Protection and control REX615

All-in-one protection for power generation and distribution applications

This document presents some of the most frequently asked questions related to REX615 – the next step for the 615 and 620 series relays.

Q1. Does REX615 replace the 615 and 620 series relays for good, meaning that there will be no more 615 and 620 series releases?
That is correct. There will be no more releases for neither the 615 series nor the 620 series. REX615 represents the next step for both series.

Q2. Are the mechanical dimensions identical to those of the 615 and 620 series relays and do the mounting kits remain the same too?
REX615 is mechanically identical to the 615 and 620 series relays, the standard-sized relay to 615 and the wide one to 620. Hardware dimensions, modules, wiring connections and mounting kits remain the same.

Q3. Is the wiring 100% compatible between the 615 and 620 series relays and REX615 or do you need wiring adapters?
REX615 uses the same hardware modules as the 615 and 620 series relays do. The connections are identical if REX615 is equipped with the same modules and configuration as the 615 or 620 series relay. In this case there is no need to change the schematics when replacing the 615 or 620 series relay with REX615.

Q4. Should we stop promoting the 615 and 620 series relays after REX615 has been released?
We should actively promote only REX615 once it has been released, as it represents the next step for the 615 and 620 series relays and the latest offering. It is crucial that we succeed in shifting the volumes from the 615 and 620 series to REX615 as fast as possible. The 615 and 620 series relays will still remain available if needed for

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frame agreements and switchgear extensions, for instance.

Q5. Can you import 615 series and 620 series relay configurations to REX615?
Configuration migration will not be supported immediately after the release but later it will.

Q6. How many application packages are there in REX615?
There are 12 different application packages and two alternative add-on packages for machine protection.

Q7. Where can you see what functions are included in the various application packages?
The name of the application package gives a good indication of its content. To support the selection of application package(s), a document listing all available functions per application package will be accessible via ABB Relays-Online (ROL) upon the release.

Q8. Can you select all application packages at the same time?
You can select all packages if you like. However, the actual load is dependent on how large the configuration is and the number of functions it includes.

Q9. Is there a tool for calculating the maximum number of application packages to avoid CPU (Central Processor Unit) overload?
The product selection tool does not include such a tool.

Q10. Is there a load calculator in PCM600 to ensure you will not create too large a configuration?
Yes, the load calculator in the Application Configuration Tool (ACT) of the relay setting and configuration tool PCM600 has a limit of 100%. As the CPU of REX615 is significantly more powerful than that of the 615 and 620 series relays, the limit will be harder to reach than before.

Q11. How do the application packages impact the cost per unit as the hardware remains the same?
Each application package has its own price tag depending on its content The more advanced functionality the packge contains, the higher the price of the package. The overall price increases with the number of selected application packages.

Q12. Are there any ready-made application configurations to facilitate implementation?
Ten different example configurations, covering the most common applications, will facilitate implementation. They can be used as such or modified according to application-specific requirements.

Q13. Is there a factory default logic for the relay application configuration?

The relay is empty when delivered from the factory but example configurations will facilitate engineering. These are accessible via the Update Manager in PCM600. The example configurations can be used as such or modified according to application-specific requirements before downloading the to the relay.

Q14. Will you be able to modify the hardware after the product has been delivered?

You will be able to modify both the hardware and software anytime, throughout the relay's entire life cycle, using PCM600. Additional application packages and hardware modules are ordered via ROL.

Q15. Is the hardware modular?

Both the hardware and software are fully modular. REX615 uses the same mechanics and same hardware modules as the 615 and 620 series relays do. The withdrawable plug-in unit design remains the same too.

Q16. Can you separate the relay and the LHMI (local human-machine interface) as in REF630 and REX640?

There is no such possibility in REX615. As in the 615 and 620 series relays, the local human-machine interface is always integrated.

Q17. Is the web-based HMI (WHMI) the same as in the 615 and 620 series relays or REX640?

The look and feel of the WHMI is new and similar to that of REX640. Some REX640-specific features are not supported, such as Measurements lists, Custom phasor list, Status widget and Alarm list.

Q18. Is the large LCD (liquid crystal display) the only option?

The large LCD is the only available option.

Q19. Does REX615 include grid automation functionality?

REX615 supports grid automation applications to some extent, but REC615 will continue as a separate product and our main offering for grid automation applications.

Q20. Does REX615 include high impedance-based earth-fault protection for solidly earthed networks?

REX615 includes high impedance-based earth-fault protection for feeders. This is the same function as in REF615 and REF620, although now slightly improved. As in REF615 and REF620, REX615 also includes a separate I_0 channel (0.2A/1A) for sensitive earth-faults.

Q21. Is multifrequency admittance-based earth-fault protection (MFA) suitable for solidly earthed networks?
MFA is designed for high-impedance earthed networks, meaning compensated, earthed and high-resistance earthed systems. MFA is not suitable for solidly earthed networks.

Q22. Does REX615 include motor start-up supervision and a motor start counter?
A new motorstart counter (MSCPMRI) and motor start-up supervision (MSCPMRI) are included and available in the machine protection package APP9.

Q23. Is three-independent-phase non-directional overcurrent protection available in REX615?
REX615 offers three-independent-phase non-directional overcurrent protection.

Q24. Does REX615 include distance protection?
The first release does not include distance protection.

Q25. Is it possible to use REX615 in one end together with RED615 in the other end for line differential protection (87L) with an in-zone power transformer?
Using REX615 in one end together with RED615 in the other end is possible for line differential protection with an in-zone transformer.

Q26. Does the machine protection application package include remanent undervoltage protection?
Remanent undervoltage protection (27R) is available in the voltage protection package, APP5.

Q27. Is REX615 a more price-friendly alternative compared to REF615 when used for current and voltage protection?
With similar hardware and functionality, the difference in price is minimal.

Q28. Does REX615 support both current and voltage sensors?
The sensor module has three combi-sensor inputs (3xIs + 3xUs) and a separate sensitive I_0 input using a 0.2A/1A CT (current transformer); exactly as in the 615 and 620 series relays. The sensor module supporting the new IEC 61869 standard is new.

Q29. Is the sensor input module still intended for slot X130 and is slot X120 left empty in that case?
The sensor module remains in slot X130 slot. There is no I/O module option for slot X120.

Q30. Does the new sensor module use analog integration for current measurements?
Yes, the SIM5 module uses analog integration for current measurements.

Q31. Does REX615 support a mixture of conventional analog inputs and sensors?
Mixed analog inputs and sensor are not supported in the first release.

Q32. Does REX615 have analog mA/voltage outputs?
REX615 does not have analog mA/voltage outputs, only RTD inputs and mA inputs as the 615 and 620 series relays do.

Q33. How many arc light detection sensors does each hardware variant have?
The number of optional arc sensors and the communication modules remain the same as in the 615 and 620 series relays.

Q34. Are the arc light detection sensors supervised?
Arc protection remains the same as in the 615 and 620 series relays, with no supervision for the sensor fiber. The communication modules and the number of communication ports remain the same too. New features are IRIG-B for HSR/PRP modules and the IEC 60870-5-104 protocol.

Q35. Is it possible to add I/O modules or is the number of inputs and outputs fixed?
It is possible to modify REX615 throughout the relay's life cycle by adding or changing the functionality and adding or replacing hardware modules.

Q36. What PCM600 version does REX615 require?
REX615 requires PCM600 version 2.12 Hotfix 3 or later.

Q37. Can you process the analog signals in the ACT logic using comparators like "greater than" or "scaling"?
For some analog values it is possible, such as for the real values available in the function block outputs in ACT, including GT/LT for real values. Mathematical blocks such as add, subtract, multiply and divide are also available in ACT. However, for real currents and voltages, or samples for current and voltage measurements, it is not possible.

Q38. Is it possible to generate power quality reports, including numbers of sags and wells, or is there just an ACT function block with an alarm output for triggering the disturbance recorder?
The function block is the same as before: Voltage variation (PQMV SWE, SAG, INST), which is collecting different types of sags, swells and interruptions, as well as the number of each type during a longer period of time. However, we do not have a tool or application for collecting, visualizing and reporting these values.

Q39. Are the communication features similar to those of REX640?
Physically, the communication modules and the number of communication ports will remain the same as in the 615 and 620 series relays. New features are IRIG-B for the

HSR/PRP modules and the IEC 60870-5-104 protocol. Generally, the communication features are very similar in REX615 and REX640.

Q40. Is it possible to switch between 61850 editions once the relay has been engineered?

It is possible, but a new relay configuration with the intended IEC 61850 edition must first be created in PCM600 and downloaded to the relay. It is not possible to switch between IEC 61850 editions just by changing a parameter in a relay. Neither is it possible to switch between IEC 61850 editions in the PCM600 configuration without first creating a new relay configuration.

Q41. Can you use current and voltage measurements from 9-2 streams independent of the hardware?

9-2 requires a redundant Ethernet COM module (HSR/PRP). The minimum order option for REX615 is one AIM or SIM module.

Q42. In case of a switchgear extension, for instance, is REX615 compatible with the 615 series relays when it comes to GOOSE communication as the data set structure has been changed?

REX615 supports IEC 61850 Edition 2.1 and Edition 1 (mainly for older legacy systems). As Edition 2.1 includes some data changes due to wrong modeling of certain items in edition 1 or 2.0, incompatibilities might occur if the fixes haven't been applied to both sides.

Q43. Does REX615 support IRIG-B time synchronization with redundant Ethernet?

IRIG-B time synchronization with redundant Ethernet is one of the new features in REX615.

Q44. How many clients does 61850-MMS (Multimedia Messaging Service) support?

61850-MMS supports five clients.

Q45. Is line differential protection with an in-zone power transformer (87L) still done using single channel communication as in RED615?

Single channel communication is used in REX615 too.

Q46. What type of central account management does REX615 have?

Active Directory, the same as in REX640.

Q47. Do you need an external memory with REX615?

You do not need any external memory device with REX615.

Q48. Can you set different IP addresses for different ports to serve two clients as with REX640?

Yes, REX615 supports two IP addresses for remote communication. As REX615 offers

a maximum of three Ethernet communication ports, one can, for example, use line IP for redundant Ethernet communication. The other IP address could be used for the remaining third port, for another communication protocol, for instance. Alternatively, the third port can be used as a dedicated service/configuration port for relay engineers.

Q49. Is REX615 certified according to any cyber security standard?
Achilles certification remains a target and will be started once REX615 has been released.

Q50. Does REX615 simultaneously support redundant station communication via IEC 61850 and process bus IEC 61850-9-2 LE, and a third communication channel dedicated to PCM600 engineering via a station computer?
Yes, this is possible with redundant communication modules equipped with three Ethernet ports and utilizing two IP addresses.

Q51. Is it possible to separate IEC 61850-9-2 LE process bus communication from station communication?
No, this is not possible, as IEC 61850 station communication, horizontal GOOSE communication and 9-2 LE process bus communication all use the same communication network.

Q52. Does REX615 include binary signal transfer (BST) functionality for performing line protection schemes?
Yes, it does, with 8 signals.

Q53. Is it possible to have 6 VT (voltage transformer) inputs in the standard-sized REX615 relay as in the ANSI version of REF615?
The standard-sized REX615 hardware can support either 4 CT + 6 VT or 4CT + 8VT. With voltages only, the maximum number of VTs in this release is 5.

Q54. How many IEC61850-9-2LE streams can REX615 send and receive?
REX615 can receive up to two full streams (phase currents, neutral current, phase voltages and neutral voltage per stream) and send one full stream.

Q55. Does REX615 comply with IEC61869-9 for sampled measured values (SMV)?
REX615 supports IEC 61850 9-2 LE but not IEC61869-9..

Q56. Does REX615 require a pilot wire, and in case it does, with or without an external modem?
Line differential in REX615 is similar to that in RED615 and does not require any external modem. The line differential relays are connected via a dedicated optical protection communication channel.

Q57. Does REX615 support power-factor controller applications?
Power-factor controller applications are not supported.

Q58. Does the operate time, as specified in the product documentation, include the operate time of the output relay?
The operate time of the output relay is included in the operate time.

Q59. Is it possible to change the colors of the configurable LEDs?
The configurable LEDs to the right of the relay display are similar to those of the 615 and 620 series relays and support red and green colors (plus no color for off state). LED states and colors can be configured during application engineering.

Q60. Will there be any marine certification available once the REX615 is released? If not, what is the plan? If yes, which one(s)?
No marine certification will be available at the time of the release, but GNV-GL certification will be started right after the release.

Q61. Does REX615 support the “Browse with HMI” tool component in PCM600?
There is no such tool in PCM600 that can imitate the content on the REX615 display.

Q62. Is it possible to customize the event names in the Event Viewer of PCM600?
The entire event, including event texts too, cannot be customized. If the engineering feature User-Defined Names is used to change function block symbols such as the user’s own symbols, the user’s own symbols will be show in the event information. The user’s own symbol will replace the original function name in the event information, but the event text will remain as the original.

Q63. Have there been any improvements made to the GOOSE data set limitations?
Yes, REX615 can support up to six GOOSE Control Blocks (GoCBs).

Q64. Do the GOOSE data sets allow setting more than 80 attributes?
Yes, the number has been increased to 120 attributes.

Q65. Have any improvements been made to the autoreclose function?
There are no major improvements to the autorecloser function. Some minor improvements have been made during the last couple of years and are also available in the 615 and 620 series products via firmware updates.

Q66. Is there an additional attribute for the minimum time that the circuit breaker needs to remain closed before the next sequence is allowed?
No such new setting nor new feature has been implemented to the autorecloser function.

Q67. Is reading/writing of the configuration files to the relay faster compared to the 615 and 620 series relays?

The reading/writing of configuration files is approximately as fast as in the 615 and 620 series relays.

Q68. Is it possible to select ring terminal connectors for binary and CT/VT signals?

Yes, this is possible.

Q69. Does REX615 support routable GOOSE?

Routable GOOSE is not supported.

Q70. Does REX615 support LGOS for GOOSE supervision?

LGOS is not supported.