



Mains monitoring relay NKR 5 / NKR 5E

SPECIAL FEATURES:

- Mains supply monitoring for 1 to 3 phases conforming to DIN VDE 0107 or DIN VDE 0108
- Adjustable voltage threshold
- Monitoring status displayed by LEDs
- Rotary field monitoring can be activated
- Restart disable function can be activated
- Operating test
- Potential-free changeover contact
- Low power consumption (intrinsic heating)
- Low wiring complexity in single-phase networks

GENERAL:

The NKR 5 and NKR 5E mains monitoring relays are used to monitor the phase voltages of single to three phase mains power supplies.

When used in a three phase mains supply, the phase sequence can also be monitored.

The switching threshold can be freely set between 150 (160) to 230V or can be set to a firmly defined value of 196V (DIN VDE 0107 or DIN VDE 0108).

On the NKR 5, the condition of each phase voltage and the direction of the rotary field is displayed by LEDs. A phase failure is visually stored by a flashing LED, so that even after restoring the power supply the phase responsible for the fault can be identified. The relay is either switched on automatically on restoring the power supply or only after manual acknowledgement (restart disable). The fault condition can be simulated by means of the built-in pushbutton or an external pushbutton, thereby enabling the circuit to be tested.

The simplified version NKR 5E indicates by a single LED only whether the monitored mains supply is functioning correctly. On restoring the voltage, the relay is automatically actuated.

APPLICATION:

Public buildings, areas with public circulation, rooms used for medical purposes etc.

OPERATION:

NKR 5:

If the voltage drops below the set value at one of the 3 monitoring inputs, or if the direction of the phase sequence (if rotary field monitoring is activated) is not clockwise, the relay drops out with a delay of 0.5s (working contact 11-14 opened).

To restart, the voltage must be 5% higher than the set value (hysteresis). If rotary field monitoring is activated, the rotary field must also be clockwise, and if the restart disable function is active the acknowledge button must be pressed before the relay is reactivated.

LEDs L1-L3 start flashing as soon as the relevant phase voltage exceeds the switch-on threshold. By briefly pressing and releasing the pushbutton, each flashing LED is switched to constantly lit mode. If a phase voltage falls below the switch-off threshold, the relevant LED goes out. When the phase voltage then again exceeds the switch-on threshold, the LED starts flashing again. In this way, the user can identify which phase caused the failure. The rotary field LED is only active when phase sequence monitoring (rotary field monitoring) is active. If the rotary field is turning clockwise, the LED is lit, whilst if it is rotating anti-clockwise the LED flashes. Holding down the button for longer than 3s switches the NKR 5 into test mode. The relay trips, so that the subsequent circuit can be tested.

NKR 5E:

If all phase voltages exceed the switch-on threshold, and if the rotary field is clockwise, the relay is energised and the LED is lit. If a phase voltage falls below the switch-off threshold, the relay trips and the LED goes out. If the phase sequence is rotating anti-clockwise, the LED flashes and the relay remains off. In "single-phase" mode, the NKR 5E is supplied only via L1. In this case, L2 and L3 do not have to be wired up.

TECHNICAL DATA:

Operating voltage	140-250V 50/60Hz
Power input	approx. 0.8W
Switch-off threshold	NKR 5: 150-230V _{eff} /196V _{eff} NKR 5E: 160-230V _{eff} /196V _{eff}
Switch-on threshold	Switch-off threshold +5%
Switch-off delay	NKR 5: 0.5s / NKR 5E: 80 ms
Switch-on criterion	U > switch-on threshold at all 3 inputs and clockwise rotating field
Switch-off criterion	U < switch-off threshold at min. 1 of 3 inputs or no clockwise rotating field
Control voltage for B1	230V AC
Line capacitance at B1	Max. 12nF
Relay contacts	1 normally open contact 16A / 250V AC
Switching capacity	See data sheet "Load capacity of relay contacts"
Ambient temperature	-10°C to +45°C
Interference immunity	compliant IEC 801-4 level 4

Equipment protection	compliant IEC 801-5 level 3
Creepage/clearance	compliant EN 60669-1/-2
Insulated housing	Flameproof to VDE 0304 Part 3, level FV 0
Connections	Socket terminals with captive screws M3.5
Installation position	Freely selectable
Fixing	Clip fastening on 35 mm standard rail DIN EN 50022
External dimensions	18x88(45)x58mm
Installation depth	55 mm
Weight	approx 90g
Colour (RAL)	Grey 7035

ORDERING INFORMATION:

Part no.	Type	Description
nkr509	NKR 5	Mains monitoring relay with fault memory
nkr5e9	NKR 5E	Mains monitoring relay

OPERATING MODES:

- NKR 5:** U = Voltage monitoring (L1-L3)
 U↻ = Voltage monitoring with rotary field monitoring
 UQ = Voltage monitoring with restart disable
 UQ↻ = Voltage monitoring with rotary field monitoring and restart disable
- NKR 5E:** 1~ = Single-phase voltage monitoring (L1)
 3~ = 3-phase voltage monitoring (L1-L3)
 3~↻ = 3-phase voltage monitoring with rotary field monitoring

TYPICAL APPLICATIONS: (terminal position differs in part for NKR 5E -> the terminal designation is decisive)

