LINE CARD

Distribution Automation
ANSI product offering

ABB delivers a full range of genuine IEC 61850 protection and control products, also including network automation. ABB’s IEC 61850 compliant solutions offer a unified user experience for operating power distribution systems from the secondary substation level up to the network control center level.

ABB’s Distribution Automation products are built to withstand the rigors of the most demanding environments including marine and offshore, industrial facilities such as mines and paper and petrochemical plants, as well as utilities in urban and rural locations.

Relion series and supporting products

| Relion® 605 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. The use is convenient with basic settings and an alphanumerical display. It has a very wide auxiliary voltage range with a universal power supply module, reducing the variants needed. The relay is offered with an optional galvanic communication module including several protocols. |
| Relion® 615 series | The protection relay line provides protection and control for a complete range of applications including feeder, line differential, transformer, busbar, motor, and generator. The 615 series offers a high functionality level in a compact format. Flexible engineering is enabled using the graphical application configuration functionality, and all relevant information including a single line diagram view is provided to the end user via the local graphical display. The relays offer easily settable state-of-the-art ground-fault protection. The integrated ARC flash protection enables detection of arc faults in the busbar, circuit breaker and cable compartments. The withdrawable-unit design enables easier testing and speeds up maintenance activities. The communication capabilities of the relays include a wide range of communication protocols and interfaces ensuring seamless system level integration. The 615 series is well prepared for digital switchgears and substations, with IEC 61850 Edition 1 and Edition 2 support, horizontal GOOSE messaging, redundant Ethernet communication including HSR and PRP protocols, and process bus according to IEC 61850-9-2 LE providing sampled measured values. |
| Relion® 620 series | The protection relay line provides protection and control for a complete range of applications including feeder protection, transformer protection and motor protection. The wider case of the relay enables a high number of binary inputs and outputs and control of several circuit breakers. Flexible engineering is enabled using the graphical application configuration functionality, and all relevant information including a single line diagram view is provided to the end user via the local graphical display. In addition, the 620 series relays include programmable push buttons on the local HMI. The relays offer easily settable state-of-the-art ground-fault protection. The integrated ARC flash protection enables detection of arc faults in the busbar, circuit breaker and cable compartments. The withdrawable-unit design enables easier testing and speeds up maintenance activities. The communication capabilities of the relays include a wide range of communication protocols and interfaces ensuring seamless system level integration. The 620 series is well prepared for digital switchgears and substations, with IEC 61850 Edition 1 and Edition 2 support, horizontal GOOSE messaging, redundant Ethernet communication including HSR and PRP protocols, and process bus according to IEC 61850-9-2 LE providing sampled measured values. |
Relion series and supporting products

**RI0600**

RI0600 Remote I/O unit is designed to expand the digital and analog I/O of ABB’s Relion® protection relays, provide I/O for the station automation device COM600F and in Grid Automation applications. 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 RI0600 helps in simplifying and decreasing the wiring inside the substation by digitizing the hardwired signals.

RI0600 enables accurate current and voltage measurements from the medium-voltage network utilizing ABB’s light weight sensor technology. Based on the measured values, RI0600 gives directional fault passage indication and reports it to the upper level system using Modbus TCP or IEC 61850 GOOSE communication. RI0600 also enables power flow and power quality monitoring. With state-of-the-art multi-frequency admittance (MFA) based ground fault indication also high-ohmic transient and intermittent type of ground faults can be reliably detected, even in compensated and isolated networks.

**Engineering and test tools**

**PCM600**

An easy-to-handle tool providing versatile functionalities required throughout the life cycle of ABB's Relion® protection and control relays in transmission and distribution applications. PCM600 is IEC 61850 certified, which simplifies relay engineering and enables information exchange with other IEC 61850 compliant tools. The hierarchical presentation model that reflects the real system topology allows you to efficiently view and edit information about your power system.

PCM600 provides efficient functionality for parameter setting, application configuration and communication engineering. With an intuitive and well-structured user interface PCM600 offers easy-to-use configuration capabilities for I/O mapping and signal mapping. The user interface, workflow and the IEC 61850 based data model in PCM600 are designed according to the same philosophy as the relay itself, ensuring smooth and seamless integration between the tool and the protection and control relays. PCM600 features facilities for engineering of IEC 61850 communication between bay and station levels and bay-to-bay GOOSE messaging for station-wide interlocking and control of parallel transformers.

**FT Flexitest™ 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. FT-19R, FT-19RX, FT-19RS, and FT-22RS Flexitest switch assemblies for rack and switchboard mounting also permit convenient isolation of switchboard relays, meters, and instruments allowing quick and easy multi-circuit testing by any conventional test method. These assemblies utilize FT-1 and/or FT-14 switches, depending on customers requirements.

Arc fault protection

**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.

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. The REA system uses two types of optical sensors for detecting light: a non-shielded, bare fiber sensor that detects light along its entire length and lens type point sensors with typically one sensor installed per switchgear compartment. The REA 101 main module can operate as a stand-alone device or in combination with other REA 101 modules. Extension modules of type REA 103 or REA 107 allow the number of sensor fibers and/or lens-type sensors to be increased to extend the area of protection. Extension module type REA 105 has also fast trip outputs allowing protection schemes with increased selectivity to be created.

Communication devices

**Arctic**

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 IEC 60870 and Modbus-based protocols, in addition to TCP/IP-based protocols.

**ARM600**

The M2M gateway ARM600 is a communication server, VPN concentrator and firewall. It is the interface between the central monitoring and control system (SCADA) and remote Arctic gateways and controllers. The ARM600 includes a device management application, Arctic Patrol, which features advanced condition monitoring and allows remote management of Arctic gateways and controllers.
Distribution Automation solutions

COM600F
An all-in-one and versatile substation management unit that performs a role of a communication protocol gateway, human machine interface (HMI) for monitoring and operations, with a capability to also run non-critical substation applications in medium voltage substations.

It is deployed together with protection relays, substation devices such as RTUs, meters and PLCs in dedicated cabinets or in a switchgear and help realize smart substation and grid automation solutions in the utility and the industrial distribution networks by using process information and device data acquired over Ethernet or serial based standard communication protocols to execute specific substation tasks.

As a substation computer, it comes with a robust IEC 61850-3 based design capable of hosting a high definition display interface and with pre-configured and user configurable cyber security features.

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. Furthermore, through the possibility of manually-initiated transfers – for targeted clearings, for example – the operation of the installation is considerably simplified. In conjunction with conventional circuit-breakers and protection devices total transfer times in the range of less than 100 ms will be achieved (counting from the occurrence of the fault in the main feeder until the circuit-breaker of the standby feeder is closed). For smooth operation of motor-driven consumers, a transfer in this range will usually be sufficient and non-critical.

For demanding applications requiring transfer systems that provide transfer times within 1 ½ cycle the SUE 3000 can be extended with additional components and performance-enhancing features, to create the High Speed Transfer System (HSTS). This system with optimized medium voltage circuit breaker VM1-T and switchbay protection and control unit REFS42plus, achieves transfer times of 30 ms. This result in a transfer time that permits sensitive industrial processes to continue in operation without any interruption. (non-UL)

cPMS/PML630
A comprehensive, freely-configurable load-shedding device that protects industrial and utility power networks with multiple power sources and critical loads against power outages and blackouts. It responds to power network disturbances and loss of available power by cutting off loads in a fast, accurate and selective manner and in the process, ensuring availability of power supply for critical loads. Such an action results in the least possible interruption to the duration and frequency of production downtime in an industrial deployment and power outage in a power distribution network.

Besides fast load-shedding, it also supports load-shedding based on power source overloading, power demand violation, frequency and manual actions. The execution of the application is aided by inputs and outputs exchanged with protection relays compliant to the IEC 61850 standard. It provides full engineering flexibility with an automated application configuration. The detachable local HMI includes a high resolution display provides all relevant information to the end user. In addition, the device includes programmable push buttons. (non-UL)

Retrofits

Relay retrofit program
Relay Retrofit Program (RRP) focuses on the smooth and controlled replacement of existing protection relays with modern protection and control IEDs. The program includes all the devices, accessories, hardware and software tools and documentation (manuals) needed for a timely scheduled and controlled execution of retrofit projects. The various phases of the retrofit project can be accurately scheduled and timely executed to minimize downtime of the production or power distribution processes. Further, the relay retrofit program can be used to improve the protection system by implementing new functionality, such as arc fault protection, and by enhancing the horizontal and vertical transfer of information.

PCMU
The Pre-Configured Matching Unit (PCMU) represents the best choice to replace ABB legacy relays. It ensures a reliable, seamless upgrade due to the risk reduction only a wire-like solution can provide. It also offers the lowest possible cost of installation in the market by using the existing wiring and connecting it to the wire-like terminals. Additionally the time to update drawings after installation is virtually eliminated since no changes in wiring are required. ABB’s PCMUs are the best choice for to replace ABB legacy relays such as MSOC, DPU245, DPU445, DPU2000, and DPU2000R

REF615R
REF615R is a dedicated relay feeder, perfectly aligned for protection, control, measurement, and supervision of utility substations and industrial power systems. The 19 inch rack mount form of ABB’s ReIOn® REF615 utilizes the same form and fit as the DPU2000R relay and provides exact wire-like matching rear terminals, making the REF615R the ideal solution for upgrading to the industry’s latest technologies. Engineered from the ground up, the 615 series has been designed to unleash the full potential of the IEC 61850 standard for communication and interoperability of substation automation devices while providing Modbus and DNP simultaneously in one standard configuration. Some SCADA integration work may be required when replacing the DPU2000R.
Service

Life cycle services

ABB offers full support for all protection and control relays throughout their entire life cycle. Our extensive life cycle services include, customer support, maintenance and modernization, in order to ensure safe, reliable and cost effective protection solutions with predictable maintenance costs. Our maintenance services range from preventive maintenance, developed to ensure reliable operation for aging protection equipment, to spare parts, refurbished spare devices and repair service. Our spare parts service ensures only genuine spare parts are supplied, and not only for the latest but also for protection relays as old as 40 years. An alternative to sending the relay for repair is ordering a refurbished spare device, which is also an ecological choice.

Modernization offers a cost-effective and smooth upgrade of your entire protection and control system, without having to replace the entire switchgear. By updating or replacing the protection relays, the switchgear lifetime can be significantly extended. Modernization also ensures your protection and control system meets the latest standards and represents the latest technology. ABB’s modernization services include software updates, product upgrades, replacements (retrofits) and also recycling, making it an economical and environmentally friendly choice.

Trainings

Distribution Automation training and learning centers offer a wide range of courses: from the basics of the relay operation to the detailed learning of the modern medium voltage protection and control products. By knowing devices and equipment you are able to use them more efficiently and also receive more specific information from your network.