



Certificate No:
TAE00004ND

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Multifunction Relay

with type designation(s)
REX640

Issued to

ABB Oy, Distribution Solutions
Vaasa, Finland

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

For installations inside switchboard/enclosures onboard ships and offshore units.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2023-06-02**

This Certificate is valid until **2028-06-01**.

for **DNV**

DNV local unit: **Finland CMC**

Approval Engineer: **Nicolay Horn**

Frederik Tore Elter
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2022-12

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Product description

Switchbay Protection and Control Unit with the following functions:

- Protection
- Measurement
- Control
- Monitoring

Protection functions available for REX640:

ANSI Code	Protection Function
21P,21N	Distance protection
21LAL	Local acceleration logic
85 21SCHLGC	Scheme communication logic
85 21CREV,WEI	Current reversal and weak-end infeed logic
85 67G/N SCHLGC	Communication logic for residual overcurrent
85 67G/N CREV,WEI	Current reversal and weak-end infeed logic for residual overcurrent
68	Power swing detection
87L	Line differential protection with inzone power transformer
BST	Binary signal transfer
SOTF	Switch-onto-fault protection
51P-1	Three-phase non- directional overcurrent protection, low stage
51P-2	Three-phase non- directional overcurrent protection, high stage
50P	Three-phase non- directional overcurrent protection, instantaneous stage
67P/51P-1	Three-phase directional overcurrent protection, low stage
67P/51P-2	Three-phase directional overcurrent protection, high stage
51G/51N-1	Non-directional earth-fault protection, low stage
51N-2	Non-directional earth-fault protection, high stage
50G/50N	Non-directional earth-fault protection, instantaneous stage
67G/N-1 51G/N-1	Directional earth-fault protection, low stage
67G/N-1 51G/N-2	Directional earth-fault protection, high stage
67P-TC	Three-phase power directional element
67N-TC	Neutral power directional element
21YN	Admittance-based earth-fault protection
67NYH	Multifrequency admittance-based earth-fault protection
32N	Wattmetric-based earth-fault protection
67NTEF/NIEF	Transient/intermittent earth-fault protection
51NH	Harmonics-based earth-fault protection
46SNQ/59N	Touch voltage based earth-fault current protection
46M	Negative-sequence overcurrent protection
46PD	Phase discontinuity protection
59G/59N	Residual overvoltage protection
27	Three-phase undervoltage protection
59.S1	Three-phase overvoltage variation protection
59	Three-phase overvoltage protection
59PS	Positive-sequence overvoltage protection
27PS	Positive-sequence undervoltage protection
47,59NS	Negative-sequence overvoltage protection
81	Frequency protection

ANSI Code	Protection Function
51V	Three-phase voltage-dependent overcurrent protection
24	Overexcitation protection
49F	Three-phase thermal protection for feeders, cables and distribution transformers
49T/G/C	Three-phase thermal overload protection, two time constants
51,37,86C	Three-phase overload protection for shunt capacitor banks
60N	Current unbalance protection for shunt capacitor banks
60P	Three-phase current unbalance protection for shunt capacitor banks
55ITHD	Shunt capacitor bank switching resonance protection, current based
59NU	Compensated neutral unbalance voltage protection
67Q	Directional negative- sequence overcurrent protection
27RT	Low-voltage ride- through protection
78VS	Voltage vector shift protection
32Q,27	Directional reactive power undervoltage protection
32R/32O	Reverse power/ directional overpower protection
32U	Underpower protection
21G	Three-phase under impedance protection
Z2Q	Directional negative sequence impedance protection
40	Three-phase under excitation protection
64TN	Third harmonic-based stator earth-fault protection
64R	Rotor earth-fault protection (injection method)
38, 51	Generator shaft leakage current
49R	Thermal overload protection for rotors
87HIM	High-impedance or flux-balance based differential protection
78PS	Out-of-step protection with double blinders
46M	Negative-sequence overcurrent protection for machines
37	Loss of phase, undercurrent
37	Loss of load supervision
50TDJAM	Motor load jam protection
49,66,48,50TDLR	Motor start-up supervision
66	Motor start counter
46R	Phase reversal protection
49M	Thermal overload protection for motors
87M/87G	Stabilized and instantaneous differential protection for machines
55U	Underpower factor protection
87T3	Stabilized and instantaneous differential protection for two- or three- winding
87T	Stabilized and instantaneous differential protection for two-winding transformers
87NLI	Numerical stabilized low-impedance restricted earth-fault protection
87NHI	High-impedance based restricted earth- fault protection
87_A	High-impedance differential protection for phase A
87_B	High-impedance differential protection for phase B
87_C	High-impedance differential protection for phase C
50BF	Circuit breaker failure protection
68HB	Three-phase inrush detector
94/86	Master trip
AFD	Arc protection
HIZ	High-impedance fault detection

ANSI Code	Protection Function
CFD	Cable Fault Detection
FLOC	Fault locator
81LSH	Load-shedding and restoration
MAP	Multipurpose protection
50/27	Accidental energization protection
21LB	Load blinder

Rated secondary values of the primary current and voltage transformer or sensors shall fit the following REX640 input values; rated primary values are application dependant.

Current and voltage transformer input values:

Rated current In 0.2 A or 1 A or 5 A
 Rated voltage Un 100 V ... 125 V

Current and voltage sensor input values:

Voltage at rated current In 150 mV (rms)
 Voltage at rated voltage Un 2V (rms)

Rated frequency: 50 or 60 Hz.

Application/Limitation

- Installation of terminal is to be according to manufacturer's specifications.
- Product certificate:
 When the unit is used for protection purposes only no product certificate is required. However, each delivery of a terminal is to be certified according to Pt.4 Ch.8 Sec.1 (essential and important services above 100 kVA) as a part of the switchboard certification.
- When the unit is used for other control purposes a product certificate acc. to Pt.4 Ch.8 Sec.1 and Pt.4 Ch.9 Sec.1 a product certificate will be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.
- The Type Approval covers hardware and software for the terminal.
- The Type Approval does not cover application software.

Clause for software control:

All changes in system software are to be recorded. Major changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before installed in the computer. Approval Test of Software may be required.

Environmental classes: Vibration A, Temperature D, Humidity B, EMC A

Type Approval documentation

Tests carried out

Type tests in accordance with IEC 60255-27, Environmental tests according to DNV-CG-0339 (EMC, dry heat, cold, damp heat and vibration.)

Marking of product

ABB – REX640

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.
 The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE