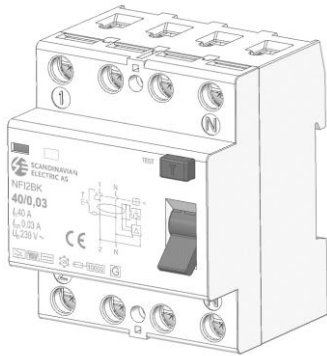


## NFIBK Residual Current Operated Circuit Breakers (RCCBs) – B type, short-time delayed

Instruction for Use

K 30 104 993

ISSUE 01



### General

NFIBK is type B residual current circuit breaker (RCCB) for which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents as for type A and in addition for smooth d.c. residual currents, residual d.c. currents which may result from rectifying circuits and high frequency a.c. residual currents up to 1 kHz. The RCCBs type B are not intended for use in d.c. systems and networks with operating frequencies other than 50 or 60 Hz. Functions of detection, evaluation and interruption for type A residual currents do not depend on the line voltage.

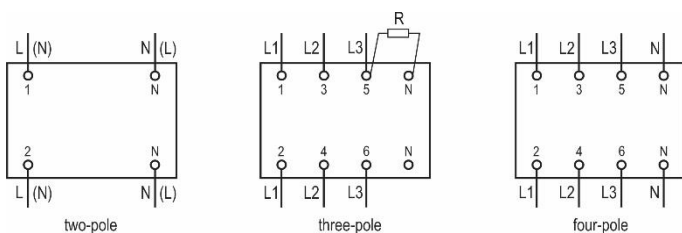
The NFIBK has short-time delayed breaking characteristic, therefore it is resistant against unwanted tripping. It excels also in high immunity against surge currents up to 3 kA (shape 8/20  $\mu$ s). Characteristics comply with standards EN 61008 and EN 62423. It is intended for use in applications with frequency inverters, medical devices, UPS, mobile installations, elevators...

### Fixing

RCCBs are adapted for fixing to a 35 mm wide mounting rail in accordance with EN 60715.

### Connection

Supply and load sides of the RCCB are optional (above or below). Four-pole RCCB can be connected as two-, three- or four-pole RCCB according to the following connection diagram:



RCCB in a three-phase system without a neutral conductor:  
The N terminal should be connected to terminal 5 or 6 via the R resistor, depending on the supply side, in order to keep 230 V power supply voltage of the test circuit. Test current is wrong if the value of the R resistor is incorrect or if only a wire connection is used instead. The R resistor value is:

$I_{\Delta n}$ (A)	R ( $\Omega$ )	$P_{min}$ (W)
0,03	2700	2
0,1 / 0,3 / 0,5	1200	2

### Overload and short-circuit

Neither overload nor short-circuit protection is built in RCCB, which should be considered at designing installation. Maximal permitted back-up fuses for protection of the RCCB against short-circuit currents:

Rated current $I_n$ (A):	25	40	63	80
Back-up fuse (gL, aM) (A):	63	63	80	80

### Earthing

Exposed conductive parts of appliances being protected and protective contacts of supply socket outlets should be earthed. Maximum permitted earthing resistances  $R_A$  regarding permitted touch voltage  $U_L$  and rated residual current  $I_{\Delta n}$  are the following:

$I_{\Delta n}$ (A)	0,03	0,1	0,3	0,5
$U_L$ (V)	$R_A$ ( $\Omega$ )			
50	120	35	12	8
25	60	18	6	4

### Functional test

The tripping operation is tested by pressing the T push-button. RCCB connected to line voltage and in ON position should break immediately. It is recommended to repeat the test in regular time intervals (e.g. once a month).

### WARNING

#### Insulation tests

**Insulation tests of the load equipment have to be carried out only when the NFIBK is switched OFF. An insulation test while NFIBK is switched on, or an insulation test of the below side (terminals 2, 4, 6 and N), can result in destruction of the electronics for AC-DC detection.**

#### Conditions for correct RCCB operation

1. Installation should comply with valid regulations for electrical installation.
2. All conductors (also neutral if available) which are necessary for the operation of the device being protected should be led through RCCB.
3. The neutral conductor on the load side of the RCCB should not be earthed or in contact with protective conductor anywhere.
4. When designing and installing electrical installations, electrical loads that can generate d.c. residual currents in the event of fault, must be assigned a separate electrical circuit.

#### Warning:

The switch protection level is IP20, which means that there is no protection against dust penetration. Dust can have baleful influence on the mechanism operation therefore the switch should be correspondingly protected in dusty environment. Distribution box protection level should be at least IP5X.

Our products and packing are made of environment-friendly materials which can be recycled and reused. Nor packing or a product should be rejected as waste after expiry of its life.