

Mains monitoring relay NKR 5

Monitoring of 1- or 3-phase networks (voltage, rotary field direction). Adjustable acknowledgement function and connection possibility of an external push-button

Special features

- ▶ Mains monitoring for 1 to 3 phases according to DIN VDE 0107 or DIN VDE 0108
- ▶ adjustable monitoring voltage
- ▶ Monitoring status indicated by LEDs
- ▶ Rotary field monitoring can be switched on
- ▶ Restart interlock can be activated
- ▶ Functional check
- ▶ Operation via external button possible
- ▶ Potential-free change-over contact 250V / 10A
- ▶ Low power consumption
- ▶ Low wiring effort in single-phase networks



General information

The NKR 5 mains monitoring relay is used to monitor the phase voltages of one- up to three-phase networks. When used in a three-phase network, the phase position can also be monitored.

The switching threshold can be set freely from 150 to 230 V or to a defined fixed value of 196 V (DIN VDE 0107 or DIN VDE 0108).

The phase voltages and the direction of the rotating field are displayed on the NKR 5 via LEDs. A phase failure is optically stored by a flashing LED, so that the phase causing the fault can be determined even after a power recovery. The relay switches on either automatically after power returns or only after acknowledgement (restart interlock). The error case can be simulated via the internal or an external push-button and the circuit can thus be tested.

Applications

Public buildings, rooms with public traffic, med. used rooms etc..

Operation

If the voltage at one of the 3 monitoring inputs drops below the set value or the rotary field direction (only for rotary field monitoring) is not clockwise, the relay drops out with a delay of 0.5s (contact 11-14 open). The voltage must be 5

% higher than the set value (hysteresis) to switch on again. If the rotary field monitoring is set, the rotary field must also be clockwise and if the restart interlock is active, the acknowledgement button must also be pressed for the relay to switch on again.

The LEDs L1 - L3 start flashing as soon as the respective phase voltage exceeds the switch-on threshold. Each flashing LED changes to continuous light by briefly pressing a button. If a phase voltage falls below the switch-off threshold, the respective LED goes out. If the phase voltage exceeds the switch-on threshold again, the LED starts flashing again. This makes it possible to determine which phase caused the fault. The rotary field LED is only active when the rotary field monitoring is set. If the field is clockwise, the LED lights up, if the field is counterclockwise, the LED flashes. By pressing the button for longer than 3s, the NKR 5 goes into test operation. The relay drops out so that the following circuit can be tested.

Connection examples

Fig. 1: Automatic mains switchover, 1-phase

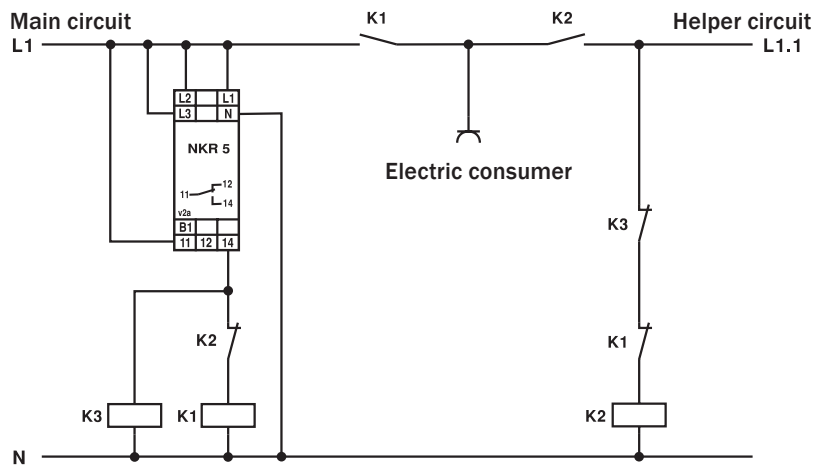


Fig. 2: Automatic mains switchover, 3-phase

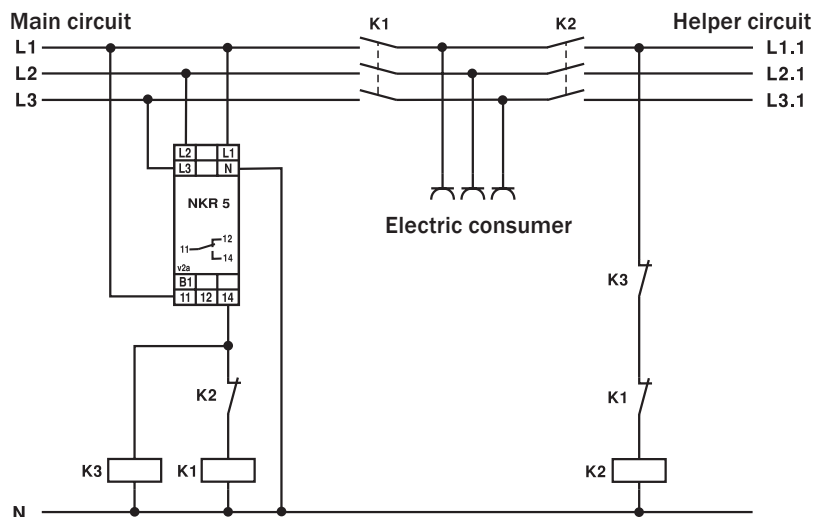


Fig. 3: Automatic rotary field switching

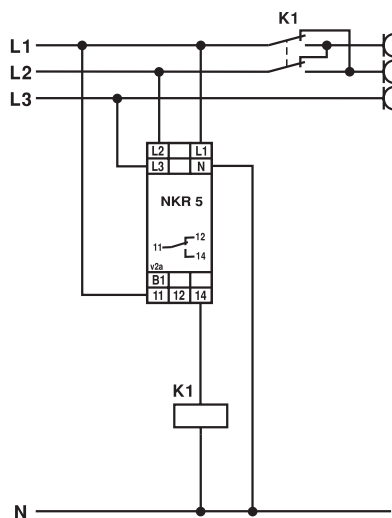
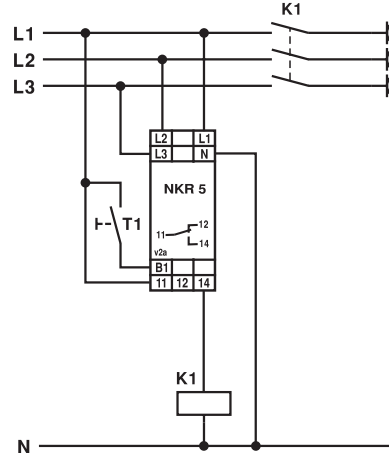


Fig 4: Motor protection (against wrong start and 2-phase operation)



T1:

External button as an alternative to the front button (for mode UQ and UQO)

- Press briefly = acknowledge error

- 3s push-button = test (relay switches off)

Operating modes

U	= Voltage monitoring (L1 - L3)
U \curvearrowright	= Voltage monitoring with rotary field monitoring
U Q	= Voltage monitoring with restart interlock
U \curvearrowright Q	= Voltage monitoring with rotary field monitoring and restart interlock

Technical data

Operating voltage:	140-250 V 50/60 Hz
Power consumption:	approx. 0.6W
Switch-off threshold	150-230 V _{eff} / 196 V _{eff}
Switch-on threshold:	Switch-off threshold + 5 %
Switch-off delay	0.5s
Switch-on criterion	U > Switch-on threshold at all 3 inputs or clockwise rotating field
Switch-off criterion	U < Switch-off threshold at least at one of three inputs or no clockwise rotating field, neutral conductor interruption is not monitored
Control voltage for B1	230V AC
Line capacitance (B1)	approx. 10 nF
Relay contacts	1 change-over contact 10A / 250V AC potential-free
Switch rating	see data sheet: "Relay contact rating"
Ambient temperature	-10°C to +45°C
Connection terminals	Socket terminals with captive screws M3.5
Clamping range	0.5 mm ² - 4.0 mm ²
Strip length	6.0 mm - 6.5 mm
Screwing torque	0.80 Nm
Mounting orientation	arbitrarily
Mounting	Click-mount on standard 35-mm rail (EN 60715)
External dimensions	18 x 88 (45) x 58 mm
Installation depth	55 mm
Weight	approx. 90 g
RAL colour	grey 7035

Order data

Item no.	EAN	Type	Designation
NKR509	4 046929 301046	NKR 5	Mains monitoring relay for 1 to 3 phases 230V AC