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LINE CARD

Digital Substation Products
Global product offering

ABB's digital substation products are IEC 61850 standard compliant and 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® product family 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.
	603 is a current transformer powered numerical feeder protection relay including overcurrent and earth-fault protection. It is designed for applications where auxiliary power is not available or cannot be guaranteed, thereby making it an ideal choice for installation at remote locations. The relay is primarily used in ring main units and secondary distribution switchgear within distribution networks.
Relion® REX610	REX610 covers the full range of basic utility applications. The modular and scalable design makes creating unique protection solutions easy, whereas the extensive range of default functionality, including communication, allows easy alterations with no additional costs nor hardware changes. This makes REX610 not only flexible but also a very cost-effective choice.
Relion® 611 series	The protection relay line provides protection and control for the most typical applications including feeder, voltage and motor protection as well as a dedicated relay for high-impedance based differential protection. The relays are compact, easy to install and efficient to engineer with a matrix type of configuration. The relays are convenient to use due to the alphanumerical display and Web browser-based user interface. The withdrawable-unit design enables easier testing and speeds up maintenance activities. The communication capabilities of the relay ensure seamless system level integration.
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. 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 earth-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 switchgear 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® product family and supporting 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. 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 earth-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 switchgear 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® 630 series

The protection relay line provides full protection and control for demanding applications including feeder protection with line distance protection, transformer protection including automatic voltage regulation for an on-load tap changer, voltage protection, busbar protection, motor protection including motor differential protection, as well as generator and interconnection protection. The 630 series offers a high number of binary inputs and outputs and control of several circuit breakers.

The full engineering flexibility with the graphical application configuration functionality includes free selection of analog channels used for protection. The detachable local HMI includes a high resolution display that provides all relevant information to the end user. In addition, the 630 series relays include programmable push buttons. The relays offer easily settable state-of-the-art earth-fault protection. The communication capabilities of the relays include a wide range of communication protocols and interfaces ensuring seamless system level integration.

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.

REX640 comes with comprehensive base functionality as standard. However, it is possible to further adapt the product to meet special installation needs by including any number of the available optional application packages into a single REX640 relay. By applying the relevant application package(s), the REX640 can be used in different protection applications, from a simple feeder to demanding power transformer and synchronous machine applications. REX640 also introduces several application packages for extended control functionalities like automatic synchronizer for generators, Petersen coil controller and on-load tap changer controller.

Complying with the IEC 61850 standard is one of the core values of REX640. Full support for horizontal GOOSE communication as well as for sending and receiving sampled measured value streams as per IEC 61850-9-2 LE. Availability of the communication-based information can be secured with PRP or HSR protocols. The modular design and the freely configurable functionality of REX640 together with extensive hardware capabilities create a unique combination to match even the most demanding requirements.

RIO600

RIO600 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 COM600 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 RIO600 helps in simplifying and decreasing the wiring inside the substation by digitizing the hardwired signals.

RIO600 enables accurate current and voltage measurements from the medium-voltage network utilizing ABB's light weight sensor technology. Based on the measured values, RIO600 gives directional fault passage indication and reports it to the upper level system using Modbus TCP or IEC 61850 GOOSE communication. RIO600 also enables power flow and power quality monitoring. With state-of-the-art multi-frequency admittance (MFA) based earth-fault indication also high-ohmic transient and intermittent type of earth-faults can be reliably detected, even in compensated and isolated networks.

Arc fault protection

REA system

A fast and selectively operating arc fault mitigation system for air-insulated low voltage and medium voltage switchgear 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 also has fast trip outputs, allowing protection schemes with increased selectivity to be created.

Centralized protection and control

SSC600

ABB Ability™ Smart Substation Control and Protection for electrical systems SSC600 is a device designed for protection, control, measurement and supervision of utility substations and industrial switchgear and equipment. The design has been guided by the IEC 61850 standard for communication and interoperability of substation automation devices. It is fully integrable with Relion relays and IEC 61850 compatible merging units for creating a complete solution protecting a whole substation. Optional functionality is available at the time of order for both software and hardware covering different application needs.

SSC600 SW

ABB offers two options for centralized protection and control. The proven turnkey Smart Substation Control and Protection SSC600 device has been on the market since 2018. Now, as the first in the world, ABB has launched virtualized protection and control with SSC600 SW. With this standalone software option, you can order only the software and install it on the hardware of your choice.

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. SMU615 itself includes no protection functionality but it offers the physical interface into the switchgear primary equipment, that is, circuit breaker, disconnector and earthing switch.

Software and test tools

PCM600

The easy-to-use PCM600 tool provides versatile functionalities required throughout the life cycle of ABB's protection and control devices, such as the Relion® protection relays. It helps you efficiently manage your protection and control devices, all the way from application and communication configuration through to disturbance handling, including automatic disturbance reporting.

PCM600 is IEC 61850-certified, which simplifies relay engineering and enables information exchange with other IEC 61850 standard compliant tools. The hierarchical presentation model that reflects the real system topology allows you to efficiently view and edit information about your power system.

RXplore

The relay explorer RXplore mobile application is designed for operators and site engineers to improve the ease-of-use and increase productivity, on site, during maintenance of protection relays. The app enables a secure connection to the ABB cloud and to selected ABB protection and control relays, and ABB monitoring and diagnostic devices. RXplore supports downloading data from ABB's cloud service as well as visualization, parameterization and sharing fault information on site.

ADAM

ADAM offers fleet management for the Smart Substation Control and Protection SSC600, and the standalone software version, SSC600 SW. Easy-to-use, cybersecure and cloud-based, ADAM provides you with the full view of your devices, complete visibility of your data, and easy device management. This digital solution is fully hosted in a cloud environment and secure communication from the site to the cloud can be managed with, for example, the Arctic family of wireless communication products.

RTB615

Relay test box for 615 series plug-in units. The 615 series relays can be withdrawn from its original case and inserted to RTB615 for testing. The test box supports periodical relay testing and commissioning of new or retrofit installations. It can also be used for demonstration or training purposes and as a support during the engineering phase. All the analog inputs and binary input and output interfaces of the relay are readily available on the RTB615 front plate to connect to the secondary injection device, for example, Omicron or Megger.

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. 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.

Communication devices

Arctic product family

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. ARM600 is available as two variants, with the server hardware (ARM600) and as the software version (ARM600SW), which can be run on a virtual machine on premise or as a cloud based solution.

ARC600

The wireless controller ARC600 is a compact, all-in-one device for remote monitoring and control of secondary substations, network disconnectors, load-break switches and ring main units (RMU) in distribution networks. The controller allows the monitoring and control system, such as SCADA, to wirelessly monitor and control field devices over the wireless cellular network.

ARR600

The wireless I/O Gateway ARR600 provides wireless monitoring and control of field devices via cellular network from a central site or control center. The devices offer industrial quality connectivity for the IEC 60870 and Modbus based protocols. Field applications can be connected and controlled via built-in digital and analog I/O's. Wireless I/O Gateway ARR600 exhibits integrated communication capability and seamless integration to SCADA systems.

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

Grid automation products

RER620

RER620 is a dedicated recloser relay perfectly aligned for the protection, control, measurement, and supervision of utility distribution feeders and industrial power systems. RER620 provides protection for overhead lines and cable feeders in distribution substations. It can be applied for protection and control of grounded and ungrounded distribution systems. Offering time and instantaneous overcurrent, negative sequence overcurrent, phase discontinuity, breaker failure, embedded loop control performing automatic loop restoration functions (commonly accepted as a means to significantly improve circuit reliability and to provide more effective system operation), and voltage metering and protection.

REC615/RER615

REC615 and RER615 provide optimal functionality to enhance grid reliability with a wide range of protection functionality, remote control and monitoring, fault indication and power quality analysing functionality. The provided range of standard network communication protocols ensures seamless integration in the overall grid control system. REC615 is suitable for a wide variety of power distribution networks, which can include distributed power generation, secondary equipment such as medium voltage disconnectors, switches and ring main units. RER615 is designed as recloser controller in medium voltage secondary distribution systems, including radial, looped and meshed distribution networks, with or without distributed power generation.

Digital services and training

ABB Relays-Online

ABB Relays-Online makes finding, selecting, ordering, and tracking of your next digital substation product order quick and easy. The modular e-business platform is the one place where you will find most of the needed functionality to take your daily power distribution protection and control business to the next level. The platform is globally accessible and allows you to explore, build and order your product anytime, anywhere.

Learn more: go.abb/relaysonline

Start using: https://relays.protection-control.abb/

Training

Our training and learning centers offer a wide range of training opportunities to ensure you get the most out of your digital substation product. Choose from interactive classroom training and hands-on sessions in our modern training facilities, e-learning courses and webinars online, or courses tailored to your specific needs on-site, in your own language. Our skilled trainers help you learn the best, safest and most efficient way to use your digital substation product to ensure safe and reliable operation, maximized product lifetime and reduced downtime.

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