

RXBA 4

SE 94 07 28



RXETB 1

SE 980090

Features

RXBA 4

- Detects single-, two- or three-phase fuse failures in less than 8 ms
- Is used to block high-speed distance protection relay tripping in case of fuse failure
- Is used to block other protection relays where fuse failure will cause unnecessary tripping such as undervoltage relays, underimpedance relays, etc.
- Operates on unbalance principle, detecting failures on both main and pilot fuse groups
- Can be used with Miniature Circuit Breakers
- Contact outputs for blocking and alarm of failures on main and pilot fuse group
- Needs no auxiliary supply
- LED indication of faulty fuse

RXETB 1

- Detects single- or two-phase fuse failures
- Is used together with fuses only
- Detects voltage unbalance in a three-phase group
- Settable operate time delay 0-10 seconds
- Operation is indicated by a red LED
- Used to give delayed alarm of fuse failure in ac supply circuit e.g. to synchronizing and energy metering equipment

Application

When fuse failures occur in the secondary circuits of voltage transformers, it is essential to achieve alarm and in some cases to block protection equipment to prevent unnecessary operation. When blocking is required, e.g. for distance- and underimpedance protection, fuse failure relay type RXBA 4 is used.

RXBA 4 can be connected to voltage transformers having one or two secondary windings as shown in Fig. 1.

When only an alarm is necessary, such as for revenue metering or synchronizing circuits, the simpler relay type RXETB 1 is used. The alarm should in such cases be delayed to prevent unnecessary alarms in case of primary system unbalanced faults.

Design

RXBA 4

The RXBA is a static, three-phase relay that compares the voltages on both sides of the fuse in each phase. The two voltages, U1 and U2, (see Fig. 1) are fed to individual inputs of the relay. One side is provided with an input transformer for each phase. After rectification, the voltages are compared in a balanced bridge to determine the voltage difference.

If the voltage difference ($U_2 < U_1$) is greater than the operating value, U1 will activate two relays, each with a make, light-duty contact. At the same time a LED on the front of the relay indicates in which phase the voltage reduction occurred. If the voltage U1 is reduced compared to U2, another light-duty output relay will operate and a LED will indicate in which phase the pilot wire voltage dropped.

Even if there is a load between the phases, and the voltage on the fuse failure side is not zero, the relay will operate correctly. If however, the load is asymmetrical, an undesired operation for pilot wire interruption might be obtained at the same time. RXBA 4 does not need any additional auxiliary power supply since auxiliary voltage is obtained from the supervised circuits.

RXETB 1

The RXETB 1 operates in case of fuse failure in one or two phases of a three-phase system or if the voltage in one phase drops below 40% of rated voltage and the other two phases have rated voltage. Fuse failure in all three phases is unlikely to occur, therefore the RXETB 1 relay is sufficient in most cases.

The measurement principle is based on a comparison between the neutral point of the voltage transformer and an internal neutral point derived from the three phases. When a voltage difference is detected, the two output relays, each with one change-over contact, operates.

By a knob at the front, the operation can be set to be delayed up to 10 seconds. During operation, a red LED is lit at the front of the relay.

Unbalanced phase to phase connected loads is not a problem due to the high remaining voltages. If the relay operates because of a voltage drop in one phase, it will reset when the voltage exceeds 75% of rated voltage.

Diagrams

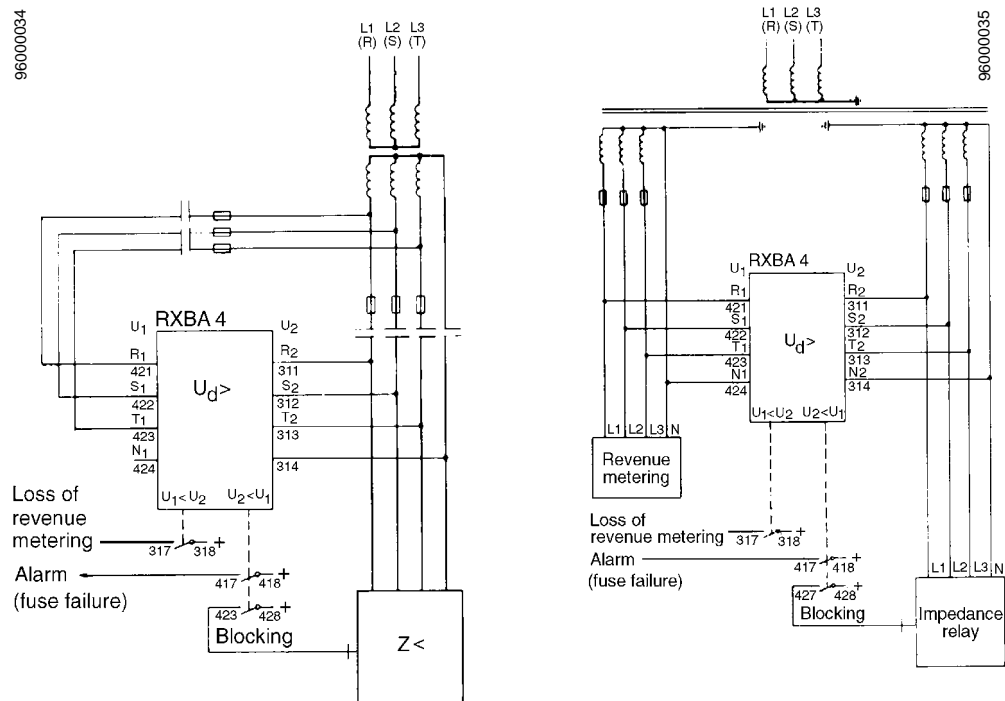


Fig. 1 Application of RXBA 4 on 11 with one respective two secondary windings

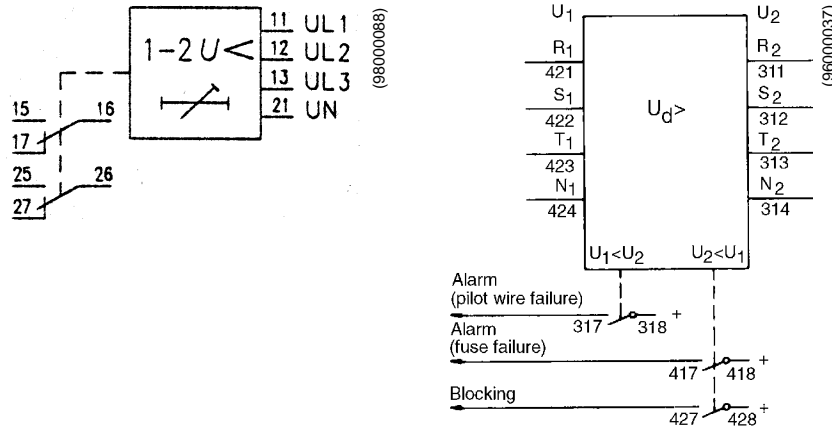


Fig. 2 Terminal diagrams for RXETB 1 and RXBA 4

Technical data

	RXBA 4	RXETB 1
Rated voltage, U_r	50-60 Hz 110/√3 Ph/N	50-60 Hz 110/√3 Ph/N
Overload capacity	120% of U_r	190% of U_r
Power consumption	2 VA/phase	0,4 VA/phase
Operate voltage	$U_d > 20 V$	1- or 2-phase voltages decreased to < 40% of U_r
Resetting voltage	$U_d > 4 V$	Faulty phase voltage increased to >75% of U_r
Operate time	8 ms	10-15 ms + set time delay
Resetting time	≤ 25 ms	< 100 ms
Time delay		0-10 s
Insulation tests:		
Dielectric test	2 kV, 50 Hz, 1 minute	2 kV, 50 Hz, 1 minute
Impulse voltage test	5 kV, 1,2/50 μs, 0,5 J	5 kV, 1,2/50 μs, 0,5 J
Disturbance tests:		
Fast transient test	4-8 kV, 2 min	4-8 kV, 2 min
1 MHz burst test	2,5 kV 1 MHz	2,5 kV 1 MHz
Permitted ambient temperature		
operation	-25 °C to +55 °C	-25 °C to +55 °C
storage	-40 °C to +70 °C	-40 °C to +70 °C
Contact data:		
Max. system voltage	250 V	250 V
Cont. current carrying capacity	0,5 A	5 A
Make and conducting capacity, 200 ms	2 A	30 A
Breaking capacity dc L/R < 40 ms 110V	60 mA	0,4 A

Dimensions and mounting

RXBA 4 fuse failure supervision relay occupies four COMBIFLEX seats (4U 12C) and relay type RXETB 1 occupies one COMBIFLEX seat (2U 6C). The relays are mounted on separately ordered COMBIFLEX bases which are mounted on an apparatus frame in an equipment frame, or on a support frame in an equipment frame.

Ordering

Specify

- Type RXBA 4
Ordering No. RK 428 004-AA
- Type RXETB 1
Ordering No. 1MRK 001 896-AA

Reference

Relay mounting systems

1MRK 514 001-BEN

Manufacturer

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Control & Force Measurement

Substation Automation

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