

# Residual Current Circuit Breakers

FI, NFI



- Residual current circuit breakers (RCCB) are used for protection against indirect contact, fire protection and additional protection against direct contact.
- They are suitable for isolation.
- No overload protection or short-circuit protection is built in RCCB.
- Two versions according to behaviour in presence of d.c. components:
  - Type A (marked NFI) - sensitive to alternating and pulsating d.c. residual currents.
  - Type AC (marked FI) - sensitive to alternating residual currents of sine form.
- Assembly to a 35 mm wide mounting rail in accordance with EN 60715.
- Optional operation position.
- Degree of protection IP20, degree of protection IP40 after installation in a distribution box.
- Additional colour display of the position of main contacts (red - contacts closed, green - contacts open).
- A terminal shape prevents connection of a conductor outside the connection area.
- Special versions:

- **Type S:** a switch with delayed break enabling selectivity regarding a general type and a short-time delayed type (type G) connected on the load side. Break time is longer than 40 ms. The switches excel in high resistance to surge currents (up to 3 kA), which prevents unwanted trippings. Their rated currents are from 25 to 100 A, and rated residual operating currents are 100, 300 and 500 mA. This is type A, and a customer can choose between NFI2S two-pole and NFI4S four-pole switches.

- **Type G:** a short-time delayed breaking characteristic (min. non-actuating period is 10 ms). The switches are resistant to unwanted trippings at current impulses or when built-in in special critical conditions. They excel in high resistance to surge currents (up to 3 kA) and a reliable operation in case of high making currents. Rated currents are from 25 to 100 A, and rated residual operating currents are 30, 100, 300 and 500 mA. This is type A, and a customer can choose between NFI2K two-pole and NFI4K four-pole switches. Versions S and G comply with the EN 61008 standard. Regarding tripping times, type G also complies with ÖVE/ ÖNORM E 8601 (supplement to ÖVE EN 61008). Both types are VDE approved.

- **FIR – FIT combination:** It is used for the protection in circuits where operational currents are higher than rated currents of residual current circuit breakers. An actuating relay FIR is separated from a FI transformer (FIT). The function of load switching is performed by the contactor or a circuit-breaker with an undervoltage release. A combination rated current therefore depends on selected switching devices. It is limited with cable cross-sections which can be inserted through the hole of the FI transformer. Rated differential currents are 0.3 A, 0.5 A, 1 A and 2 A.

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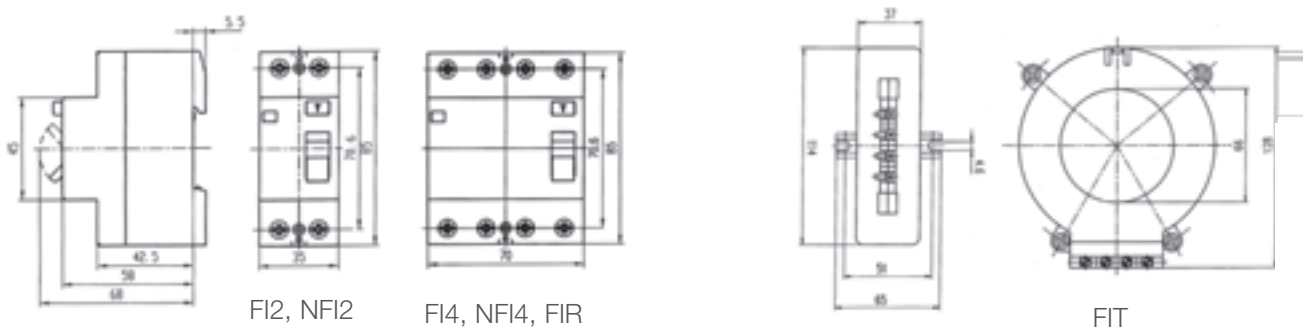
### TECHNICAL DATA

Type	AC		FI2		FI4
	A		NFI2		NFI4
	A-G		NFI2K		NFI4K
	A-S		NFI2S		NFI4S
Standards	IEC/EN 61008, type A-G acc. to ÖVE E 8601				
Approvals	VDE, NF, GOST-R				
No. of poles			2		4
Rated voltage	$U_n$	V	230		230/400
Rated impulse voltage	$U_{imp}$	kV	4		
Rated frequency	$f$	Hz	50		
Rated current	$I_n$	A	16, 25, 40, 63, 80, 100		25, 40, 63, 80, 100
Rated residual operating current	$I_{\Delta n}$	mA	10 ( $I_n = 16, 25 \text{ A}$ ), 30, 100, 300, 500		30, 100, 300, 500
Rated making and breaking capacity = Rated residual making and breaking capacity	$I_m = I_{\Delta m}$	A	800 ( $I_n = 16 - 80 \text{ A}$ ) 1000 ( $I_n = 100 \text{ A}$ )		
Max. back-up fuse for short-circuit current	$I_v$	A	63 ( $I_n = 16 - 40 \text{ A}$ ) 80 ( $I_n = 63, 80 \text{ A}$ ) 100 ( $I_n = 100 \text{ A}$ )		
Rated conditional short-circuit current	$I_{nc}$	kA	10		
Terminal capacity	S	mm <sup>2</sup>	1 ... 35		
Max. tripping times, types AC, A		ms	$1 \times I_{\Delta n} : \leq 300 \text{ ms}$ ; $5 \times I_{\Delta n} : \leq 40 \text{ ms}$		
Response time delay, types A-G, A-S		ms	type A-G - $1 \times I_{\Delta n} : 10 \text{ ms} < T \leq 300 \text{ ms}$ ; $5 \times I_{\Delta n} : 10 \text{ ms} < T \leq 40 \text{ ms}$ type A-S - $1 \times I_{\Delta n} : 130 \text{ ms} < T \leq 500 \text{ ms}$ ; $5 \times I_{\Delta n} : 50 \text{ ms} < T \leq 150 \text{ ms}$		
Ambient temperature		°C	-25 ... +40		
Storage temperature		°C	-35 ... +60		
Weight		kg	0.23		0.39
Tightening torque		Nm	2.0		

### ACCESSORIES

A sealing cover for two-pole (SCNFI2) and four-pole (SCNFI4) switches

### DIMENSIONS



### ORDERING DATA

FI2 - 25 /0,03  
NFI4 - 40 /0,3

Rated residual operating current  $I_{\Delta n}$  (A)  
Rated current  $I_n$  (A)  
Type