



## Features

- Two independent supervision circuits in one module
- Undervoltage operation
- Green LEDs indicate healthy circuits
- Operation delayed 2.2 s or 1.1 s (24V)
- Two change-over contacts per circuit
- No extra auxiliary supply is required

## Application

The relay can be used for detecting loss of DC voltage supply, detection of open circuits, or simply as a drop-off delayed relay in automation circuits.

A typical application is continuous supervision of a circuit breaker trip circuit, including the breaker coil, in transmission and sub-transmission substations, see Fig. 2.

The resistor R is preferably mounted close to the circuit breaker auxiliary contacts. Recommended resistor values are given in Table 9: Resistor R in Trip Circuit Supervision applications. The resistance can be built up by resistors in two or four component blocks RTXE. With two circuits in one module, both the A and B coils of the circuit breaker can be supervised.

## Technical data

**Table 1: Functional data**

Function	Undervoltage, delayed
Rated voltage $U_r$	24, 48, 110-125 or 220-250 V DC
Operate voltage	17-35% of $U_r$
Reset voltage	< 80 % of $U_r$
Operate time (TOP) when voltage is changed from $U_r$ to 0 $U_r = 24$ V $U_r = 48, 110-125, 220-250$ V	1,1 s $\pm$ 20 % 2,2 s $\pm$ 25 %
Reset time when voltage is changed from 0 to $U_r$	< 10 ms
Power consumption per circuit at $U_r$ $U_r = 24, 48, 110-125$ V $U_r = 220-250$ V	< 0,6 W < 1,3 W
Voltage overload capacity, continuously	110 % of $U_r$
Operate indication	One green LED for each circuit

**Table 2: Environmental conditions**

Quantity	Type test values	Reference standard
Nominal operative temperature range	-25 °C to +55 °C	IEC 60255-6
Transport and storage temperature range	-40 °C to + 70 °C	IEC 60068-2-1, -2
Damp heat test, steady state	93 % humidity, 40°C, 4 days	IEC 60068-2-3
Damp heat test, cyclic	93-95 % humidity, 25-55°C, 6 cycles 12 + 12 h	IEC 60068-2-30
Degree of protection	IP 44	IEC 60529

**Table 3: Ambient temperature dependence**

Influence on	Within temperature range	Dependence
Operate voltage	-25°C to +55°C	< 0,2 %/ °C
Operate time	-25°C to +55°C	< 0,25 %/ °C

**Table 4: Electromagnetic compatibility (EMC), immunity tests**

Test	Type test values	Reference standards
Spark test	4-8 kV	SS 436 15 03, Class III
1 MHz burst test - common mode - differential mode	2,5 kV 1,0 kV	IEC 60255-22-1, Class III
Electrostatic discharge test	8 kV, air discharge	IEC 60255-22-2, Class 3
Fast transient/burst test	4 kV	IEC 60255-22-4, Class A
Surge test - line to earth - line to line	2 kV 1 kV	IEC 60255-22-5
Power frequency test - common mode - differential mode	150 V, 50 Hz 300 V, 50 Hz	IEC 60255-22-7, Class A

**Table 5: Insulation tests**

Test	Type test value	Reference standard
Dielectric test across open contacts	2,0 kV, 50 Hz, 1 min 1,0 kV, 50 Hz, 1 min	IEC 60255-5
Impulse voltage test	5 kV, 1,2/50 $\mu$ s, 0.5 J	IEC 60255-5
Insulation resistance	>100 M $\Omega$ at 500 V	IEC 60255-5

**Table 6: Mechanical tests**

Test	Type test value	Reference standards
Vibration test - response test - endurance test	0,075 mm/1,0 g, 10-150 Hz 2,0 g, 10-150 Hz	IEC 60255-21-1, Class 2
Shock test - response test - withstand test	5 g, 11 ms 10 g, 11 ms	IEC 60255-21-2, Class 1
Bump test	10 g, 16 ms	IEC 60255-21-2, Class 1
Seismic test - X - and Y -axes - Z- axis	11 mm /3 g, 1-50 Hz 7,5 mm/2 g, 1-50 Hz	IEC 60255-21-3, Class 2 extended by 1 g

**Table 7: Contact data**

Type of contact	Two change-over contacts per circuit
Highest system voltage	250 V AC/DC
Recommended contact voltage	20-250 V AC/DC
Contact current capacity continuous max 4 s	1 mA to 5 A 15 A
Making capacity	15 A
Breaking capacity for AC	2000 VA
Breaking capacity for DC, L/R $\leq$ 40 ms, 24 V 48 V 110 V 220 V	2,0 A 0,7 A 0,2 A 0,15 A

**Table 8: Weight and dimension**

Weight	250 g
Dimensions width height	6 C modules 2 U modules

**Table 9: Resistor R in Trip Circuit Supervision applications, see Fig. 2.**

Rated voltage $U_r$	Recommended value
48 V DC	1,0 k $\Omega$ 4 W
110 - 125 V DC	5,6 k $\Omega$ 4 W
220 - 250 V DC	10 k $\Omega$ 8 W

Diagrams

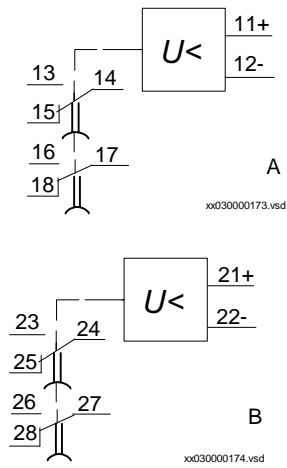


Fig. 1 Terminal diagram for the two circuits A and B in RXEM 1.

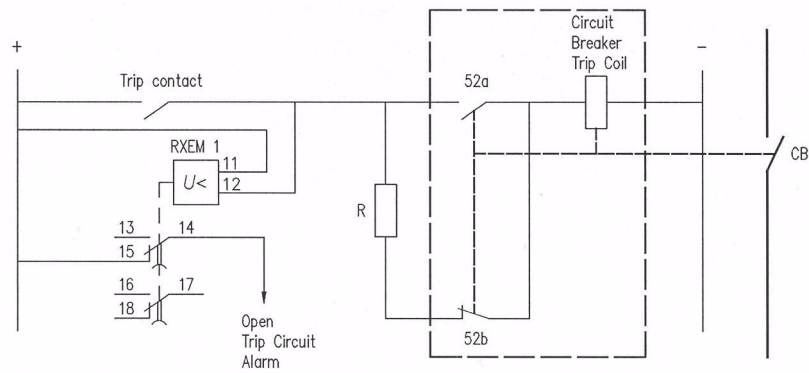


Fig. 2 RXEM 1, circuit A, used as Trip Circuit Supervision Relay.

Ordering

Specify:

- RXEM 1 supervision relay
- Quantity

Rated voltage	Quantity	Ordering number
24 VDC	<input type="checkbox"/>	1MRK 002 080-AD
48VDC	<input type="checkbox"/>	1MRK 002 080-AH
110-125 VDC	<input type="checkbox"/>	1MRK 002 080-AN
220-250 VDC	<input type="checkbox"/>	1MRK 002 080-AS

**Mounting**

The relay shall be mounted on separately ordered COMBIFLEX bases. For mounting details refer to the catalogue for mounting systems and parts.

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**Reference**

RTXE Component blocks	1MRK 507 004-UEN
COMBIFLEX connection and installation components	1MRK 513 003-BEN
Relay mounting systems	1MRK 514 001-BEN

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**Manufacturer**

**ABB Automation Technology Products AB**  
Substation Automation  
SE-721 59 Västerås  
Sweden  
Telephone +46 (0) 21 34 20 00  
Facsimile +46 (0) 21 14 69 18  
[www.abb.com/substationautomation](http://www.abb.com/substationautomation)

