

Relay Retrofit Program for SPACOM to REX615

Product Guide



	4TLB000502 B
Relay Retrofit Program for SPACOM to REX615	

Contents

1. Description.....	3	6. Training.....	8
2. SPACOM series relays and replacement relay REX615.....	3	7. References.....	8
3. Replacement relay REX615 engineering.....	4	8. Document revision history.....	8
4. Installation accessories.....	5		
5. Selection and ordering data.....	7		

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1. Description

ABB's life cycle extension initiative aims to support utility and industrial power distribution systems' life cycle management (LCM). One strategic consideration of the LCM of a power system is to extend the life cycle of a switchgear panel through retrofit programs targeted at selected switchgear equipment. A timely executed retrofit program for selected devices allows full utilization of the life cycle of the remaining switchgear components.

ABB's Relay Retrofit Program for SPACOM offers smooth and controlled replacement of selected SPACOM protection relays with the all-in-one protection relay REX615, representing the latest protection and control technology.

The result is extended switchgear lifetime, full availability of relay life cycle services, and the possibility to adapt the power protection system to meet the new requirements.

In addition to the REX615 replacement relay, the Relay Retrofit Program for selected SPACOM relay types offer all the necessary accessories and hardware and software tools needed for the successful and timely execution of retrofit projects. The relay comes with a retrofit connector kit corresponding to SPACOM relay connector numbers to minimize the time required to rewire and update the schematic drawings. This complete package ensures that production or power distribution process downtime is reduced to a bare minimum.

2. SPACOM series relays and replacement relay REX615

The selection of replacement relays for the existing SPACOM series relays has been carefully considered based on expert knowledge of previous product generations and recent protection and control technology developments.

The selected replacement relay type REX615 belongs to the Relion® family, and its functionality corresponds to the selected SPACOM series relays. In addition, the REX615 offers the possibility to expand the functionality of the power protection system further, for example, by adding optional protection, control and condition monitoring features. The REX615 relays are characterized by their compactness and withdrawable unit design.

The Relay Retrofit Program for replacing SPACOM with REX615 relays supports the entire replacement process – from engineering, through installation, to testing of the relay – and covers:

- Always included
 - REX615 relay with retrofit connector kit
 - Documentation
- For installation personnel
 - Configuration support services for REX615 relay
 - Cutting tool kit
 - Installation support frame
 - Cover plate (for SPACOM 300 series relay retrofit with standard REX615)
- On demand
 - Relion® BIO-Tester 610-611-615-620 (for stand-alone REX615 relay)
 - Training

The Relion® family REX615 relays have been designed to unleash the full potential of the IEC 61850 standard for communication and interoperability between the substation automation devices.

Once the new replacement relay REX615 has been given the application-specific configuration and settings, it can be put into service directly. The replacement relay is provided with a retrofit connector kit that minimizes re-wiring time and reduces the need to update the existing schematic drawings.

The REX615 relays support a range of communication protocols, including IEC 61850 with Edition 1 & 2.1 support, IEC 60870-5-103, IEC 104, Modbus and DNP3.

Relay Retrofit Program for SPACOM to REX615

Supported SPACOM relay types* are as follows:

- | | | | |
|--------------|--------------|--------------|--------------|
| • SPAA 120 C | • SPAF 140 C | • SPAJ 144 C | • SPAU 330 C |
| • SPAA 121 C | • SPAJ 110 C | • SPAJ 160 C | • SPAU 331 C |
| • SPAA 341 C | • SPAJ 111 C | • SPAM 150 C | |
| • SPAC 310 C | • SPAJ 115 C | • SPAS 120 C | |
| • SPAC 312 C | • SPAJ 131 C | • SPAU 110 C | |
| • SPAC 315 C | • SPAJ 135 C | • SPAU 121 C | |
| • SPAC 317 C | • SPAJ 140 C | • SPAU 130 C | |
| • SPAD 346 C | • SPAJ 141 C | • SPAU 140 C | |
| | • SPAJ 142 C | | |

*More SPACOM relay types to follow

3. Replacement relay REX615 engineering

Relay Retrofit Program for SPACOM to REX615 offers configuration support services. These services can be requested while ordering the Relay Retrofit Program for selected SPACOM relays.

The appropriate functionality is selected depending on the specific application, and its configurations are created with the Application Configuration tool in PCM600. Functions not available in selected SPACOM relays but supported by REX615 can be engineered separately depending on the application requirement. This customized configuration can be saved as a template. The configuration templates can be used with the Protection and Control IED Manager PCM600 while replacing the selected SPACOM relay with a corresponding REX615 protection and control relay.

REX615 relays are delivered from the factory either per their standard default configuration or re-configured using Relay Retrofit Program configuration support services. After using support services, the configuration of REX615 corresponds to the selected SPACOM relays' standard configurations.

Default configurations, connections for binary inputs, binary outputs, function-to-function connections and alarm LEDs are described in the REX615 protection and control relay manuals.

The parameter setting values can be changed from the front panel user interface (local HMI) or PCM600 with the relay-specific connectivity package.

Relay Retrofit Program for SPACOM to REX615

4. Installation accessories

The relay retrofit program offers installation accessories to facilitate the user to do the time efficient work.

Retrofit connector kit

Relay retrofit connectors can be installed on the same terminals as REX615. REX615 relays are delivered from the factory with retrofit connectors installed on the relay terminals.

Depending on the SPACOM relay type, the retrofit connector kit consists of:

- X100 24-p connector, X110 24-p connector or X130 18-p connector,
- 2 meters long, 6 mm² protective earth wire with a ring-lug in both ends for a M4 screw
- Sticker for X120
- M3 x 8mm screw T10 (for the X100 and X110 connectors).

Table 1. SPACOM relay types and connectors

SPACOM relay type to be replaced	X100 24-p connector	X110 24-p connector	X130 18-p connector
SPAA 120 C	X	X	
SPAA 121 C	X	X	
SPAA 341 C	X	X	X
SPAC 310 C	X	X	X
SPAC 312 C	X	X	X
SPAC 315 C	X	X	X
SPAC 317 C	X	X	X
SPAD 346 C	X	X	
SPAF 140 C	X	X	X
SPAJ 110 C	X	X	
SPAJ 111 C	X	X	
SPAJ 115 C	X	X	
SPAJ 131 C	X	X	
SPAJ 135 C	X	X	
SPAJ 140 C	X	X	
SPAJ 141 C	X	X	
SPAJ 142 C	X	X	
SPAJ 144 C	X	X	
SPAJ 160 C	X	X	
SPAM 150 C NO	X	X	
SPAM 150 C NC	X	X	
SPAS 120 C	X	X	
SPAU 110 C	X	X	X
SPAU 121 C	X	X	X
SPAU 130 C	X	X	X
SPAU 140 C	X	X	X
SPAU 330 C	X	X	X
SPAU 331 C	X	X	X



Figure 1. Retrofit connector kit

The retrofit connector is marked on the top based on the existing SPACOM relay terminal numbers. The user can disconnect secondary wires from the existing SPACOM relay terminal and re-connect the same on the corresponding number of the retrofit connector. Retrofit connectors allow users to rewire without referring to the schematic diagram or relay manual. It also minimizes the time required to rewire and update the schematic drawings.

Relay Retrofit Program for SPACOM to REX615

Installation support frame

The installation support frame helps the user mount retrofit connectors temporarily during rewiring. A support frame can be installed with the same mounting arrangement as the one for the SPACOM relay. Retrofit connectors can be installed on the support frame's corresponding terminals. Re-wiring done for X100, X110, or X130 shall be permanent. Separate push-in type terminals are provided for the CT/VT connection.

The support frame and SPACOM relay can be removed from the panel once all the re-wiring is done. The pre-wired retrofit connectors X100, X110 or X130 can be installed on the REX615 relay corresponding terminals. CT/VT wires need to be removed from push-in type terminals and re-connected to the corresponding terminals on X120 of REX615 protection and control relay.

The installation support frame helps only the installation-re-wiring process, which can be repeated for other SPACOM relay retrofits.

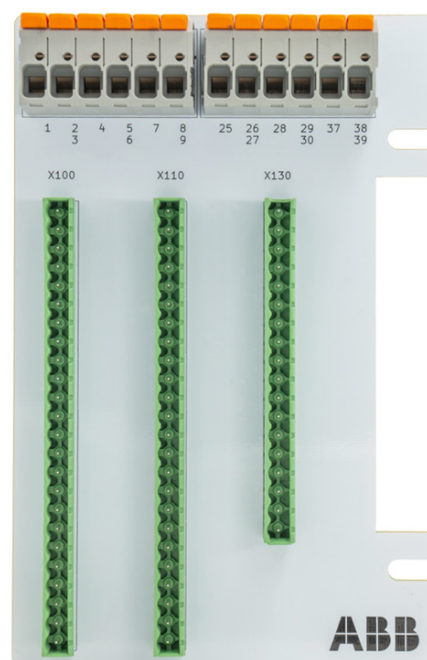


Figure 2. Installation support frame

Cutting tool kit

Since the mechanical dimensions of SPACOM and REX615 are not the same, a cutting tool is needed. The cutting tool is a handheld device for machining the existing panel cutout to the required size. It is delivered in a cutting tool kit. The cutting tool comprises a battery-operated power unit and a cutting head consisting of a punch and a die.

The cutting tool enables a precise quality cut. Neither time-consuming measurements nor additional panel surface protection is needed. The existing panel cutout can be enlarged in the most convenient direction. The tool is silent, fast and safe to use, and it can cut a panel metal sheet with a thickness of up to 3.0 mm.

REX615 can then be installed in the same place as SPACOM after modifying the cutout on the panel door. The installation is a very time-efficient process where the users do not need to mark the panel door or refer to any manuals for the mechanical cutout dimensions.

In warranty cases, only the correct cutting tool part should be claimed instead of the complete kit. Parts under warranty and accessories can be ordered separately from the local ABB representative.

If the existing panel cutout is larger than that of the replacement relay, or if it has a different format, the cover plate can be used for adjusting the size of the cutout.



Figure 3. Cutting tool with dedicated cutting head

Relay Retrofit Program for SPACOM to REX615

5. Selection and ordering data

The deliverables of Relay Retrofit Program for SPACOM to REX615 can be ordered from the local ABB representative. It always includes REX615 protection and control relay with

the retrofit connector kit. Other optional installation accessories and services can also be ordered depending on the requirement.



Figure 4. SPACOM and REX615 with retrofit connectors

The replacement relay order code should be defined when ordering the Relay Retrofit Program for SPACOM to REX615.

The latest relevant information on the REX615 protection and control relays is available on the product page. Use the **ABB Library** to access the selection and ordering information and to generate the order number.

Table 2. Order codes for Relay Retrofit Program for SPACOM to REX615

SPACOM relay type to be retrofitted	Order code for Relay Retrofit Program for SPACOM to REX615 (REX615 relay delivered with pre-configuration)	Order code for Relay Retrofit Program for SPACOM to REX615 (REX615 relay delivered without pre-configuration)
SPAA 120 C	RRPSPAA120CREX615C	RRPSPAA120CREX615N
SPAA 121 C	RRPSPAA121CREX615C	RRPSPAA121CREX615N
SPAA 341 C	RRPSPAA341CREX615C	RRPSPAA341CREX615N
SPAC 310 C	RRPSPAC310CREX615C	RRPSPAC310CREX615N
SPAC 312 C	RRPSPAC312CREX615C	RRPSPAC312CREX615N
SPAC 315 C	RRPSPAC315CREX615C	RRPSPAC315CREX615N
SPAC 317 C	RRPSPAC317CREX615C	RRPSPAC317CREX615N
SPAD 346 C	RRPSPAD346CREX615C	RRPSPAD346CREX615N
SPAF 140 C	RRPSPAF140CREX615C	RRPSPAF140CREX615N
SPAJ 110 C	RRPSPAJ110CREX615C	RRPSPAJ110CREX615N
SPAJ 111 C	RRPSPAJ111CREX615C	RRPSPAJ111CREX615N
SPAJ 115 C	RRPSPAJ115CREX615C	RRPSPAJ115CREX615N
SPAJ 131 C	RRPSPAJ131CREX615C	RRPSPAJ131CREX615N
SPAJ 135 C	RRPSPAJ135CREX615C	RRPSPAJ135CREX615N
SPAJ 140 C	RRPSPAJ140CREX615C	RRPSPAJ140CREX615N
SPAJ 141 C	RRPSPAJ141CREX615C	RRPSPAJ141CREX615N
SPAJ 142 C	RRPSPAJ142CREX615C	RRPSPAJ142CREX615N
SPAJ 144 C	RRPSPAJ144CREX615C	RRPSPAJ144CREX615N
SPAJ 160 C	RRPSPAJ160CREX615C	RRPSPAJ160CREX615N

Relay Retrofit Program for SPACOM to REX615

SPACOM relay type to be retrofitted	Order code for Relay Retrofit Program for SPACOM to REX615 (REX615 relay delivered with pre-configuration)	Order code for Relay Retrofit Program for SPACOM to REX615 (REX615 relay delivered without pre-configuration)
SPAM 150 C (NO)	RRPSPAM150OREX615C	RRPSPAM150OREX615N
SPAM 150 C (NC)	RRPSPAM150CREX615C	RRPSPAM150CREX615N
SPAS 120 C	RRPSPAS120CREX615C	RRPSPAS120CREX615N
SPAU 110 C	RRPSPAU110CREX615C	RRPSPAU110CREX615N
SPAU 121 C	RRPSPAU121CREX615C	RRPSPAU121CREX615N
SPAU 130 C	RRPSPAU130CREX615C	RRPSPAU130CREX615N
SPAU 140 C	RRPSPAU140CREX615C	RRPSPAU140CREX615N
SPAU 330 C	RRPSPAU330CREX615C	RRPSPAU330CREX615N
SPAU 331 C	RRPSPAU331CREX615C	RRPSPAU331CREX615N

Table 3. Order codes for installation accessories

Item	Description	Order code
Installation support frame	Installation support frame	1VFR100623E0001 (for 100 series) 1VFR100633E0003 (for 300 series)
Cutting tool kit ¹⁾	SPACOM 100 and 300 Series	2RCA031784
Cutting tool accessories	Cutting tool power unit	2RCA032139
	Cutting head for SPACOM 100 and 300 series	2RCA031786
	Battery charger for a cutting tool	2RCA032140
	Additional battery for the power unit	2RCA031785
Cover plate	Cover plate for SPACOM 300 series relay retrofit with standard REX615	1VFR100623A0001

1) Includes a power unit, a cutting head, battery, a battery charger, hard plastic bag

6. Training

A one-day classroom training course for Relay Retrofit Program can be organized upon request. The aim of the course is to introduce the tools and equipment used in the program. The course also provides other relay retrofit program, solutions overview, and practical information on what to consider when quoting or planning to quote a retrofit project, how to effectively carry out relay retrofit projects.

For additional information, please contact your local ABB representative.

7. References

The www.abb.com/mediumvoltage portal provides information on the entire range of digital substation products and services. The latest information on Relay Retrofit Program and Solutions is found on the [Retrofits](#) page. Scroll down the page to find and download the related documentation.

8. Document revision history

Document revision/date	History
A/2024-04-05	First release
B/2025-06-30	Second release



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