Arc Fault Protection System
REA

Minimizes material damage, increases operating personnel safety and allows smooth power restoration. Enables redundant, instantaneous and fail-safe arc fault protection. Fiber-optic technology and flexible, fast overcurrent monitoring for secure protection. Technology promotes quick reaction and cost-effective installation.

The REA Arc Fault Protection System from ABB provides your substation with comprehensive protection against arc faults. It minimizes material damage and allows power distribution to be smoothly and safely restored. The system can also bring cost benefits even before an arc fault occurs. As older switchgear is more prone to arc faults, fitting an ABB Arc Fault Protection System will effectively extend the life of your switchgear and make more of your investment. But even more importantly, this technology can also help save lives.

Redundancy
A reliable function of the protection system is of crucial importance for network nodes. This justifies the implementation of a redundant protection system, fully independent of the basic protection system. An autonomous REA Arc Fault Protection System perfectly fulfills this requirement, as its function is based on a different physical phenomenon than conventional protection solutions and on a dedicated technology.

Technology for increased safety
The key to efficient protection is the immediate detection of arcs. The REA system utilizes optical fiber sensor technology, which enables fail-safe and instantaneous arc flash detection anywhere within the switchgear enclosure. Tough, unshielded fiber-optic sensor cables run throughout the switchgear enclosure and sense the intense light from a developing arc, no matter where it strikes. Alternatively, radial fibers with light collecting lenses can be used.

Faster protection than ever
Among other advantages, optical arc flash detection technology promotes quick reaction and cost-effective installation, which is ideally suited to multi-chamber low or medium voltage air-insulated switchgears. It is here that the system’s fast trip outputs using Insulated Gate Bipolar Transistor (IGBT) solid-state circuits react instantly (<2.5 ms) to isolate the arc, long before any extensive damage can occur, causing long and devastatingly expensive downtime.

Peace of mind guaranteed
The REA Arc Fault Protection System is second to none when it comes to reliability: continuous self-monitoring of the system and its fiber-optic loops ensure non-stop protection. Flexible configuration capabilities allow either light or light and simultaneous overcurrent detection to trigger a circuit-breaker for absolute security. Selective indication and zone-divided protection are easy to implement. Extension modules allow single feeders or bus bars to be isolated, maintaining the power supply even in the event of an arc incident to the rest of the system. Combined with zone-divided protection, this allows you to pinpoint exactly where the arc occurred. What’s more, if one feeder is isolated during maintenance, the rest of the system remains fully protected against arcs.

The intelligent investment that minimizes material damage
Whether caused by human error, a faulty device or bad insulators, arc faults expose your switchgear and other costly equipment to severe pressure and fire impacts, not to mention the danger to operating personnel. Simply put, the REA Arc Fault Protection System is the far-sighted way to improve productivity and increase profits while enhancing personnel safety. It is a secure investment in your future competitiveness in more ways than one and will pay for itself many times over. The system can be installed in either retrofit installations or green-field investments.
Functions and features
- Extremely short overall operating time (<2.5 ms)
- Arc flash detection with long-sensor fiber or light collecting lens-type sensors
- Fast, adjustable three-phase overcurrent or two-phase overcurrent and neutral current condition to secure fault detection
- Low burden 1A/5A CT inputs
- Circuit-breaker failure protection
- Continuous self-supervision of sensor fiber loops, operating voltages and cabling between main modules and extension modules
- Wide area automatic or manual backlight compensation

The REA 101 main module
- Two high-speed solid-state (Insulated Gate Bipolar Transistor) outputs for tripping CBs
- Selective tripping by additional REA 105 extension modules
- Two opto-connectors for fast signal transfer of light/current/trip signals between the main modules
- Relay output for circuit-breaker failure protection or as an alarm output
- Two RJ-45-type ports for chaining max. 5 extension modules per port

Extension modules for detecting the arc
REA 103
- Two sensor fibers in loop or radial arrangement
- Two signal relays activated by light

REA 105
- Loop-type or radial sensor fiber
- Two high-speed semi-conductor outputs for tripping CBs
- Signal relay activated by light
- Can serve as over current information link between two REA 101 main modules

REA 107
- Eight lens sensors in radial arrangement
- Two signal relays activated by light

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