (instead of fuses)

Load interrupter switch (LIS) retrofit



The LIS retrofit provides reduced arc flash incident energy levels on existing medium voltage equipment by retrofitting a fixed mounted vacuum circuit breaker (VCB) into the fused compartment of LIS. Operating in three cycles, the fast-acting VCB is superior to fuses and offers an arc flash mitigating solution designed in response to arc flash safety standards.

Joslyn Varmaster and VerSaVac® switches



Joslyn Hi-Voltage® switches are designed to switch capacitor banks for improved system efficiency, voltage profile and capacity. Using vacuum interruption, solid dielectric insulation and solenoid operators, these switches offer long, reliable service life of up to 100,000 expected operations with no required maintenance. They contain no oil or gas, eliminating the associated environmental concerns and regulatory requirements for monitoring usage and leakage. VerSaVac (VSV) distribution capacitor switches are available in single- and three-phase, 15–38 kV, 200 A.

Varmaster (VBM) substation capacitor and reactor switches are available in one-pole and three-phase, 15–72.5 kV, 300 to 600 A. A zero voltage closing (ZVC) control option provides transient mitigation of system over-voltages and inrush current.

eHouses

Single point of contact for products and services related to project packages or modular solutions

ABB offers a comprehensive approach to product administration for modular solutions such as E-houses and skid solutions. By managing the design, procurement, installation, logistics and commissioning of all project elements, customer engineering costs, risk and complexity are reduced.



Installation Products

Cable accessories - Elastimold™ underground cable accessories



The Elastimold™ brand offers one of the largest product offerings in the industry of IEEE 200 A loadbreak and deadbreak elbows and 600 A and 900 A with EPDM rubber molded products and epoxy components. All products are manufactured in the USA in state-of-the-art facilities with centralized stocking in the USA and are 100% tested. The Elastimold™ brand's long, innovative history includes pioneering such products as extended, repair and jacket seal elbows. Elastimold accessories, available from 5–138 kV, are used to connect, ground, splice, terminate and protect underground cable.

Cable accessories - Hi-Tech™ current-limiting fuses



Hi-Tech™ is an industry brand of current-limiting fuses with advanced designs to provide superior protection in small, cost-efficient form factors to optimize value, reliability and reduce system life cycle costs. With fault clearing capabilities in less than one-half cycle, Hi-Tech current limiting fuses reduce the letthrough energy, thereby significantly reducing stress on equipment and increasing safety. One hundred percent factory tested and sealed, rugged machined-brass end caps and patented damage sensors are just a few benefits. ABB now offers the Hi-Tech Valiant™ full-range current-limiting fuse for fire mitigation. This new fuse incorporates over 20 years of field-tested Hi-Tech full-range fuse technology combined with a new visual indicating mechanism. The Hi-Tech Valiant current-limiting fuse's special construction contains the expulsive fragments that could otherwise be emitted during fuse operation – fragments that could fall on dry vegetation and ignite a wildfire.

Cable accessories - Underground and network connectors Homac™



Network connectors



Transformer connectors



Multiport connectors



Splice systems



Grounding



Installation Products

Homac™ Street lighting connectors



Homac™ street lighting connectors are available in breakaway and non-breakaway styles with both compression and mechanical connectors to meet all of your street lighting connection needs.

Overhead connectors - Blackburn™ terminals



The Blackburn™ brand stands for quality and reliability in connecting overhead distribution power lines and equipment, encompassing a complete line of splices, taps and terminals for all overhead distribution applications. With Blackburn Storm-Safe® breakaway service entrance kits, when ice-loaded or debris-damaged service cables come down, they are deenergized, with no further damage to equipment or customer property.

Blackburn™ taps



Blackburn™ splices



Substation connectors - Homac™ welded aluminum



Homac™ substation connectors encompass a broad line of high quality substation connectors. With weldment and bolted products up to 500 kV, the wide Homac product offering includes a full line of couplers, taps, bus supports, terminals and expansion connectors. Homac products are made in plants that are ISO 9001-2008 certified for both design and manufacturing to ensure quality and reliability. Prefabricated bus assemblies, A-frames and jumpers are also available to save you time and money on the jobsite.

Homac™ bolted aluminum



Homac™ bolted bronze



Homac™ EHV 345–500 kV welded and bolted aluminum



Color Keyed Lugs



The Color-Keyed method of installing compression connectors on power cables is designed to provide a high degree of reliability in electrical wiring. This method allows electrical workers to make installations with little effort and at a considerable savings in time. The benefit, of course, is a high quality connection at a low installed cost.

Installation Products

Mechanical Connectors



Blackburn® cast, forged, or formed mechanical connections, produced in economical copper and dual-rated aluminum, provide unequaled variety with a large variety of U.L. and C.S.A. certified solutions for your electrical interface needs.

Grounding



ABB introduces a method of compression to replace exothermic welding and its associated disadvantages. This compression method is designed to provide quick, reliable connections for grid grounding at significantly lower installed costs because compression connectors install in less time, in any weather, and are unaffected by moisture, reducing downtime. In addition, our compression connectors for grid grounding require no special training for installation. They are made of high-conductivity wrought and cast copper, and are used for connecting and tapping cross grid, loop lines and ground rods for direct burial or concrete embedded ground grid systems. The ABB compression system uses standard electrical connector installation tools

6 Ton, 12 Ton, 15 Ton tool & Dies



The ABB line of 6- to 15-ton compression and cutting tools is equipped with lithium-ion (Li) battery technology.

- Works with the common MAKITA® battery platform for ease of use with other tools
 - 18 V MAKITA® battery offers lighter weight, longer run times, no memory effect, minimal discharge and a rapid recharge
 - Visual indication of complete crimp compression (green/orange/red)
 - Lithium-ion battery-powered tools and lithium-ion batteries come with a 5-year limited warranty
 - Covers a wide range of applications in both the electrical and utility markets
-

E-mobility

Public and passenger vehicle charging infrastructure 20 to 350 kW at up to 920 VDC



As the first to deploy nationwide charging networks over a decade ago, ABB E-mobility is experienced in DC fast charging systems for public networks, commercial retail sites, public parking and convenience locations. Our charging solutions serve all passenger vehicles in a range of power according to all open charging protocols and safety standards. Additionally, ABB E-mobility chargers are connected 24/7 for enabling OCPP and varied payment solutions, as well as remote updates and field services which support an optimal owner and driver experience.

Fleet and commercial vehicle charging infrastructure from 20 to 350 kW



ABB E-mobility provides a wide range of charging solutions tailored to fleet and commercial vehicle needs from 20 to 350 kW including critical high voltage DC fast charging for trucks, vans and other medium- and heavy- duty fleet vehicles. Every charger is connected for round the clock remote services and updates, OCPP integrations, and a suite of web tools to enable data collection and reporting as well as multiple authentication modes. All ABB chargers are backed by specialized services including tech support, training, interoperability testing and validation, as well as commissioning and field service support.

Bus and transit charging infrastructure up to 450 kW and 850 VDC

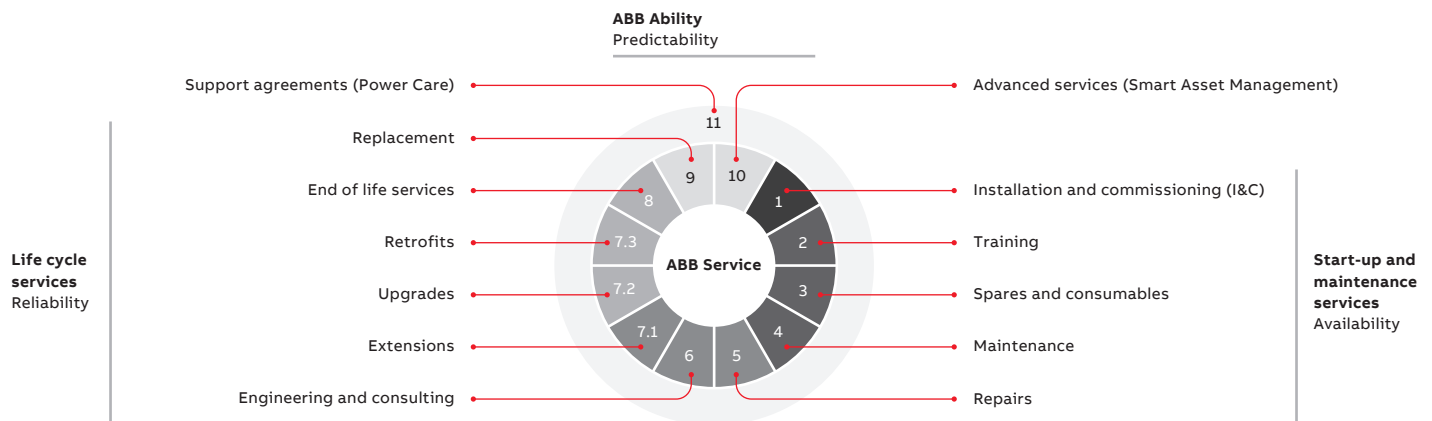


HVC charging systems from ABB E-mobility cover a robust DC power range up to 450 kW and 850 VDC via CCS and pantograph based connections. The HVC overnight charging solution allows connection of up to three depot charge boxes with a single power cabinet, where vehicles are charged sequentially over time. The pantograph opportunity charging systems can deliver high-power charging via an automated rooftop connection in charge times of 3 to 6 minutes at endpoints, terminals and intermediate stops, mounted on a pole or ceiling, without impacting daily route operations. All ABB E-mobility HVC solutions can meet Buy America (Rule 49 CFR Part 661.5). ABB's HVC charging systems come with an extensive suite of connectivity features including network integrations as well as remote services such as monitoring, management, diagnostics and software upgrades.

Service and aftermarket solutions

Start-up and maintenance services	Installation and commissioning Training Spares and consumables Maintenance <ul style="list-style-type: none"> - Testing - Refurbishment Repairs Extended Warranty
Life cycle services	Engineering and consulting Power system studies Match-in-line/extension Upgrades <ul style="list-style-type: none"> - Safety improvements - Arc fault protection - Fast protection relays - Ultra fast earthing switch (UFES) - Remote racking Retrofit Circuit breaker retrofit options (roll-in replacement & hard bus retrofit) Relay retrofit Replacement breakers
ABB Ability	Monitoring and diagnostics Assessments Service agreements

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Notes

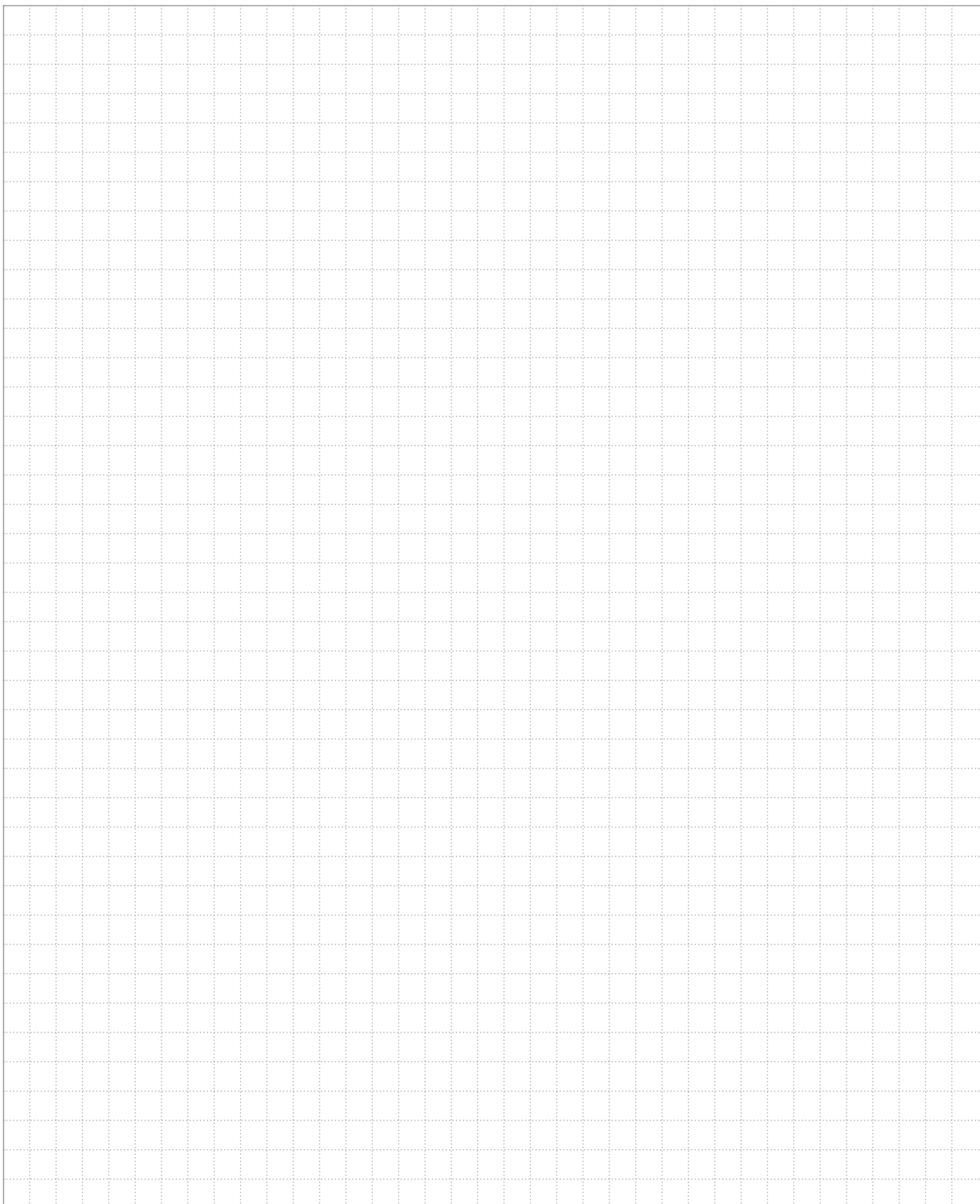




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