Release of Relion® 670 series
Version 2.2

The evolution of Relion 670 series continues with this update. The designation of this update is revision 2.2.4

Release authorized by:
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Introduction

We are pleased to announce an update of the Relion 670 series version 2.2, our flagship protection and control IEDs. With this update, we bring several new features and enhancements.

The update covers customized and pre-configured IEDs covering all application areas within the products REB/REC/RED/REG/REL/RER/RES and RET670. The Relion 670 series covers a complete set of applications from generator protection, transformer protection and control to busbar protection, line protection, phasor monitoring and bay control. With the introduction of version 2.2 of the 670 series, we further expand the application areas especially for digital substations, enhancing the system functionality and flexibility.

Key system features such as support for several Ethernet communication ports, HSR redundancy method and precision time synchronization following the IEC/IEEE 61850-9-3 profile have been introduced in place since the launch of version 2.2. Also, process bus sampled values via IEC/UCA 61850-9-2LE has been supported in all products of the Relion 670 series. A number of system and cybersecurity features bring enhancements to these already available features.
New features and benefits

The following new features and their benefits are introduced in this update:

**Hardware related**

- Introducing an enhanced revision of the Static Output Module (SOM), article number 1MRK002614-CA with six relay outputs and six heavy duty outputs for fast and direct circuit breaker operation without the need for intermediate auxiliary relays. The enhanced breaking capability is as shown in the technical data in product guides and technical manuals.

**Application related**

- Introducing a novel transient earth fault protection that can be universally applied in resonant, high-impedance and isolated networks. Earth faults of various types like low-Ohmic, high-Ohmic, intermittent and re-striking can be accurately and securely detected. This functionality can be integrated in line protection RED670 or REL670, bay controller REC670, transformer protection RET670 and in generator protection REG670.

- A complete set of current and voltage-based unbalance protection functions for protection of shunt capacitor banks. These are available in the bay controller REC670 and transformer protection RET670. The wide range of functions can easily be adapted depending on the fusing method, size, grounding and availability of CT/VT of the installation.
• The existing high-speed line distance protection functions ZMFPDIS/ZMFCPDIS are now enhanced further with an additional overall seventh zone, where-in one zone is fixed to forward, one zone is fixed to reverse and the directionality of the remaining five zones are settable. Further, the directional blinders from being fixed in the past can now be settable by the user. The enhancements meet requirements for flexible and demanding distance protection applications in solidly and high impedance grounded networks.

• The existing line distance protection function ZRWPDIS as part of railway protection RER670 is improved where-in among other things the end zone logic, handling of Petersén grounded network and additional outputs are made available to facilitate testing. Technical documentation of this function is improved.

• The setting range for Relay Operating Angle (ROA) in the existing restricted earth fault differential protection REFPDIF is increased in order to handle applications in high-impedance grounded networks.

• The existing earth fault protection EF4PTOC is now enhanced with built-in phase selector providing information of the faulty phase(s). This enhancement meets requirement of earth-fault performance in networks where single-pole auto-reclosing is used.

System and cyber-security related

• The 670 series already support user accounts that are managed locally or centrally via ABB’s SDM600. Central account management has been further enhanced to support Microsoft® Active Directory service for user management. This enhancement allows user account management and authorization via a third-party Active Directory domain server.

• The 670 series communication to central account management servers has been enhanced to support Lightweight Directory Access Protocol over SSL (LDAPS) also called secure LDAP.

• Default password and PIN code for the IED while being fixed in earlier versions can now be changed by user thereby meeting requirements of cyber-security standards.

• The communication to/from 670 series devices uses data encryption via Transport Layer Security (TLS). While TLS versions 1.2, 1.1, 1.0 are supported, these are also settable by the user in terms of allowed Min/Max versions. This provides the flexibility for users to raise the cyber security data encryption levels and when needed for specific cases/clients allow a lower encryption level.

• The United States Federal Information Processing Standard (FIPS) defines security and interoperability requirements for computer systems that are used in governmental organizations. The 670 series version 2.2.4 together with PCM600 version 2.10 and connectivity package version 3.4 now uses SHA-256 encryption algorithm to meet the FIPS 140 standard. This enhancement ensures that the IED and tools environment work seamlessly in a FIPS or non-FIPS system.

• All 670 series products include a feature where the function keys on the LHMI can be configured for use either with or without authentication. In addition, a configurable input is now available for additional conditional checks, like L/R position for example. This eliminates any unsafe operations with function keys.

• IEC 61850 communication supervision now covers GOOSE via logical node ALGOS and sample value supervision via logical node ALSVS.
• IEC 61850 supports a powerful feature of simulation and testing of sample values and GOOSE data. While the 670 series devices have supported this simulation mode, it is further enhanced with clear indication on the LEDs when in simulation mode and a function block output which can be used in application configurations.

• When using LDCM modules, extensive line data communication information is now available on LHMI and signal monitoring in PCM600 for supervision of communication links.

• User Defined Name (UDN) is a simple yet powerful way to identify signals in a configuration and on the LHMI. From the present 13-character limit, it is now increased to 16-characters and complies with IEC/IEEE C37.118.2, with 16 bytes for station, channel names.

• The total number of disturbance records stored in the 670 series IED has been increased from the present 100 to 200 records.

• As the 670 series product capability allows higher functional integration the need for larger local storage of events in the internal event recorder is vital. The total storage of process events has been increased from present 1000 to 5000 events.

• In multi-end line differential protection application, some line ends and IEDs may need to be taken out of service. In order to increase the availability of the system the remaining parts of the system are kept in service. Feeders can now be set out-of-service or in-service from a single local end thereby reducing maintenance, testing and outage costs.

• Line differential protection security has been improved where bit errors caused by the communication system can lead to incorrect protection operation. Protection security has been enhanced such that a remote communication trip signal will be processed only when there is a genuine line differential protection start; either a local start or a remote start.

• OpenSSL updated to version 1.1.1d (http://www.openssl.org).

**PCM600 and IED connectivity package for 670 series products version 2.2**

PCM600 version 2.10 together with PCM600 2.10 Hotfix Rollup 20200424 or later and 670 series connectivity package version 3.4 will be required.

The version 3.4 of the IED Connectivity package for Relion 670 series supports 670 series version 2.2 products as well as earlier versions of the 670 series.

For further details about the connectivity package and its installation, please refer to the release note 1MRG038188.
Documentation and marketing material

The product guides, technical manuals, technical summary sheets and brochures are available via abb.com/protection-control.

Ordering and delivery

All new orders on the Relion 670 series version 2.2 products will be delivered with this latest version. Existing orders will be processed with the version/revision as acknowledged at order. If existing order shall be upgraded to this latest version, a request shall be made to SA-T sales.

For current delivery time, please get in touch with our sales contact at ABB Power Grids, Grid Automation Products.

Kind regards,

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