

# RESIDUAL CURRENT CIRCUIT BREAKERS - TYPE A

NFI, NFIK, NFIS, NFIF



RESIDUAL CURRENT CIRCUIT BREAKERS (RCCB) ARE USED FOR PROTECTION AGAINST INDIRECT CONTACT, FIRE PROTECTION AND ADDITIONAL PROTECTION AGAINST DIRECT CONTACT. THEY ARE SENSITIVE TO ALTERNATING AND PULSATING D.C. RESIDUAL CURRENTS



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## FEATURES

- They are suitable for isolation
- No overload protection or short-circuit protection is built in RCCB
- 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

### • NFIK - SENSITIVE TO A.C. AND PULSATING DIRECT RESIDUAL CURRENTS

- Short-time delayed RCCBs with minimum non-actuating time 10 ms (type G acc. to ÖVE E 8601)
- Surge current withstand capability with current waveform 8/20  $\mu$ s up to 3 kA
- High immunity against unwanted tripping at current impulses (e.g. a high number of fluorescent lamps, transient effects) or when installed in special critical conditions (leakage currents of impulse shape at long cables, the influence of storms, computers, X-ray devices, etc.).

### • NFIS - SENSITIVE TO A.C. AND PULSATING DIRECT RESIDUAL CURRENTS

- Time delayed selective type with minimum non-actuating time 40 ms (type S)
- Surge current withstand capability with current waveform 8/20  $\mu$ s up to 3 kA
- Selectivity regarding a general type and a short-time delayed type is enabled
- Particularly suitable as the main RCCB

### • NFIF - SENSITIVE TO RESIDUAL CURRENTS AS TYPE A AND IN ADDITION TO RESIDUAL CURRENTS WITH MIXED FREQUENCIES

- Sensitive to residual currents as type A and in addition to residual currents with mixed frequencies up to 1 kHz that can result from single-phase electrical loads with frequency inverters (acc. to IEC/EN 62423)
- Time delayed selective RCCBs with minimum non-actuating time 40 ms
- Surge current withstand capability with current waveform 8/20  $\mu$ s up to 3 kA
- Intended for protection when using washing machines, vacuum cleaners, dishwashers, heating pumps, lighting system ...

|                                 |        |
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# RESIDUAL CURRENT CIRCUIT BREAKERS - NFI

## TYPE A - SENSITIVE TO A.C. AND PULSATING DIRECT RESIDUAL CURRENTS

NFI2 - type A, without time delay

| Type          | Rated current $I_n$<br>(A) | Rated residual current $I_{\Delta n}$<br>(A) | Number of poles | Ordering No. | Weight<br>(g) | Packaging<br>(pcs) |
|---------------|----------------------------|--|-----------------|--------------|---------------|--------------------|
| NFI2 16/0.01  | 16                         | 0.01   | 2               | 30.104.260   | 184           | 1                  |
| NFI2 25/0.01  | 25                         | 0.01   | 2               | 30.104.264   | 184           | 1                  |
| NFI2 16/0.03  | 16                         | 0.03   | 2               | 30.104.238   | 184           | 1                  |
| NFI2 25/0.03  | 25                         | 0.03   | 2               | 30.104.239   | 184           | 1                  |
| NFI2 40/0.03  | 40                         | 0.03   | 2               | 30.104.240   | 184           | 1                  |
| NFI2 63/0.03  | 63                         | 0.03   | 2               | 30.104.241   | 184           | 1                  |
| NFI2 80/0.03  | 80                         | 0.03   | 2               | 30.104.357   | 184           | 1                  |
| NFI2 100/0.03 | 100                        | 0.03   | 2               | 30.104.553   | 184           | 1                  |
| NFI2 16/0.1   | 16                         | 0.1  | 2               | 30.104.261   | 184           | 1                  |
| NFI2 25/0.1   | 25                         | 0.1  | 2               | 30.104.265   | 184           | 1                  |
| NFI2 40/0.1   | 40                         | 0.1  | 2               | 30.104.268   | 184           | 1                  |
| NFI2 63/0.1   | 63                         | 0.1  | 2               | 30.104.271   | 184           | 1                  |
| NFI2 80/0.1   | 80                         | 0.1  | 2               | 30.104.644   | 184           | 1                  |
| NFI2 100/0.1  | 100                        | 0.1  | 2               | 30.104.554   | 184           | 1                  |
| NFI2 16/0.3   | 16                         | 0.3  | 2               | 30.104.262   | 184           | 1                  |
| NFI2 25/0.3   | 25                         | 0.3  | 2               | 30.104.266   | 184           | 1                  |
| NFI2 40/0.3   | 40                         | 0.3  | 2               | 30.104.269   | 184           | 1                  |
| NFI2 63/0.3   | 63                         | 0.3  | 2               | 30.104.272   | 184           | 1                  |
| NFI2 80/0.3   | 80                         | 0.3  | 2               | 30.104.450   | 184           | 1                  |
| NFI2 100/0.3  | 100                        | 0.3  | 2               | 30.104.555   | 184           | 1                  |
| NFI2 16/0.5   | 16                         | 0.5  | 2               | 30.104.263   | 184           | 1                  |
| NFI2 25/0.5   | 25                         | 0.5  | 2               | 30.104.267   | 184           | 1                  |
| NFI2 40/0.5   | 40                         | 0.5  | 2               | 30.104.270   | 184           | 1                  |
| NFI2 63/0.5   | 63                         | 0.5  | 2               | 30.104.273   | 184           | 1                  |
| NFI2 80/0.5   | 80                         | 0.5  | 2               | 30.104.645   | 184           | 1                  |
| NFI2 100/0.5  | 100                        | 0.5  | 2               | 30.104.556   | 184           | 1                  |



NFI4 - type A, without time delay

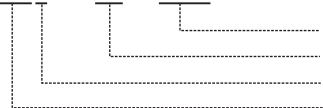
| Type          | Rated current $I_n$<br>(A) | Rated residual current $I_{\Delta n}$<br>(A) | Number of poles | Ordering No. | Weight<br>(g) | Packaging<br>(pcs) |
|---------------|----------------------------|--|-----------------|--------------|---------------|--------------------|
| NFI4 16/0.01  | 16                         | 0.01   | 4               | 30.104.823   | 316           | 1                  |
| NFI4 25/0.01  | 25                         | 0.01   | 4               | 30.104.786   | 316           | 1                  |
| NFI4 25/0.03  | 25                         | 0.03   | 4               | 30.104.296   | 316           | 1                  |
| NFI4 40/0.03  | 40                         | 0.03   | 4               | 30.104.300   | 316           | 1                  |
| NFI4 63/0.03  | 63                         | 0.03   | 4               | 30.104.304   | 316           | 1                  |
| NFI4 80/0.03  | 80                         | 0.03   | 4               | 30.104.358   | 316           | 1                  |
| NFI4 100/0.03 | 100                        | 0.03   | 4               | 30.104.550   | 360           | 1                  |
| NFI4 25/0.1   | 25                         | 0.1  | 4               | 30.104.297   | 316           | 1                  |
| NFI4 40/0.1   | 40                         | 0.1  | 4               | 30.104.301   | 316           | 1                  |
| NFI4 63/0.1   | 63                         | 0.1  | 4               | 30.104.305   | 316           | 1                  |
| NFI4 80/0.1   | 80                         | 0.1  | 4               | 30.104.436   | 316           | 1                  |
| NFI4 100/0.1  | 100                        | 0.1  | 4               | 30.104.551   | 360           | 1                  |
| NFI4 25/0.3   | 25                         | 0.3  | 4               | 30.104.298   | 316           | 1                  |
| NFI4 40/0.3   | 40                         | 0.3  | 4               | 30.104.302   | 316           | 1                  |
| NFI4 63/0.3   | 63                         | 0.3  | 4               | 30.104.306   | 316           | 1                  |
| NFI4 80/0.3   | 80                         | 0.3  | 4               | 30.104.433   | 316           | 1                  |
| NFI4 100/0.3  | 100                        | 0.3  | 4               | 30.104.552   | 360           | 1                  |
| NFI4 25/0.5   | 25                         | 0.5  | 4               | 30.104.299   | 316           | 1                  |
| NFI4 40/0.5   | 40                         | 0.5  | 4               | 30.104.303   | 316           | 1                  |
| NFI4 63/0.5   | 63                         | 0.5  | 4               | 30.104.307   | 316           | 1                  |
| NFI4 80/0.5   | 80                         | 0.5  | 4               | 30.104.443   | 316           | 1                  |
| NFI4 100/0.5  | 100                        | 0.5  | 4               | 30.104.619   | 360           | 1                  |



**NOTE:** Rated current 32 A on request

## ORDERING DATA

**NFI4 - 25 / 0.03**



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

# RESIDUAL CURRENT CIRCUIT BREAKERS - NFI, NFIK, NFIS

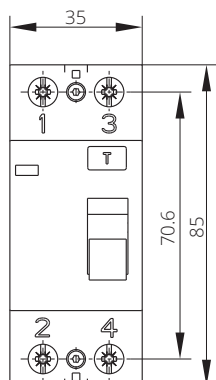
| Type  | A<br>G<br>S | Symbol         | Unit            | NFI2<br>NFI2K<br>NFI2S   | NFI4<br>NFI4K<br>NFI4S                             |
|---|-------------|----------------|-----------------|--|--|
| Standards   |             |                |                 | IEC/EN 61008, type G acc. to ÖVE E 8601  |  |
| Approvals   |             |                |                 | CE, VDE, EAC   |  |
| Module width                                      |             |                |                 | 2  | 4  |
| Number of poles                                   |             |                |                 | 2  | 4  |
| Rated voltage                                     |             | $U_n$          | V               | 230  | 400  |
| Rated insulation voltage                          |             | $U_i$          | V               | 400  |  |
| Rated impulse withstand voltage                   |             | $U_{imp}$      | kV              | 4  |  |
| Rated frequency                                   |             | $f$            | Hz              | 50   |  |
| Rated current                                     |             | $I_n$          | A               | 16, 25, 32, 40, 63, 80, 100  | 25, 32, 40, 63, 80, 100                            |
| Rated residual current                            |             | $I_{\Delta n}$ | mA              | 10 ( $I_n = 16, 25, 32 \text{ A}$ ), 30, 100, 300, 500   | 10 ( $I_n = 25, 32 \text{ A}$ ), 30, 100, 300, 500 |
| Operational residual current                      |             | $I_{\Delta}$   |                 | 0.5 - 1.0 $I_{\Delta n}$   |  |
| Rated conditional short-circuit current           |             | $I_{nc}$       | kA              | 10   |  |
| Rated making and breaking capacity                |             | $I_m$          | A               | 800 ( $I_n = 16 - 80 \text{ A}$ )  |  |
| Rated residual making and breaking capacity       |             | $I_{\Delta m}$ |                 | 1000 ( $I_n = 100 \text{ A}$ )   |  |
| Max. back-up fuse for short-circuit current $g_L$ |             | $I_v$          | A               | 63 ( $I_n = 16 - 40 \text{ A}$ )<br>80 ( $I_n = 63, 80 \text{ A}$ )<br>100 ( $I_n = 100 \text{ A}$ )   |  |
| Surge current withstand capability                |             |                | A               | FI, NFI: 200 (0.5 $\mu\text{s}/100 \text{ kHz}$ ring wave)<br>NFIK, NFIS: 3000 (8/20 $\mu\text{s}$ surge current)                                  |  |
| Maximum breaking times                            |             |                |                 | FI, NFI, NFIK - 1 x $I_{\Delta n}$ : < 300 ms; 5 x $I_{\Delta n}$ : < 40 ms<br>NFIS - 1 x $I_{\Delta n}$ : < 500 ms; 5 x $I_{\Delta n}$ : < 150 ms |  |
| Minimum response time delay                       |             |                |                 | FI, NFI: instantaneous<br>NFIK: 10 ms<br>NFIS: 40 ms   |  |
| Mechanical endurance                              |             |                | op. c.          | min. 5000  |  |
| Electrical endurance                              |             |                | op. c.          | min. 2000  |  |
| Minimum distance of open contacts                 |             |                | mm              | 4  |  |
| Ambient temperature                               |             |                | °C              | -25 ... +40 *  |  |
| Storage temperature                               |             |                | °C              | -35 ... +60  |  |
| Resistance to climate                             |             |                |                 | acc. to IEC 60068-2-30: 28 cycles (55 °C, 95 % relative humidity)  |  |
| Terminal capacity<br>rigid (solid or stranded)    |             | S              | mm <sup>2</sup> | 1 ... 35   |  |
| flexible  |             |                |                 | 1 ... 35   |  |
| Screw   |             |                |                 | M5   |  |
| Screw head  |             |                |                 | PZ2  |  |
| Tightening torque                                 |             |                | Nm              | 2.0  |  |
| Length of removed conductor insulation            |             |                | mm              | 15   |  |
| Degree of protection                              |             |                |                 | IP20 (IP40 after installation in a distribution box)   |  |
| Pollution degree                                  |             |                |                 | 2  |  |
| Weight  |             |                | g               | 184  | 360  |

\* -35°C on request

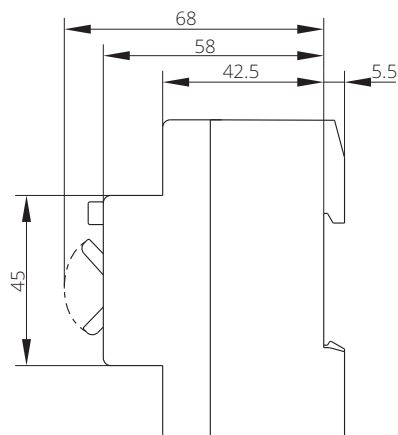
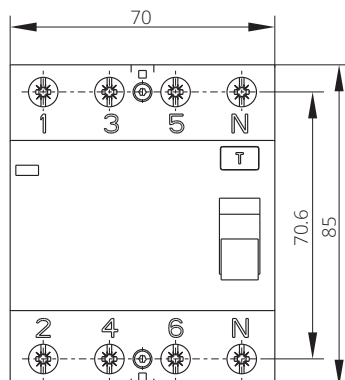
# RESIDUAL CURRENT CIRCUIT BREAKERS - TYPE A

NFI, NFIK, NFIS, NFIF

NFI2, NFI2K  
NFI2S, NFI2F



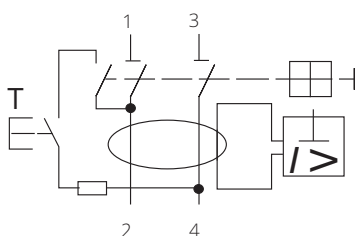
NFI4, NFI4K  
NFI4S, NFI4F



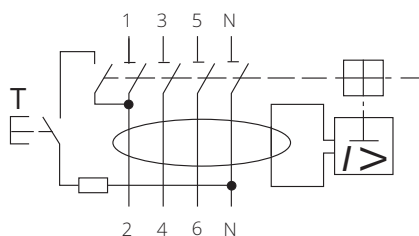
## Schematics

NFI, NFIK, NFIS, NFIF

Two-pole



Four-pole, N-pole right



Four-pole, N-pole left

