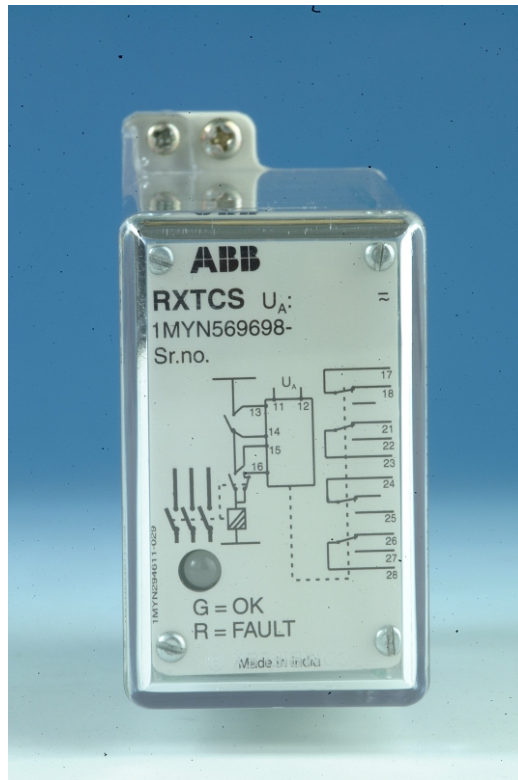


# Trip circuit supervision relay Type RXTCS



## Features

- Continuous supervision of complete trip circuit independent of the circuit breaker position.
- Detects faults in the supervised circuits, such as loss of voltage, circuit breakage, contact degeneration in connections and resistivity increases in wires, contacts and coils
- Low-level measuring current enables application in sensitive or high resistance circuits
- Operation delayed to avoid spurious signals, for instance, on circuit breaker operation
- Operation indication by a single dual colour LED
- Complete range of rated voltages either ac or dc
- Galvanic isolation is possible between auxiliary source and supervised circuit
- Very low burden on auxiliary source

## Application

In a protection system the tripping of circuit breaker is crucial. Should an interruption occur in a trip circuit a possible network fault would not be disconnected and the fault would have to be cleared by another protection upstreams in the power system. The supervision function is particularly important when there is only one tripping coil and CB tripping is vital, for instance, for generator circuit breakers or other important circuit breaker in distribution networks. The supervision relay type RXTCS is intended for a continuous supervision of circuit breaker trip circuit and gives an alarm for loss of auxiliary supply, faults on the trip-coil or its wires independent of the breaker

position, faults on the breaker auxiliary contacts and faults in the supervision relay itself.

## Description

The supervision relay RXTCS is designed to be used for the supervision of trip circuits and other important control and monitoring circuits. Block diagram of the relay is shown in Fig. 1. The supervision function is based on low-level ( $\sim 3$  mA) current injection principle. The injected current is sensed by two opto-couplers. The supervision function in three steady states of circuit breaker-trip circuit can be seen from fig.2, 3 and 4. In normal condition the indicator LED glows green and output relays are in picked-up condition. If in the event of a fault, the measuring current goes below the operating value of the relay (0.3 - 0.7 mA) or completely stops flowing, the supervision relay operates (drops-off) after a delay of 0.6 sec and the indicator LED turns red. The supervision relay, for its functioning requires an auxiliary voltage (ac or dc) of rated value to be connected to the terminals 11 and 12. This voltage can be the same as that of the supervised circuit or it could be a separate source with same magnitude (ac or dc). Should a fault occur in the auxiliary voltage supply the LED does not glow and the output relay drops off. Relays with differing rated voltage for supervision circuit and auxiliary supply can be supplied as special execution.

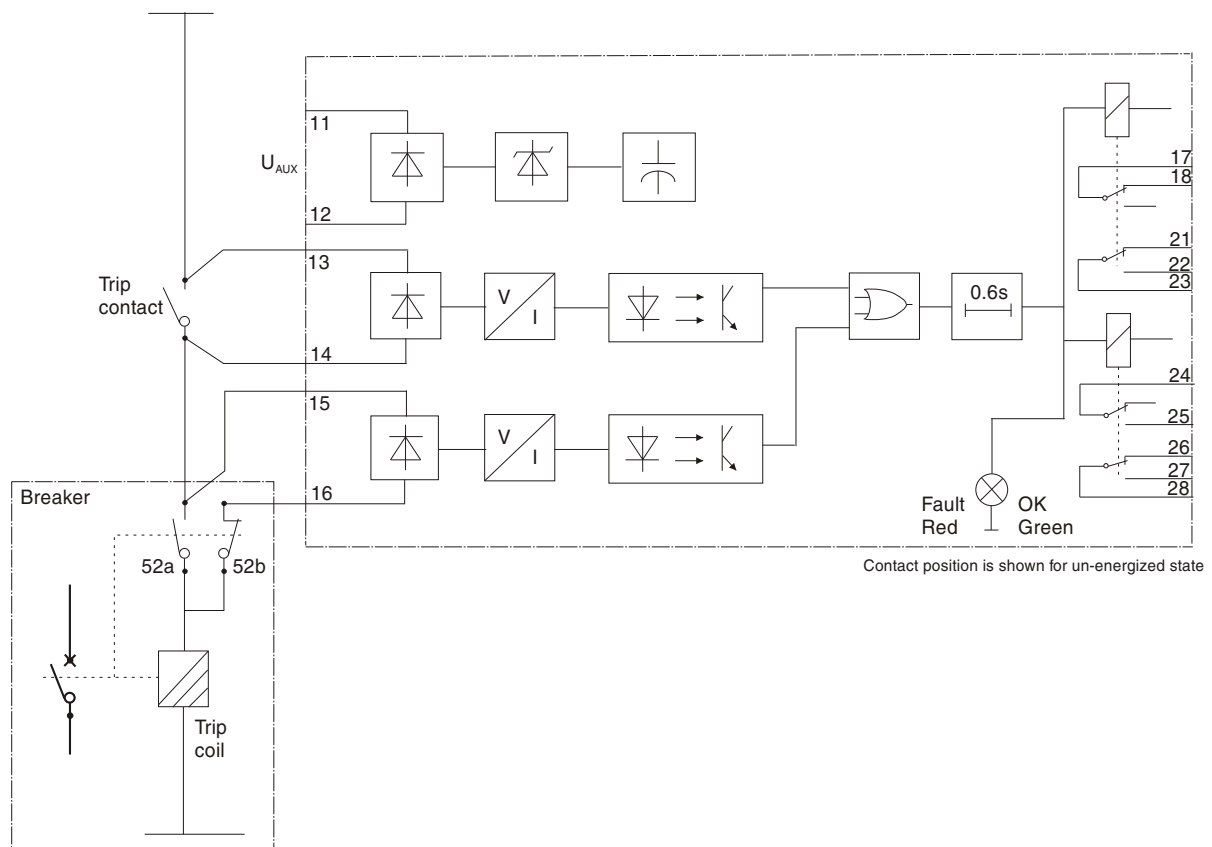


Fig. 1. Block diagram of RXTCS relay.

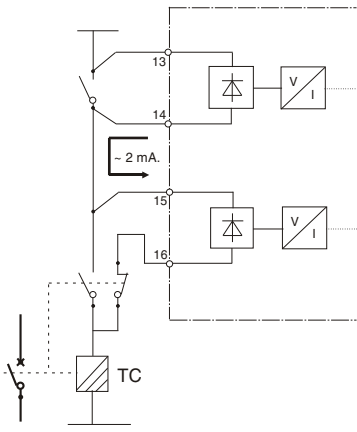


Fig. 2. Supervision in Pre-close condition

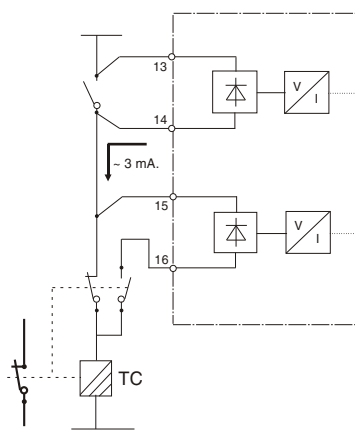


Fig. 3. Supervision in Post-close condition

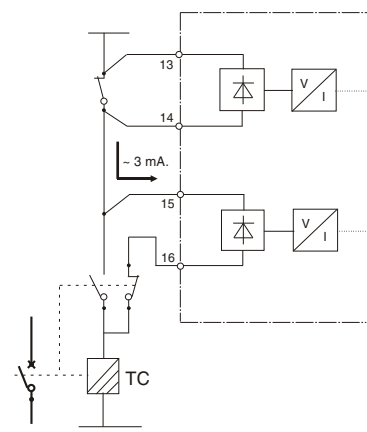


Fig. 4. Supervision with latched trip relay

## Technical data

### Energizing quantities, rated values and limits

Rated Voltage of supervised and auxiliary circuit $U_{AUX}$	:	24,30,48,110-125,220-250,V ac or dc
Operative voltage range	:	80-110% of rated $U_{AUX}$
Permitted ambient temperature range	:	0° C to +55° C
Pick-up & Drop-off current at rated voltage $U_{AUX}$ & 25° C	:	0.3-0.7 mA
Operate (Drop-off) time at rated voltage $U_{AUX}$ & 25° C	:	0.6 - 0.7 sec.
Burden at rated voltage		24      30      48      110      125      220      250
Auxiliary circuit (W)		1      1.3      1.4      2      2.5      2.7      3.5
Supervision circuit (W)		0.08    0.08    0.15    0.25    0.32    0.54    0.7
Mechanical durability	:	1 Million switching operation and 200 Draw-out/plug-in operation
Weight	:	0.25 Kg

### Contact data

Contact configuration (self reset)	:	1 N/O +1 N/C +2C/O
Max voltage within a contact system	:	250 V dc / ac
Rated current	:	5 A.
Make and carry for 0.5 s	:	10 A
Make and carry for 3.0 s	:	8 A
Breaking capacity for dc with circuit time-constant L/R $\leq$ 40 ms, at 48/110/220 Vdc	:	1A/0.25A/0.15A
Electrical endurance tested according to IEC 255-23	:	10,000 operations, at 110 V dc, 0.35A resistive, 360 op/hr

### Electrical tests

Temperature-rise; Tested acc. to IEC 255-6	:	Enclosure, pcb relays, heat dissipating components
Insulation resistance; Tested acc. to IEC 255-5	:	>100 M Ohm at 500 V dc
Dielectric; Tested acc. to IEC 255-5	:	2,0 kV, 50 Hz, 1 min
Impulse; Tested acc. to IEC 255-5	:	5 kV, 1,2/50us, 0,5J
1 MHz burst disturbance test acc. to IEC 255-22-1	:	Class III
- common mode	:	2,5 kV, 1 MHz, 400 pls/s
- differential mode	:	1 kV, 1 MHz, 400 pls/s

## Technical data (Cont)

Electrostatic discharge test acc. to IEC 255-22-2	: Class III
- contact discharge	: 6 kV, 150 pF/330 ohm
- air discharge	: 8 kV, 150 pF/330 ohm
Fast transient disturbance test	
acc. to IEC 255-22-4	: Class IV
- common mode	: 4 kV, 5/50 ns, 5kHz, Rs = 50 ohm
Surge immunity test acc. to IEC 255-22-5	Class III
- common mode	: 2 kV, 1,2/50 us, Rs = 10 ohm
- differential mode	: 1 kV, 1,2/50 us, Rs = 2 ohm

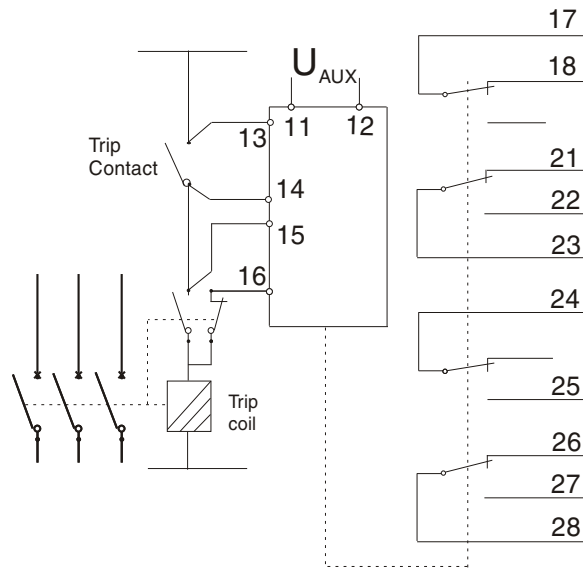
## Environmental tests

Vibration response and endurance	
Tested acc. to IEC 255-21-1	: Class I, 10.....150Hz
Shock response and endurance	
Tested acc. to IEC 255-21-2	: Class I, 11 ms
Dry heat; test acc. to IEC 68-22-2	: +55° C /+70° C
Dry cold; test acc. to IEC 68-2-1	: -10° C / -25° C
Damp heat (cyclic - 12+12 Hr)	: 12 Hr/55° C + 12 Hr/25° C x 6 days at 95% RH
test acc. to IEC 68-2-30	

## Ordering details:

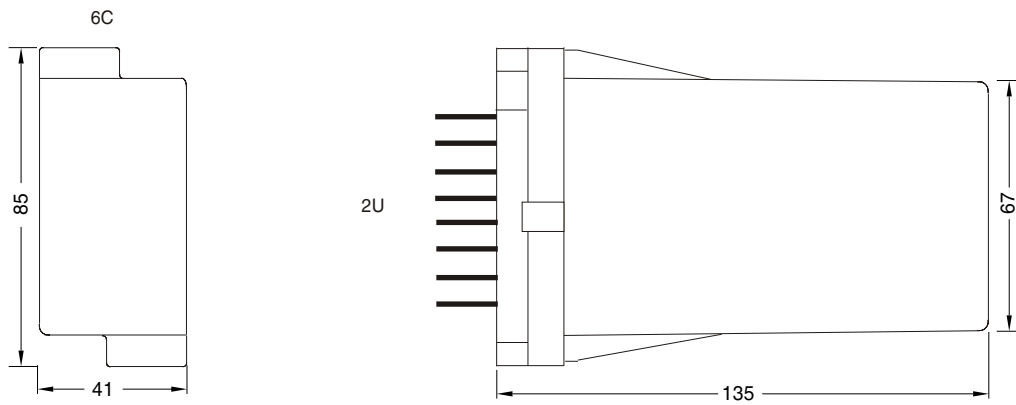
Relay type	Contact	Rate voltage	Article no
RXTCS	1N/O+1N/C+2C/O	24	1MYN569698-A
		30	1MYN569698-B
		48	1MYN569698-C
		110-125	1MYN569698-E
		220-250	1MYN569698-G

## Connection diagram and Contact configuration



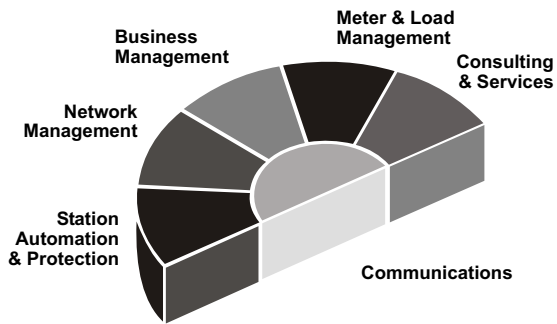
Contact position is shown for un-energized state

## Dimensions



**References** Connection and installation components in COMBIFLEX  
Relay mounting systems

1MRK 513 003-BEN  
1MRK 514 001-BEN



**Panorama is the standard for a comprehensive range of integrated solutions for efficient and reliable management of power networks. Using innovative information technology, Panorama delivers total control of the power process, from generation to consumption. The Panorama standard covers six application areas, each offering specific solutions.**



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