

# Relion® 670 series version 2.0 Release Note

**Dear Reader,**

We are proud to announce the release of Relion® 670 series version 2.0, our first KEMA certified IEC 61850 Ed. 2 compliant IED. This release introduces several new features and functional enhancements in REB/REC/RED/REG/REL and RET670. The release contains customized and pre-configured IEDs.



The 670 series has since its introduction in 2005 grown to cover a wide area of applications for protection and control of the power system. Having a product series in operation for close to a decade has given us the in-service experience in many different application areas. We have kept the proven in use application functions and we have added unique value creating new functions. The 670 series can be utilized for a complete set of applications from generator protection, transformer protection and control to busbar protection, line protection and bay control. Introducing version 2.0 of the 670 series further expands the application areas and the flexibility. The introduction of support for IEC 61850 Ed. 2 simplifies design and testing of protection and control systems utilizing GOOSE. Process bus sampled values via IEC 61850-9-2LE is supported for REC670, RED670, REG670, REL670 and RET670.

Externally type tested hardware and communication protocols (IEC 61850 Ed. 1 & Ed. 2, DNP 3.0 and IEC 60870-5-103) safeguards trouble-free system integration and operation of your protection and control investment.

The high speed line distance protection tested according to IEC 60255-121 allows an optimized use of the power lines due to the fast fault clearing time. Several new functions for generator protection and monitoring strengthens the position of REG670 as a best-in-class solution for generator applications. The monitoring functions for breakers and insulation media offers data for condition based maintenance schedule.

The local HMI including configurable three color LEDs and programmable command buttons offers a flexibility to have any information just one key-press away. The parameter setting view in PCM600 is optimized to reduce the number of and to simplify the parameter settings.

The cyber security features including user activity logging, user management and system event logging enables the design of a system in compliance to industry standards. A virtual on-screen keyboard supports utilizing complex passwords as required.

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### New features and benefits

A number of new features are included in this release. The key features and their benefits are listed below:

- Six zone high speed distance protection ZMFPDIS with sub-cycle operation times
- Multi-purpose filter, SMAIHPAC making it possible to accurately measure any current and/or voltage frequency component in connected CT and VT circuits enabling novel applications such as sub-synchronous resonance protection
- Out-of-step protection OOSPAM for selective operation at pole slipping
- Gas medium supervision SIMG and liquid medium supervision SIML, for monitoring of switchgear insulation media
- Breaker Monitoring SSCBR for monitoring of breaker wear
- Revised synchrocheck and synchronizing function SESRSYN including extended setting range and automatic phase angle matching
- Fuse failure supervision based on voltage difference VDRFUF for a phase wise comparison of two sets of three-phase voltages
- Rotor and stator overload protection GRPTTR and GSPTTR for over-temperature protection of generator windings. Rotor function includes innovating feature to measure rotor DC current.
- Frequency accumulative protection FTAQFVR to supervise & protect generators and turbines from abnormal frequency conditions
- Fault locator LMBRFLO improved accuracy for faults on radial lines

### User experience

The following are key improvements of engineering efficiency and overall usability

- Forcing of binary outputs from PCM600 or the local HMI reduces time needed for wiring check when the IED is installed
- Global Base Values for protection & monitoring functions reduces the number of parameters to be set
- User defined names for functions and signals simplifies navigation in menus and on-line debugging of engineered solutions

### Communication

The following additions have been made to the communication protocols supported

- User selectable IEC 61850 Ed.1 or Ed.2 communication.
- IEC 60870-5-103 protocol enhanced for greater flexibility and compatibility with different master systems

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### Cyber security features

In order to prevent unauthorized access to IEDs and safeguarding SA systems, a number of cyber security features are available.

- User activity logging enables traceability of user actions
- System event logging over IEC 61850 or Syslog to enable a system-wide overview of system events
- Encrypted communication for file transfer of disturbance records and engineering data from PCM600
- Per-port enable or disable of engineering access and communication protocols
- Virtual keyboard on local HMI for simplified user password entry

### Feature enhancements in 670 series products

In addition to the new functions and features, the 670 series version 2.0 of introduces a large number of improvements in existing functionality.

### Pre-configured solutions

The following product variants for ready-made application configurations are available

Product	Pre-configuration	Application description
REB670	A20	3 phase, 4 bays
	A31	3 phase, 8 bays
	B20	1 phase, 12 bays, single busbar
	B21	1 phase, 12 bays, double busbar
	B31	1 phase, 24 bays
	A31A	2 zones, 3 phase, 8 bays ANSI
REC670	A30	Single breaker
	B30	Double breaker
	A31	Bus-coupler for double busbar
	C30	1½ breaker diameter
RED670	A31	Single breaker, 3 phase tripping
	B31	Multi breaker, 3 phase tripping
	A32	Single breaker, 1 phase tripping
	B32	Multi breaker, 1 phase tripping
REG670	A30	Generator differential and back-up
	B30	Generator differential and generator/transformer back-up
	C30	Generator/transformer differential and back-up
REL670	A21	Isolated or high impedance earthed systems
	A31	Single breaker, 3 phase tripping
	B31	Multi breaker, 3 phase tripping
	A32	Single breaker, 1 phase tripping
	B32	Multi breaker, 1 phase tripping
RET670	A10	Back-up protection
	A25	Voltage and tap changer control
	A30	Single breaker, 2 winding differential
	B30	Multi breaker, 2 winding differential
	A40	Single breaker, 3 winding differential
	B40	Multi breaker, 3 winding differential
	B40A	Multi breaker, 3 winding differential ANSI

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### **Protection and Control IED Manager PCM600 tool**

The 670 series version 2.0 is supported by Protection and control IED manager PCM600 version 2.6 Hotfix 20140929 and onwards. We recommend upgrading any earlier PCM600 installation to this latest version. For more details please refer to 1MRG014630 "Protect and Control IED Manager PCM600 Ver. 2.6 Release Note". PCM600 provides support for migrating existing solutions from 670 series version 1.1 and 1.2 into 670 series version 2.0.

### **IED Connectivity package for 670 series products version 2.0**

The version 3.0 of the IED Connectivity package for Relion 670 series supports the 670 series version 2.0 products as well as earlier version of the 670 series. For further details about this version and its installation, please refer to the release note 1MRG015708.

### **Documentation**

The product guides and updated technical documentation for 670 series version 2.0 are available via [www.abb.com/protection-control](http://www.abb.com/protection-control).

### **Ordering and delivery**

The 670 series version 2.0 products can be ordered as of today. For current delivery times please refer to your local ABB representative.

Kind regards,

Lars Frisk  
Global Product Manager  
Substation Automation Products