## SITOR LV HRC design

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### Overview

SITOR fuses protect power semiconductors from the effects of short circuits because the super quick disconnect characteristic is far quicker than with conventional LV HRC fuses (NH type). They protect expensive devices and system components, such as converters with fuses in the input and the DC link, UPS systems and soft starters for motors.

Panel mounting requirements have given rise to various connection versions and designs.

The fuses with blade contacts comply with IEC 60269-2 and are suitable for installation in LV HRC fuse bases, in LV HRC fuse switch disconnectors and switch disconnectors with fuses. They also include fuses with slotted blade contacts for screw fixing with 110 mm mounting dimension, whose sizes are according to IEC 60269-4.

Fuses with slotted blade contacts for screw fixing with 80 mm or 110 mm mounting dimension are often screwed directly onto busbars for optimum heat dissipation. Even better heat transmission is provided by the compact fuses with M10 or M12 female thread, which are also mounted directly onto busbars.

Bolt-on links with 80 mm mounting dimension are another panel-mounting version for direct busbar mounting.

The fuses for SITOR thyristor sets, railway rectifiers or electrolysis systems were developed specially for these applications.

The LV HRC bases useable for SITOR fuses and safety switching devices are on pages 5/46 and 5/47.

Fuse characteristics, configuration notes and the assignments of SITOR fuses to the fuse bases and 3NP and 3KL safety switching devices can be found under:
www.siemens.com/lowvoltage/manuals

The new size 3 type ranges have a round ceramic body instead of a square one. These series are characterized by small $I^2t$ values with low power dissipation and high capability under alternating load. The dimensions and functional dimensions correspond to the current standards IEC 60269-4/ EN 60269-4.

Note:
The ordering data of the fuses are listed in ascending order of the rated voltage in the selection tables.

### Benefits

- SITOR fuses have a high varying load factor, which ensures a high level of operating safety and plant availability - even when subject to constant load change.
- The use of SITOR fuses in LV HRC bases or Siemens switch disconnectors has been tested with regard to heat dissipation and maximum current loading. This makes planning and dimensioning easier and prevents consequential damage.
- Our high standard of quality ensures good compliance with the characteristic curve and accuracy. This ensures long-term protection of devices.

#### *Operational classes*

Fuses are categorized according to function and operational classes. SITOR semiconductor fuses, in LV HRC design, are available in the following operational classes:

- aR: for the short-circuit protection of power semiconductors (partial range protection)
- gR: for the protection of power semiconductors (full range protection)
- gS: The operational class gS combines cable and line protection with semiconductor protection (full range protection).

## Selection and ordering data

| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 3 | 150 | 500 | gR | 33 000 | 35 | 0.85 | B | **3NC2 423-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 200 | | | 64 000 | 40 | 0.85 | B | **3NC2 425-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 250 | | | 99 000 | 50 | 0.85 | B | **3NC2 427-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 300 | | | 132 000 | 65 | 0.85 | B | **3NC2 428-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 350 | | aR | 249 000 | 60 | 0.85 | B | **3NC2 431-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 400 | | | 390 000 | 50 | 0.85 | B | **3NC2 432-3C** | | 1 | 3 units | 047 | 0.940 |
|  | With slotted blade contacts with two M10 oblong slots, or for installation in LV HRC fuse bases or fuse switch disconnectors | | | | | | | | | | | | | |
| | 3 | 150 | 500 | gR | 33 000 | 35 | 0.85 | D | **3NC2 423-0C** | | 1 | 3 units | 047 | 0.940 |
| | | 200 | | | 64 000 | 40 | 0.85 | D | **3NC2 425-0C** | | 1 | 3 units | 047 | 0.940 |
| | | 250 | | | 99 000 | 50 | 0.85 | D | **3NC2 427-0C** | | 1 | 3 units | 047 | 0.940 |
| | | 300 | | | 132 000 | 65 | 0.85 | D | **3NC2 428-0C** | | 1 | 3 units | 047 | 0.940 |
| | | 350 | | aR | 249 000 | 60 | 0.85 | C | **3NC2 431-0C** | | 1 | 3 units | 047 | 0.940 |
| | | 400 | | | 390 000 | 50 | 0.85 | D | **3NC2 432-0C** | | 1 | 3 units | 047 | 0.940 |
|  | With blade contacts for mounting in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 3 | 710 | 600 | gR | 2 460 000 | 65 | 1.0 | D | **3NE1 437-1** | | 1 | 3 units | 047 | 1.179 |
| | | 800 | | | 3 350 000 | 72 | 1.0 | B | **3NE1 438-1** | | 1 | 3 units | 047 | 1.100 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 3 | 150 | 690 | gR | 17 600 | 40 | 0.85 | B | **3NC8 423-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 200 | | | 38 400 | 55 | 0.85 | B | **3NC8 425-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 250 | | | 70 400 | 72 | 0.85 | B | **3NC8 427-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 350 | | | 176 000 | 95 | 0.85 | B | **3NC8 431-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 500 | | | 448 000 | 130 | 0.85 | B | **3NC8 434-3C** | | 1 | 3 units | 047 | 0.940 |
| | | 1 000 | 600 | aR | 2 480 000 | 140 | 0.9 | C | **3NC8 444-3C** | | 1 | 3 units | 047 | 0.940 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 1 | 160 | 690 | gR | 18 600 | 30 | 1.0 | D | **3NE1 224-3** | | 1 | 3 units | 047 | 0.610 |
| | | 200 | | | 51 800 | 28 | 1.0 | D | **3NE1 225-3** | | 1 | 3 units | 047 | 0.610 |
| | | 250 | | | 80 900 | 35 | 1.0 | D | **3NE1 227-3** | | 1 | 3 units | 047 | 0.610 |
| | | 315 | | | 168 000 | 42 | 1.0 | D | **3NE1 230-3** | | 1 | 3 units | 047 | 0.610 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 2 | 350 | 690 | gR | 177 000 | 44 | 1.0 | D | **3NE1 331-3** | | 1 | 3 units | 047 | 0.750 |
| | | 400 | | | 224 000 | 54 | 1.0 | D | **3NE1 332-3** | | 1 | 3 units | 047 | 0.750 |
| | | 450 | | | 276 500 | 62 | 1.0 | D | **3NE1 333-3** | | 1 | 3 units | 047 | 0.750 |
| | | 500 | | | 398 000 | 65 | 1.0 | D | **3NE1 334-3** | | 1 | 3 units | 047 | 0.750 |

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* You can order this quantity or a multiple thereof.

## SITOR LV HRC design



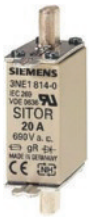
| Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| **SITOR LV HRC design** | | | | | | | | | | | | | |
| With slotted blade contacts for M12 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| 3 | 560 | 690 | gR | 890 000 | 60 | 1.0 | D | **3NE1 435-3** | | 1 | 3 units | 047 | 1.150 |
| | 630 | | | 1 390 000 | 62 | 1.0 | D | **3NE1 436-3** | | 1 | 3 units | 047 | 1.150 |
| | 670 | | | 1 640 000 | 65 | 1.0 | D | **3NE1 447-3** | | 1 | 3 units | 047 | 1.150 |
| | 710 | | | 1 818 000 | 72 | 1.0 | D | **3NE1 437-3** | | 1 | 3 units | 047 | 1.150 |
| | 800 | | | 2 475 000 | 82 | 1.0 | D | **3NE1 438-3** | | 1 | 3 units | 047 | 1.150 |
| | 850 | | | 3 640 000 | 76 | 1.0 | D | **3NE1 448-3** | | 1 | 3 units | 047 | 1.150 |
| With slotted blade contacts with two M10 oblong slots for screw fixing, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| 3 | 150 | 690 | gR | 17 600 | 40 | 0.85 | B | **3NC8 423-0C** | | 1 | 3 units | 047 | 0.940 |
| | 200 | | | 38 400 | 55 | 0.85 | B | **3NC8 425-0C** | | 1 | 3 units | 047 | 0.940 |
| | 250 | | | 70 400 | 72 | 0.85 | B | **3NC8 427-0C** | | 1 | 3 units | 047 | 0.940 |
| | 350 | | | 176 000 | 95 | 0.85 | B | **3NC8 431-0C** | | 1 | 3 units | 047 | 0.940 |
| | 500 | | | 448 000 | 130 | 0.85 | B | **3NC8 434-0C** | | 1 | 3 units | 047 | 0.940 |

| Size | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | V AC/ V DC | | $A^2s$ | W | WL | | | | | | | kg |
| **SITOR LV HRC design** | | | | | | | | | | | | | |
| With M8 bolt-on links, mounting dimension: 80 mm, for screwing onto busbars | | | | | | | | | | | | | |
| 000 | 20 | 690/ 700[1] | gR | 83 | 7 | 0.9 | B | **3NE8 714-1** | | 1 | 10 units | 047 | 0.128 |
| | 25 | | | 140 | 9 | 0.9 | B | **3NE8 715-1** | | 1 | 10 units | 047 | 0.130 |
| | 32 | | | 285 | 10 | 0.9 | A | **3NE8 701-1** | | 1 | 10 units | 047 | 0.110 |
| | 40 | | | 490 | 12 | 0.9 | A | **3NE8 702-1** | | 1 | 10 units | 047 | 0.122 |
| | 50 | | | 815 | 15 | 0.9 | A | **3NE8 717-1** | | 1 | 10 units | 047 | 0.131 |
| | 63 | | aR | 1 550 | 16 | 0.95 | A | **3NE8 718-1** | | 1 | 10 units | 047 | 0.130 |
| | 80 | | | 2 700 | 18 | 0.9 | ▶ | **3NE8 720-1** | | 1 | 10 units | 047 | 0.132 |
| | 100 | | | 4 950 | 19 | 0.95 | ▶ | **3NE8 721-1** | | 1 | 10 units | 047 | 0.123 |
| | 125 | | | 9 100 | 23 | 0.95 | ▶ | **3NE8 722-1** | | 1 | 10 units | 047 | 0.130 |
| | 160 | | | 17 000 | 31 | 0.9 | ▶ | **3NE8 724-1** | | 1 | 10 units | 047 | 0.122 |
| | 200 | | | 30 000 | 36 | 0.9 | ▶ | **3NE8 725-1** | | 1 | 10 units | 047 | 0.117 |
| | 250 | | | 55 000 | 42 | 0.9 | ▶ | **3NE8 727-1** | | 1 | 10 units | 047 | 0.132 |
| | 315 | | | 85 500 | 54 | 0.85 | ▶ | **3NE8 731-1** | | 1 | 10 units | 047 | 0.127 |

[1] DC voltage acc. to UL.



* You can order this quantity or a multiple thereof.

| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
| | With blade contacts for mounting in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
|  | 000 | 16 | 690 | gS | 200 | 3.0 | 1.0 | ▶ | **3NE1 813-0** | | 1 | 3 units | 047 | 0.133 |
| | | 20 | | | 430 | 3.5 | 1.0 | ▶ | **3NE1 814-0** | | 1 | 3 units | 047 | 0.124 |
| | | 25 | | | 780 | 4.0 | 1.0 | ▶ | **3NE1 815-0** | | 1 | 3 units | 047 | 0.127 |
| | | 35 | | | 1 700 | 5.0 | 1.0 | ▶ | **3NE1 803-0** | | 1 | 3 units | 047 | 0.128 |
| | | 40 | | | 3 000 | 5.0 | 1.0 | ▶ | **3NE1 802-0** | | 1 | 3 units | 047 | 0.126 |
| | | 50 | | | 4 400 | 6.0 | 1.0 | ▶ | **3NE1 817-0** | | 1 | 3 units | 047 | 0.129 |
| | | 63 | | | 9 000 | 7.0 | 1.0 | ▶ | **3NE1 818-0** | | 1 | 3 units | 047 | 0.126 |
| | | 80 | | | 18 000 | 8.0 | 1.0 | ▶ | **3NE1 820-0** | | 1 | 3 units | 047 | 0.124 |
| | 00 | 100 | 690 | gS | 33 000 | 10 | 1.0 | ▶ | **3NE1 021-0** | | 1 | 3 units | 047 | 0.204 |
| | | 125 | | | 63 000 | 11 | 1.0 | ▶ | **3NE1 022-0** | | 1 | 3 units | 047 | 0.195 |
| | 1 | 160 | 690 | gS | 60 000 | 24 | 1.0 | ▶ | **3NE1 224-0** | | 1 | 3 units | 047 | 0.522 |
| | | 200 | | | 100 000 | 27 | 1.0 | ▶ | **3NE1 225-0** | | 1 | 3 units | 047 | 0.518 |
| | | 250 | | | 200 000 | 30 | 1.0 | ▶ | **3NE1 227-0** | | 1 | 3 units | 047 | 0.515 |
| | | 315 | | | 310 000 | 38 | 1.0 | A | **3NE1 230-0** | | 1 | 3 units | 047 | 0.519 |
|  | 2 | 350 | 690 | gS | 430 000 | 42 | 1.0 | ▶ | **3NE1 331-0** | | 1 | 3 units | 047 | 0.687 |
| | | 400 | | | 590 000 | 45 | 1.0 | ▶ | **3NE1 332-0** | | 1 | 3 units | 047 | 0.519 |
| | | 450 | | | 750 000 | 53 | 1.0 | A | **3NE1 333-0** | | 1 | 3 units | 047 | 0.689 |
| | | 500 | | | 950 000 | 56 | 1.0 | A | **3NE1 334-0** | | 1 | 3 units | 047 | 0.765 |
| | 3 | 560 | 690 | gS | 1 700 000 | 50 | 1.0 | A | **3NE1 435-0** | | 1 | 3 units | 047 | 1.000 |
| | | 630 | | | 2 350 000 | 55 | 1.0 | A | **3NE1 436-0** | | 1 | 3 units | 047 | 1.113 |
| | | 710 | | | 3 400 000 | 60 | 1.0 | A | **3NE1 437-0** | | 1 | 3 units | 047 | 1.045 |
| | | 800 | | | 5 000 000 | 59 | 1.0 | A | **3NE1 438-0** | | 1 | 3 units | 047 | 1.560 |
|  | 00 | 80 | 690 | gR | 5 800 | 10.5 | 1.0 | A | **3NE1 020-2** | | 1 | 3 units | 047 | 0.200 |
| | | 100 | | | 11 000 | 11.5 | 1.0 | A | **3NE1 021-2** | | 1 | 3 units | 047 | 0.197 |
| | | 125 | | | 23 000 | 13.5 | 1.0 | A | **3NE1 022-2** | | 1 | 3 units | 047 | 0.195 |
| | 1 | 160 | 690 | gR | 18 600 | 30 | 1.0 | A | **3NE1 224-2** | | 1 | 3 units | 047 | 0.535 |
| | | 200 | | | 51 800 | 28 | 1.0 | A | **3NE1 225-2** | | 1 | 3 units | 047 | 0.508 |
| | | 250 | | | 80 900 | 35 | 1.0 | A | **3NE1 227-2** | | 1 | 3 units | 047 | 0.533 |
| | | 315 | | | 168 000 | 42 | 1.0 | A | **3NE1 230-2** | | 1 | 3 units | 047 | 0.519 |
|  | 2 | 350 | 690 | gR | 177 000 | 44 | 1.0 | A | **3NE1 331-2** | | 1 | 3 units | 047 | 0.684 |
| | | 400 | | | 224 000 | 54 | 1.0 | D | **3NE1 332-2** | | 1 | 3 units | 047 | 0.760 |
| | | 450 | | | 276 500 | 62 | 1.0 | A | **3NE1 333-2** | | 1 | 3 units | 047 | 0.691 |
| | | 500 | | | 398 000 | 65 | 1.0 | A | **3NE1 334-2** | | 1 | 3 units | 047 | 0.695 |
|  | 3 | 560 | 690 | gR | 890 000 | 60 | 1.0 | A | **3NE1 435-2** | | 1 | 3 units | 047 | 1.098 |
| | | 630 | | | 1 390 000 | 62 | 1.0 | A | **3NE1 436-2** | | 1 | 3 units | 047 | 1.038 |
| | | 670 | | | 1 640 000 | 65 | 1.0 | A | **3NE1 447-2** | | 1 | 3 units | 047 | 1.044 |
| | | 710 | | | 1 818 000 | 72 | 1.0 | B | **3NE1 437-2** | | 1 | 3 units | 047 | 1.031 |
| | | 800 | | | 2 475 000 | 82 | 1.0 | A | **3NE1 438-2** | | 1 | 3 units | 047 | 1.067 |
| | | 850 | | | 3 640 000 | 76 | 1.0 | A | **3NE1 448-2** | | 1 | 3 units | 047 | 1.048 |

* You can order this quantity or a multiple thereof.

## SITOR LV HRC design



| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
| | With blade contacts for mounting in LV HRC fuse bases or switch disconnectors (contd.) | | | | | | | | | | | | | |
|  | 00 | 25 | 690 | gR | 180 | 7 | 0.95 | ► | **3NE8 015-1** | | 1 | 3 units | 047 | 0.193 |
| | | 35 | | | 400 | 9 | 0.95 | ► | **3NE8 003-1** | | 1 | 3 units | 047 | 0.195 |
| | | 50 | | | 700 | 14 | 0.95 | ► | **3NE8 017-1** | | 1 | 3 units | 047 | 0.614 |
| | | 63 | | | 1 400 | 16 | 0.95 | ► | **3NE8 018-1** | | 1 | 3 units | 047 | 0.196 |
| | | 80 | | aR | 2 400 | 19 | 0.95 | ► | **3NE8 020-1** | | 1 | 3 units | 047 | 0.206 |
| | | 100 | | | 4 200 | 22 | 0.95 | ► | **3NE8 021-1** | | 1 | 3 units | 047 | 0.207 |
| | | 125 | | | 6 500 | 28 | 0.95 | ► | **3NE8 022-1** | | 1 | 3 units | 047 | 0.195 |
| | | 160 | | | 13 000 | 38 | 0.95 | ► | **3NE8 024-1** | | 1 | 3 units | 047 | 0.195 |
|  | With slotted blade contacts for M12 screw fixing, mounting dimension: 80 mm | | | | | | | | | | | | | |
| | 3 | 630 | 690 | aR | 244 000 | 120 | 0.85 | C | **3NC3 236-1** | | 1 | 3 units | 047 | 0.785 |
| | | 710 | | | 346 000 | 130 | 0.85 | D | **3NC3 237-1** | | 1 | 3 units | 047 | 0.785 |
| | | 800 | | | 498 000 | 135 | 0.9 | C | **3NC3 238-1** | | 1 | 3 units | 047 | 0.785 |
| | | 900 | | | 677 000 | 145 | 0.9 | D | **3NC3 240-1** | | 1 | 3 units | 047 | 0.785 |
| | | 1 000 | | | 975 000 | 155 | 0.95 | C | **3NC3 241-1** | | 1 | 3 units | 047 | 0.785 |
| | | 1 100 | | | 1 382 000 | 165 | 0.95 | D | **3NC3 242-1** | | 1 | 3 units | 047 | 0.785 |
| | | 1 250 | | | 1 990 000 | 175 | 0.95 | C | **3NC3 243-1** | | 1 | 3 units | 047 | 0.785 |
| | | 1 400 | 500 | | 2 100 000 | 200 | 0.95 | D | **3NC3 244-1** | | 1 | 3 units | 047 | 0.785 |
| | | 1 600 | | | 2 860 000 | 240 | 0.9 | D | **3NC3 245-1** | | 1 | 3 units | 047 | 0.785 |
|  | With M12 female thread at both ends for direct busbar mounting | | | | | | | | | | | | | |
| | 3 | 630 | 690 | aR | 244 000 | 125 | 0.9 | C | **3NC3 236-6** | | 1 | 3 units | 047 | 0.765 |
| | | 710 | | | 346 000 | 130 | 0.9 | D | **3NC3 237-6** | | 1 | 3 units | 047 | 0.765 |
| | | 800 | | | 498 000 | 135 | 0.95 | C | **3NC3 238-6** | | 1 | 3 units | 047 | 0.765 |
| | | 900 | | | 677 000 | 140 | 0.95 | D | **3NC3 240-6** | | 1 | 3 units | 047 | 0.765 |
| | | 1 000 | | | 975 000 | 145 | 1.0 | C | **3NC3 241-6** | | 1 | 3 units | 047 | 0.765 |
| | | 1 100 | | | 1 382 000 | 150 | 1.0 | D | **3NC3 242-6** | | 1 | 3 units | 047 | 0.765 |
| | | 1 250 | | | 1 990 000 | 155 | 1.0 | C | **3NC3 243-6** | | 1 | 3 units | 047 | 0.765 |
| | | 1 400 | 500 | | 2 100 000 | 175 | 1.0 | C | **3NC3 244-6** | | 1 | 3 units | 047 | 0.765 |
| | | 1 600 | | | 2 860 000 | 195 | 0.95 | C | **3NC3 245-6** | | 1 | 3 units | 047 | 0.765 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 2 | 250 | 800 | aR | 29 700 | 105 | 0.85 | ► | **3NE4 327-0B** | | 1 | 3 units | 047 | 0.780 |
| | | 315 | | | 60 700 | 120 | 0.85 | ► | **3NE4 330-0B** | | 1 | 3 units | 047 | 1.539 |
| | | 450 | | | 191 000 | 140 | 0.85 | ► | **3NE4 333-0B** | | 1 | 3 units | 047 | 0.682 |
| | | 500 | | | 276 000 | 155 | 0.85 | ► | **3NE4 334-0B** | | 1 | 3 units | 047 | 0.683 |
| | | 710 | | | 923 000 | 155 | 0.85 | ► | **3NE4 337** | | 1 | 3 units | 047 | 0.689 |
|  | With blade contacts for mounting in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
| | 0 | 32 | 1 000 | gR | 280 | 12 | 0.9 | ► | **3NE4 101** | | 1 | 3 units | 047 | 0.824 |
| | | 40 | | | 500 | 13 | 0.9 | ► | **3NE4 102** | | 1 | 3 units | 047 | 0.258 |
| | | 50 | | | 800 | 16 | 0.9 | ► | **3NE4 117** | | 1 | 3 units | 047 | 0.274 |
| | | 63 | | aR | 1 500 | 20 | 0.9 | ► | **3NE4 118** | | 1 | 3 units | 047 | 0.257 |
| | | 80 | | | 3 000 | 22 | 0.9 | ► | **3NE4 120** | | 1 | 3 units | 047 | 0.261 |
| | | 100 | | | 6 000 | 24 | 0.9 | ► | **3NE4 121** | | 1 | 3 units | 047 | 0.260 |
| | | 125 | | | 14 000 | 30 | 0.9 | ► | **3NE4 122** | | 1 | 3 units | 047 | 0.265 |
| | | 160 | | | 29 000 | 35 | 0.9 | ► | **3NE4 124** | | 1 | 3 units | 047 | 0.274 |

* You can order this quantity or a multiple thereof.

| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
| | With slotted blade contacts for M10 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
|  | 1 | 100 | 1 000 | aR | 4 800 | 28 | 0.95 | A | **3NE3 221** | | 1 | 3 units | 047 | 0.510 |
| | | 125 | | | 7 200 | 36 | 0.95 | A | **3NE3 222** | | 1 | 3 units | 047 | 0.506 |
| | | 160 | | | 13 000 | 42 | 0.95 | ▶ | **3NE3 224** | | 1 | 3 units | 047 | 0.513 |
| | | 200 | | | 30 000 | 42 | 0.95 | ▶ | **3NE3 225** | | 1 | 3 units | 047 | 0.586 |
| | | 250 | | | 48 000 | 50 | 0.95 | ▶ | **3NE3 227** | | 1 | 3 units | 047 | 0.580 |
| | | 315 | | | 80 000 | 65 | 0.95 | ▶ | **3NE3 230-0B** | | 1 | 3 units | 047 | 0.513 |
| | | 350 | | | 100 000 | 75 | 0.9 | A | **3NE3 231** | | 1 | 3 units | 047 | 0.515 |
| | | 400 | | | 135 000 | 85 | 0.9 | A | **3NE3 232-0B** | | 1 | 3 units | 047 | 0.520 |
| | | 450 | | | 175 000 | 95 | 0.9 | ▶ | **3NE3 233** | | 1 | 3 units | 047 | 0.580 |
|  | 2 | 400 | 1 000 | aR | 135 000 | 85 | 1.0 | A | **3NE3 332-0B** | | 1 | 3 units | 047 | 0.683 |
| | | 450 | | | 175 000 | 90 | 1.0 | A | **3NE3 333** | | 1 | 3 units | 047 | 0.687 |
| | | 500 | | | 260 000 | 90 | 1.0 | ▶ | **3NE3 334-0B** | | 1 | 3 units | 047 | 0.697 |
| | | 560 | | | 360 000 | 95 | 1.0 | ▶ | **3NE3 335** | | 1 | 3 units | 047 | 0.692 |
| | | 630 | | | 600 000 | 100 | 1.0 | ▶ | **3NE3 336** | | 1 | 3 units | 047 | 0.810 |
| | | 710 | 900 | aR | 800 000 | 105 | 1.0 | ▶ | **3NE3 337-8** | | 1 | 3 units | 047 | 0.687 |
| | | 800 | 800 | | 850 000 | 130 | 0.95 | ▶ | **3NE3 338-8** | | 1 | 3 units | 047 | 0.686 |
| | | 900 | 690 | | 920 000 | 165 | 0.95 | ▶ | **3NE3 340-8** | | 1 | 3 units | 047 | 0.657 |
| | With slotted blade contacts for M10 screw fixing, mounting dimension: 130 mm | | | | | | | | | | | | | |
|  | 3 | 100 | 1 000 | aR | 13 500 | 25 | 1.0 | D | **3NE3 421-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 224 | | | 54 000 | 85 | 1.0 | B | **3NE3 626-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 315 | | | 218 000 | 80 | 1.0 | B | **3NE3 430-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 400 | | | 364 000 | 110 | 1.0 | B | **3NE3 432-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 450 | | | 488 000 | 110 | 1.0 | B | **3NE3 635-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 500 | | | 870 000 | 95 | 1.0 | B | **3NE3 434-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 630 | | | 1 280 000 | 132 | 1.0 | D | **3NE3 636-0C** | | 1 | 3 units | 047 | 1.120 |
| | | 710 | | | 1 950 000 | 145 | 1.0 | D | **3NE3 637-0C** | | 1 | 3 units | 047 | 1.120 |
| | With M10 female thread at both ends for direct mounting on busbars | | | | | | | | | | | | | |
|  | 3 | 450 | 1 000 | aR | 488 000 | 110 | 1.0 | D | **3NE3 635-6** | | 1 | 3 units | 047 | 1.184 |
| | With slotted blade contacts for M12 screw fixing, mounting dimension: 140 mm | | | | | | | | | | | | | |
|  | 3 | 710 | 1 000 | aR | 1 950 000 | 145 | 1.0 | D | **3NE3 637-1C** | | 1 | 3 units | 047 | 1.120 |
| | With slotted blade contacts for M12 screw fixing, mounting dimension: 110 mm, or for installation in LV HRC fuse bases or switch disconnectors | | | | | | | | | | | | | |
|  | 3 | 630 | 1 000 | aR | 418 000 | 145 | 0.85 | C | **3NC3 336-1** | | 1 | 3 units | 047 | 1.020 |
| | | 710 | | | 569 000 | 150 | 0.85 | D | **3NC3 337-1** | | 1 | 3 units | 047 | 1.020 |
| | | 800 | | | 819 000 | 155 | 0.85 | C | **3NC3 338-1** | | 1 | 3 units | 047 | 1.020 |
| | | 900 | | | 1 160 000 | 165 | 0.9 | D | **3NC3 340-1** | | 1 | 3 units | 047 | 1.020 |
| | | 1 000 | | | 1 670 000 | 170 | 0.9 | C | **3NC3 341-1** | | 1 | 3 units | 047 | 1.020 |
| | | 1 100 | 800 | | 1 910 000 | 185 | 0.9 | D | **3NC3 342-1** | | 1 | 3 units | 047 | 1.020 |
| | | 1 250 | | | 2 600 000 | 210 | 0.9 | D | **3NC3 343-1** | | 1 | 3 units | 047 | 1.020 |

*** You can order this quantity or a multiple thereof.**

## SITOR LV HRC design



| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
|  | With M12 female thread at both ends for direct busbar mounting | | | | | | | | | | | | | |
| | 3 | 630 | 1 000 | aR | 418 000 | 130 | 0.90 | C | **3NC3 336-6** | | 1 | 3 units | 047 | 0.980 |
| | | 710 | | | 569 000 | 140 | 0.90 | D | **3NC3 337-6** | | 1 | 3 units | 047 | 0.980 |
| | | 800 | | | 819 000 | 150 | 0.90 | C | **3NC3 338-6** | | 1 | 3 units | 047 | 0.980 |
| | | 900 | | | 1 160 000 | 160 | 0.95 | D | **3NC3 340-6** | | 1 | 3 units | 047 | 0.980 |
| | | 1 000 | | | 1 670 000 | 165 | 0.95 | C | **3NC3 341-6** | | 1 | 3 units | 047 | 0.980 |
| | | 1 100 | 800 | | 1 910 000 | 175 | 0.95 | D | **3NC3 342-6** | | 1 | 3 units | 047 | 0.980 |
| | | 1 250 | | | 2 600 000 | 185 | 0.95 | C | **3NC3 343-6** | | 1 | 3 units | 047 | 0.980 |
|  | With slotted blade contacts for M12 screw fixing, mounting dimension: 110 mm | | | | | | | | | | | | | |
| | 3 | 315 | 1 250 | aR | 72 500 | 80 | 0.95 | D | **3NC3 430-1** | | 1 | 3 units | 047 | 1.010 |
| | | 400 | | | 163 000 | 95 | 0.95 | D | **3NC3 432-1** | | 1 | 3 units | 047 | 1.010 |
| | | 500 | | | 290 000 | 115 | 0.90 | D | **3NC3 434-1** | | 1 | 3 units | 047 | 1.010 |
| | | 630 | | | 650 000 | 120 | 0.95 | D | **3NC3 436-1** | | 1 | 3 units | 047 | 1.010 |
| | | 800 | 1 100 | | 985 000 | 145 | 0.90 | D | **3NC3 438-1** | | 1 | 3 units | 047 | 1.150 |
|  | With M12 female thread at both ends for direct busbar mounting | | | | | | | | | | | | | |
| | 3 | 315 | 1 250 | aR | 72 500 | 80 | 0.95 | D | **3NC3 430-6** | | 1 | 3 units | 047 | 1.010 |
| | | 400 | | | 163 000 | 95 | 0.95 | D | **3NC3 432-6** | | 1 | 3 units | 047 | 1.010 |
| | | 500 | | | 290 000 | 115 | 0.90 | D | **3NC3 434-6** | | 1 | 3 units | 047 | 1.010 |
| | | 630 | | | 650 000 | 120 | 0.95 | D | **3NC3 436-6** | | 1 | 3 units | 047 | 1.010 |
| | | 800 | 1 100 | | 985 000 | 145 | 0.95 | D | **3NC3 438-6** | | 1 | 3 units | 047 | 1.110 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 210 mm | | | | | | | | | | | | | |
| | 3 | 160 | 1 500 | aR | 54 000 | 56 | 1.0 | D | **3NE5 424-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 224 | | | 138 000 | 80 | 1.0 | C | **3NE5 426-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 315 | | | 311 000 | 115 | 1.0 | D | **3NE5 430-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 350 | | | 428 000 | 135 | 1.0 | D | **3NE5 431-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 450 | | | 870 000 | 145 | 0.95 | D | **3NE5 433-0C** | | 1 | 2 units | 047 | 1.860 |
| | With slotted blade contacts for M12 screw fixing, mounting dimension: 210 mm | | | | | | | | | | | | | |
| | | 450 | | | 870 000 | 145 | 0.95 | D | **3NE5 433-1C** | | 1 | 2 units | 047 | 1.860 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 170 mm | | | | | | | | | | | | | |
| | 3 | 250 | 1 500 | aR | 84 000 | 130 | 1.0 | D | **3NE5 627-0C** | | 1 | 3 units | 047 | 1.520 |
| | | 450 | | | 590 000 | 160 | 1.0 | B | **3NE5 633-0C** | | 1 | 3 units | 047 | 1.520 |
| | | 600 | | | 1 950 000 | 145 | 1.0 | D | **3NE5 643-0C** | | 1 | 3 units | 047 | 1.520 |
|  | With slotted blade contacts for M10 screw fixing, mounting dimension: 210 mm | | | | | | | | | | | | | |
| | 3 | 200 | 2 000 | aR | 138 000 | 75 | 1.0 | D | **3NE7 425-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 250 | | | 218 000 | 110 | 1.0 | D | **3NE7 427-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 350 | | | 555 000 | 120 | 1.0 | D | **3NE7 431-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 400 | | | 870 000 | 150 | 1.0 | D | **3NE7 432-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 450 | | | 960 000 | 160 | 1.0 | D | **3NE7 633-0C** | | 1 | 2 units | 047 | 1.860 |
| | | 630 | | | 1 950 000 | 220 | 1.0 | D | **3NE7 636-0C** | | 1 | 2 units | 047 | 1.860 |
| | With slotted blade contacts for M12 screw fixing, mounting dimension: 210 mm | | | | | | | | | | | | | |
| | 3 | 450 | 2 000 | aR | 960 000 | 160 | 1.0 | C | **3NE7 633-1C** | | 1 | 2 units | 047 | 1.860 |
| | | 525 | | | 1 120 000 | 210 | 1.0 | D | **3NE7 648-1C** | | 1 | 2 units | 047 | 1.860 |
| | | 630 | | | 1 950 000 | 220 | 1.0 | C | **3NE7 636-1C** | | 1 | 1 unit | 047 | 1.860 |
| | | 710 | | | 3 110 000 | 275 | 1.0 | B | **3NE7 637-1C** | | 1 | 2 units | 047 | 1.860 |

* You can order this quantity or a multiple thereof.

| | Sizes | $I_e$ | $U_e$ | Operational classes | Breaking $I^2t$ value | Power loss | Varying load factor | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC | | $A^2s$ | W | WL | | | | | | | kg |
| | **SITOR LV HRC design** | | | | | | | | | | | | | |
| | With slotted blade contacts for M12 screw fixing, mounting dimension: 260 mm | | | | | | | | | | | | | |
| | 3 | 125 | 2500 | aR | 34 500 | 78 | 1.0 | D | **3NE9 622-1C** | | 1 | 1 unit | 047 | 2.500 |
| | | 400 | | | 620 000 | 250 | 1.0 | D | **3NE9 632-1C** | | 1 | 1 unit | 047 | 2.350 |
| | | 500 | | | 1 270 000 | 235 | 1.0 | D | **3NE9 634-1C** | | 1 | 1 unit | 047 | 2.350 |
| | | 630 | | | 2 800 000 | 275 | 1.0 | D | **3NE9 636-1C** | | 1 | 1 unit | 047 | 2.350 |
| | **Fuses for special applications** | | | | | | | | | | | | | |
| | For screwing onto water-cooled busbars, for rectifiers in electrolysis systems | | | | | | | | | | | | | |
| | --[1] | 350 | 800 | aR | 260 000 | 80 | 0.9 | X | **3NC5 531** | | 1 | 3 units | 047 | 0.671 |
| | | 600 | 1 000 | | 888 000 | 150 | 0.9 | D | **3NC5 840** | | 1 | 3 units | 047 | 1.485 |
| | | 630 | 800 | | 888 000 | 145 | 0.9 | D | **3NC5 841** | | 1 | 3 units | 047 | 1.177 |
| | | 800 | 1 000 | | 1 728 000 | 170 | 0.9 | D | **3NC5 838** | | 1 | 3 units | 047 | 3.569 |
| | | 710 | 900 | | 620 000 | 150 | 0.9 | D | **3NE6 437-7** | | 1 | 3 units | 047 | 1.062 |
| | | 1 250 | 600 | | 2 480 000 | 210 | 0.9 | D | **3NE9 450-7** | | 1 | 3 units | 047 | 1.072 |
| | With M10 female thread at both ends for direct busbar mounting, for air-cooled rectifiers in electrolysis systems | | | | | | | | | | | | | |
| | --[1] | 710 | 900 | aR | 620 000 | 150 | 0.9 | D | **3NE6 437** | | 1 | 3 units | 047 | 1.030 |
| | | 850 | 600 | gR | 2 480 000 | 85 | 1.0 | D | **3NE9 440-6** | | 1 | 3 units | 047 | 0.960 |
| | | 900 | 900 | aR | 1 920 000 | 170 | 0.9 | C | **3NE6 444** | | 1 | 3 units | 047 | 1.105 |
| | | 1 250 | 600 | aR | 2 480 000 | 210 | 0.9 | D | **3NE9 450** | | 1 | 3 units | 047 | 1.011 |
| | Fuses with installation holder for SITOR 6QG10 thyristor sets | | | | | | | | | | | | | |
| | -- | 200 | 1 000 | aR | 44 000 | 50 | 0.85 | D | **3NE3 525-5** | | 1 | 2 units | 047 | 0.744 |
| | | 450 | | | 395 000 | 90 | 0.85 | D | **3NE3 535-5** | | 1 | 2 units | 047 | 0.735 |
| | Fuses with installation holder for SITOR 6QG11 thyristor sets | | | | | | | | | | | | | |
| | --[1] | 50 | 1 000 | gR | 1 100 | 20 | 0.85 | C | **3NE4 117-5** | | 1 | 2 units | 047 | 0.300 |
| | | 100 | | aR | 7 400 | 35 | 0.85 | B | **3NE4 121-5** | | 1 | 2 units | 047 | 0.299 |
| | | 170 | | aR | 60 500 | 43 | 0.85 | B | **3NE4 146-5** | | 1 | 2 units | 047 | 0.287 |
| | Fuses female thread at both ends for SITOR 6QG12 thyristor sets | | | | | | | | | | | | | |
| | --[1] | 250 | 800 | aR | 29 700 | 105 | 0.85 | ▶ | **3NE4 327-6B** | | 1 | 3 units | 047 | 0.650 |
| | | 315 | | | 60 700 | 120 | 0.85 | ▶ | **3NE4 330-6B** | | 1 | 3 units | 047 | 0.655 |
| | | 450 | | | 191 000 | 140 | 0.85 | ▶ | **3NE4 333-6B** | | 1 | 3 units | 047 | 0.642 |
| | | 500 | | | 276 000 | 155 | 0.85 | ▶ | **3NE4 334-6B** | | 1 | 3 units | 047 | 0.681 |
| | | 710 | | | 923 000 | 155 | 0.95 | ▶ | **3NE4 337-6** | | 1 | 3 units | 047 | 0.640 |
| | With M12 female thread at both ends for direct mounting on busbars for railway supply rectifiers | | | | | | | | | | | | | |
| | --[1] | 250 | 680 | aR | 635 000 | 25 | 0.9 | D | **3NC7 327-2** | | 1 | 3 units | 047 | 0.670 |
| | | 350 | | | 1 430 000 | 32 | 0.9 | D | **3NC7 331-2** | | 1 | 3 units | 047 | 0.740 |

[1] Special design

* You can order this quantity or a multiple thereof.

# SITOR, cylindrical fuse design



## Overview

SITOR cylindrical fuses protect power semiconductors from the effects of short-circuits because the super quick disconnect characteristic is far quicker than that of conventional fuses. They protect expensive devices and system components such as solid-state contactors, electronic relays (solid state), converters with fuses in the input and in the DC link, UPS systems and soft starters for motors up to 100 A.

The cylindrical design is approved for industrial applications. The cylindrical fuse links comply with IEC 60269.

Cylindrical fuse holders also comply with IEC 60269 and UL 512. The cylindrical fuse holders for 10 x 38 mm and 14 x 51 mm have been tested and approved as fuse switch disconnectors and the cylindrical fuse holders for 22 x 58 mm as fuse disconnectors according to the switching device standard IEC 60947-3. The utilization category and the tested current and voltage values are specified in the Table "Technical Specifications".

The cylindrical fuse holders have been specially developed for the application of SITOR fuse links with regard to heat tolerance and heat dissipation and are therefore not recommended for standard applications.

Cylindrical fuse bases do not offer the same comprehensive touch protection as the fuse holders, but have better heat dissipation. The single-pole cylindrical fuse bases for 14 x 51 mm and 22 x 58 mm allow modular expansion to multipole bases.

## Benefits

- Cylindrical fuses have an extremely compact design and a correspondingly small footprint
- The cylindrical fuses have IEC and UL approval and are suitable for universal use worldwide.
- The use of SITOR cylindrical fuses in the cylindrical fuse holders and bases has been tested with regard to heat dissipation and maximum current loading. This makes planning and dimensioning easier and prevents consequential damage.
- The use of fuse holders as switch disconnectors expands the area of application of these devices and increases operating safety.

## Technical specifications

| | | | | |
|---|---|---|---|---|
| **Sizes** | mm × mm | **10 × 38** | **14 × 51** | **22 × 58** |
| | | **Cylindrical fuse links 3NC1 0, 3NC1 4, 3NC2 2** | | |
| **Standards**<br>**Approvals** | | IEC 60269-4; UL 248-13; CSA C22.2 No. 248.13<br>UL 248-13; UL File No. E167357; CSA C22.2 No. 248.13 | | |
| | | **Fuse holders, fuse bases 3NC1, 3NC2** | | |
| **Standards**<br>**Approvals** | | IEC 60269-2; EN 60947-3; UL 512; CSA C22.2 No. 39-M<br>UL 512; UL File No. E220063; CSA C22.2 No. 39-M | | |
| **Rated voltage** | V AC | 690 | | |
| **Rated current $I_n$** | A | 32 | 50 | 100 |
| **Max. power dissipation** of fuse links (conductor cross-section used) | W | 3 (6 $mm^2$)<br>4.3 (10 $mm^2$) | 5 (10 $mm^2$)<br>6.5 (25 $mm^2$) | 9.5 (35 $mm^2$)<br>11 (50 $mm^2$) |
| **Feeder terminals** | $mm^2$ | 1.5 ... 25 | 1.5 ... 35 | 4 ... 50 |
| **Conductor cross-sections** | | | | |
| • Solid and stranded | $mm^2$ | 1.5 ... 25 | 1.5 ... 35 | 4 ... 50 |
| • AWG Conductor cross-section, solid and stranded | AWG | 18 ... 4 | 14 ... 2 | 10 ... 1/0 |
| **Utilization category** Acc. to IEC 60947-3 | | 22B/32 A/400 V AC<br>22B/10 A/690 V AC | 22B/50 A/400 V AC<br>22B/20 A/690 V AC | 20B/690 V AC |
| **Rated conditional short-circuit current** | | | | |
| • At 400 V | kA | 50 (32 A gG) | 100 (50 A gG) | 100 (100 A gG)<br>80 (80 A gG) |

## Selection and ordering data

| Sizes | $I_e$ | $U_e$ | Breaking $I^2t$ value | Power loss | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm × mm | A | V AC/ V DC | $A^2s$ | W | | | | | | | kg |
| **Cylindrical fuse links, operational class aR** | | | | | | | | | | | |
| 10 × 38 | 3 | 600/400 | 8 | 1.2 | A | **3NC1 003** | | 1 | 10 units | 047 | 0.008 |
| | 6 | | 20 | 1.5 | ▶ | **3NC1 006** | | 1 | 10 units | 047 | 0.008 |
| | 8 | | 30 | 2 | B | **3NC1 008** | | 1 | 10 units | 047 | 0.006 |
| | 10 | | 60 | 2.5 | ▶ | **3NC1 010** | | 1 | 10 units | 047 | 0.007 |
| | 12 | | 110 | 3 | B | **3NC1 012** | | 1 | 10 units | 047 | 0.006 |
| | 16 | | 150 | 3.5 | ▶ | **3NC1 016** | | 1 | 10 units | 047 | 0.009 |
| | 20 | | 200 | 4.8 | ▶ | **3NC1 020** | | 1 | 10 units | 047 | 0.016 |
| | 25 | | 250 | 6 | ▶ | **3NC1 025** | | 1 | 10 units | 047 | 0.008 |
| | 32 | | 500 | 7.5 | ▶ | **3NC1 032** | | 1 | 10 units | 047 | 0.010 |
| 14 × 51 | 1 | 660/700[1] | 1.2 | 5 | B | **3NC1 401** | | 1 | 10 units | 047 | 0.018 |
| | 2 | | 10 | 3 | ▶ | **3NC1 402** | | 1 | 10 units | 047 | 0.020 |
| | 3 | | 15 | 2.5 | B | **3NC1 403** | | 1 | 10 units | 047 | 0.018 |
| | 4 | | 25 | 3 | ▶ | **3NC1 404** | | 1 | 10 units | 047 | 0.018 |
| | 5 | 690/700[1] | 9 | 1.5 | B | **3NC1 405** | | 1 | 10 units | 047 | 0.021 |
| | 6 | | 12 | 1.5 | ▶ | **3NC1 406** | | 1 | 10 units | 047 | 0.022 |
| | 10 | | 20 | 4 | ▶ | **3NC1 410** | | 1 | 10 units | 047 | 0.019 |
| | 15 | | 75 | 5.5 | ▶ | **3NC1 415** | | 1 | 10 units | 047 | 0.020 |
| | 20 | | 120 | 6 | ▶ | **3NC1 420** | | 1 | 10 units | 047 | 0.020 |
| | 25 | | 250 | 7 | ▶ | **3NC1 425** | | 1 | 10 units | 047 | 0.020 |
| | 30 | | 300 | 9 | B | **3NC1 430** | | 1 | 10 units | 047 | 0.020 |
| | 32 | | 700 | 7.6 | ▶ | **3NC1 432** | | 1 | 10 units | 047 | 0.028 |
| | 40 | | 900 | 8 | ▶ | **3NC1 440** | | 1 | 10 units | 047 | 0.020 |
| | 50 | | 1 800 | 9 | ▶ | **3NC1 450** | | 1 | 10 units | 047 | 0.001 |
| 22 × 58 | 20 | 690/700[1] | 220 | 4.6 | B | **3NC2 220** | | 1 | 5 units | 047 | 0.056 |
| | 25 | | 300 | 5.6 | B | **3NC2 225** | | 1 | 5 units | 047 | 0.053 |
| | 32 | | 450 | 7 | B | **3NC2 232** | | 1 | 5 units | 047 | 0.055 |
| | 40 | | 700 | 8.5 | B | **3NC2 240** | | 1 | 5 units | 047 | 0.055 |
| | 50 | | 1 350 | 9.5 | ▶ | **3NC2 250** | | 1 | 5 units | 047 | 0.056 |
| | 63 | | 2 600 | 11 | ▶ | **3NC2 263** | | 1 | 5 units | 047 | 0.051 |
| | 80 | | 5 500 | 13.5 | ▶ | **3NC2 280** | | 1 | 5 units | 047 | 0.055 |
| | 100 | 600/700[1] | 8 000 | 16 | ▶ | **3NC2 200** | | 1 | 5 units | 047 | 0.052 |
| **Cylindrical fuse links with striking pin, operational class aR** | | | | | | | | | | | |
| 14 × 51 | 10 | 690/700[1] | 90 | 4 | B | **3NC1 410-5** | | 1 | 10 units | 047 | 0.001 |
| | 15 | | 100 | 5.5 | B | **3NC1 415-5** | | 1 | 10 units | 047 | 0.001 |
| | 20 | | 500 | 6 | B | **3NC1 420-5** | | 1 | 10 units | 047 | 0.020 |
| | 25 | | 400 | 7 | C | **3NC1 425-5** | | 1 | 10 units | 047 | 0.001 |
| | 30 | | 500 | 9 | C | **3NC1 430-5** | | 1 | 10 units | 047 | 0.020 |
| | 32 | | 600 | 7.6 | B | **3NC1 432-5** | | 1 | 10 units | 047 | 0.022 |
| | 40 | | 900 | 8 | B | **3NC1 440-5** | | 1 | 10 units | 047 | 0.020 |
| | 50 | | 2 000 | 9 | B | **3NC1 450-5** | | 1 | 10 units | 047 | 0.020 |
| 22 × 58 | 20 | 690/700[1] | 240 | 5 | C | **3NC2 220-5** | | 1 | 10 units | 047 | 0.039 |
| | 25 | | 350 | 6 | C | **3NC2 225-5** | | 1 | 5 units | 047 | 0.041 |
| | 32 | | 500 | 8 | B | **3NC2 232-5** | | 1 | 5 units | 047 | 0.057 |
| | 40 | | 800 | 9 | B | **3NC2 240-5** | | 1 | 5 units | 047 | 0.039 |
| | 50 | | 1 500 | 9.5 | B | **3NC2 250-5** | | 1 | 5 units | 047 | 0.058 |
| | 63 | | 3 000 | 11 | B | **3NC2 263-5** | | 1 | 5 units | 047 | 0.040 |
| | 80 | | 6 000 | 13.5 | B | **3NC2 280-5** | | 1 | 5 units | 047 | 0.057 |
| 22 × 58 | 100 | 600/700[1] | 8 500 | 16 | B | **3NC2 200-5** | | 1 | 5 units | 047 | 0.042 |

[1] DC voltage acc. to UL.

*** You can order this quantity or a multiple thereof.**

## SITOR, cylindrical fuse design



| | Sizes | Version | Rated voltage | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm × mm | | V AC | | | | | | | kg |
| | **Cylindrical fuse holders**<br>Can be used as fuse switch disconnectors[1] | | | | | | | | | |
|  | 10 × 38 | 1P | 690 | ▶ | **3NC1 091** | | 1 | 12 units | 047 | 0.067 |
| | | 2P | | ▶ | **3NC1 092** | | 1 | 6 units | 047 | 0.126 |
| | | 3P | | ▶ | **3NC1 093** | | 1 | 4 units | 047 | 0.200 |
| | 14 × 51 | 1P | | ▶ | **3NC1 491** | | 1 | 6 units | 047 | 0.102 |
| | | 2P | | ▶ | **3NC1 492** | | 1 | 3 units | 047 | 0.203 |
| | | 3P | | B | **3NC1 493** | | 1 | 2 units | 047 | 0.279 |
| | 22 × 58 | 1P | | ▶ | **3NC2 291** | | 1 | 1 unit | 047 | 0.204 |
| | | 2P | | ▶ | **3NC2 292** | | 1 | 3 units | 047 | 0.358 |
| | | 3P | | B | **3NC2 293** | | 1 | 2 units | 047 | 0.512 |
| | **Cylindrical fuse holders**<br>Can be used as fuse switch disconnectors, with alarm switches for fuse links with striking pin[1] | | | | | | | | | |
|  | 14 × 51 | 1P | 690 | B | **3NC1 491-5** | | 1 | 6 units | 047 | 0.130 |
| | 22 × 58 | 1P | | B | **3NC2 291-5** | | 1 | 6 units | 047 | 0.181 |
| | **Cylindrical fuse bases** | | | | | | | | | |
|  | 10 × 38 | 1P | 600 | B | **3NC1 038-1** | | 1 | 10 units | 047 | 0.045 |
| | | 2P | | C | **3NC1 038-2** | | 1 | 8 units | 047 | 0.074 |
| | | 3P | | B | **3NC1 038-3** | | 1 | 6 units | 047 | 0.113 |
| | 14 × 51 | 1P | 690 | B | **3NC1 451-1** | | 1 | 3 units | 047 | 0.108 |
| | 22 × 58 | 1P | | B | **3NC2 258-1** | | 1 | 3 units | 047 | 0.225 |
| | **Cylindrical fuse clips** | | | | | | | | | |
| | For fuses 10 × 38 | | | C | **3NC1 038** | | 1 | 20 units | 047 | 0.001 |
| | For fuses 14 × 51 | | | B | **3NC1 451** | | 1 | 20 units | 047 | 0.118 |
| | **Fuse tongs** | | | | | | | | | |
|  | 10 × 38,<br>14 × 51,<br>22 × 58 | | | B | **3NC1 000** | | 1 | 1 unit | 047 | 0.069 |

[1] Please observe the utilization category and current/voltage values specified in the "Technical specifications" table.

* You can order this quantity or a multiple thereof.

## Overview

SILIZED is the brand name of the NEOZED fuses (D0 fuses) and the DIAZED fuses (D fuses) with super quick characteristic for semiconductor protection. The fuses are used in combination with fuse bases, fuse screw caps and accessory parts of the standard fuse system.

SILIZED fuses protect power semiconductors from the effects of short-circuits because the super quick disconnect characteristic is far quicker than that of conventional fuses. They protect expensive devices and system components, such as semiconductor contactors, static relays, converters with fuses in the input and in the DC link, UPS systems and soft starters for motors up to 100 A.

When using fuse bases and fuse screw caps made of molded plastic, always heed the maximum permissible power loss values due to the high power loss (power dissipation) of the SILIZED fuses. When using these components, the following maximum permissible power loss applies:

- NEOZED D02: 5.5 W
- DIAZED DII: 4.5 W
- DIAZED DIII: 7.0 W

For this reason, sometimes a thermal permanent load of only 50 % is possible.

The DIAZED screw adapter DII for 25 A is used for the 30 A fuse link.

## Benefits

- SILIZED fuses have an extremely compact design. This means they have a very small footprint – particularly the NEOZED version.
- The rugged and well-known DIAZED design complies with IEC 60269-3. It is globally renowned and can be used in many countries.
- A huge range of fuse bases and accessories are available for the NEOZED and DIAZED versions of the SILIZED fuses. This increases the application options in many devices.

## Technical specifications

| | | SILIZED fuse links, NEOZED design 5SE1 3 | SILIZED fuse links, DIAZED design 5SD4 |
|---|---|---|---|
| **Standards** | | DIN VDE 0636-3; IEC 60269-3; DIN VDE 0636-4; IEC 60269-4 | |
| **Operational class** | | gR | |
| **Characteristic** | | Super quick | |
| **Rated voltage $U_n$** | V AC<br>V DC | 400<br>250 | 500<br>500 |
| **Rated current $I_n$** | A | 10 ... 63 | 16 ... 100 |
| **Rated breaking capacity** | kA AC<br>kA DC | 50<br>8 | |
| **Mounting position** | | Any, but preferably vertical | |
| **Non-interchangeability** | | Using adapter sleeves | Using screw adapter or adapter sleeves |
| **Resistance to climate** | °C | up to 45 at 95 % rel. humidity | |
| **Ambient temperature** | °C | -5 ... +40, humidity 90 % at 20 | |

## NEOZED and DIAZED design, SILIZED



### Selection and ordering data

| | Sizes | $I_e$ | $U_e$ | Breaking $I^2t$ value | Power loss | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC/ V DC | $A^2s$ | W | | | | | | | kg |
| | **Fuse links, NEOZED design, SILIZED Operational class gR** | | | | | | | | | | | |
|  | D01 | 10 | 400/250 | 73 | 6.9 | B | **5SE1 310** | | 1 | 10 units | 016 | 0.007 |
| | | 16 | | 120 | 6.2 | B | **5SE1 316** | | 1 | 10 units | 016 | 0.007 |
|  | D02 | 20 | | 190 | 8.1 | B | **5SE1 320** | | 1 | 10 units | 016 | 0.012 |
| | | 25 | | 215 | 8.2 | B | **5SE1 325** | | 1 | 10 units | 016 | 0.013 |
| | | 35 | | 470 | 16.7 | B | **5SE1 335** | | 1 | 10 units | 016 | 0.013 |
| | | 50 | | 1 960 | 12.0 | B | **5SE1 350** | | 1 | 10 units | 016 | 0.017 |
| | | 63 | | 4 230 | 15.5 | B | **5SE1 363** | | 1 | 10 units | 016 | 0.016 |

| | Sizes | $I_e$ | $U_e$ | Breaking $I^2t$ value | Power loss | DT | Order No. | Price per PU | PU (UNIT, SET, M) | PS*/ P. unit | PG | Weight per PU approx. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | V AC/ V DC | $A^2s$ | W | | | | | | | kg |
| | **Fuse links, DIAZED design, SILIZED Operational class gR** | | | | | | | | | | | |
|  | DII | 16 | 500/500 | 60 | 12.1 | A | **5SD4 20** | | 1 | 5 units | 016 | 0.028 |
| | | 20 | | 139 | 12.3 | A | **5SD4 30** | | 1 | 5 units | 016 | 0.029 |
| | | 25 | | 205 | 12.5 | A | **5SD4 40** | | 1 | 5 units | 016 | 0.029 |
| | | 30 | | 310 | 13.5 | A | **5SD4 80** | | 1 | 5 units | 016 | 0.031 |
| | DIII | 35 | | 539 | 14.8 | A | **5SD4 50** | | 1 | 5 units | 016 | 0.047 |
| | | 50 | | 1 250 | 18.5 | A | **5SD4 60** | | 1 | 5 units | 016 | 0.048 |
| | | 63 | | 1 890 | 28 | A | **5SD4 70** | | 1 | 5 units | 016 | 0.049 |
| | DIV | 80 | | 4 200 | 34.3 | B | **5SD5 10** | | 1 | 3 units | 016 | 0.131 |
| | | 100 | | 8 450 | 41.5 | B | **5SD5 20** | | 1 | 3 units | 016 | 0.115 |

* You can order this quantity or a multiple thereof.

## Cylindrical fuse design



### Overview

In spite of the lack of uniform international and European standards, cylindrical fuses for photovoltaic applications are already being deployed in many European countries.

The fuse inserts have a rated voltage of 1000 V and a high operational class of gPV for the protection of PV modules and their connecting cables.

The cylindrical fuse holders can be supplied in single-pole and two-pole versions with and without signal detectors. In the case of devices with signal detector, a small electronic device with LED is located behind an inspection window in the plug-in module. If the inserted fuse link is tripped, this is indicated by the LED flashing.

The fuse holders size 10 mm x 38 mm have a sliding catch that enables the removal of individual devices from the assembly.

The infeed can be from the top or the bottom. Because the cylindrical fuse holders are fitted with the same anti-slip terminals at the top and the bottom, the devices can also be rail-mounted at the top or the bottom.

The PV cylindrical fuse holders comply with IEC 60269-2 and are regarded as fuse disconnectors in the sense of the switching device standard IEC 60947. Under no circumstances are they suitable for switching loads.

There is still no uniform international or European standard for PV fuses and fuse holders, but work on integrating the special requirements of these fuses in the IEC 60269 set of standards is in progress. UL approval for the international market will be available soon.

The correct selection and dimensioning of these fuses must take account of the specific operating conditions as well as the data of the PV modules when calculating the voltage and the current.

### Benefits

- Protection of the module connection leads and the modules in case of reverse currents
- Safe disconnection in case of fault currents reduces the risk of fire due to DC electric arcs
- Safe isolation when the fuse holder is open
- A flashing LED on the fuse holder indicates when the fuse link disconnects. This enables fast detection during runtime.

### Technical specifications

#### *Cylindrical fuse holders*

| | | 3NW7 0..-4 cylindrical fuse holders |
|---|---|---|
| **Size** | mm x mm | 10 x 38 |
| **Standards** | | IEC 60269, IEC 60269-6 (draft), IEC 60947 |
| **Approvals** | | UL 712 (available soon) |
| **Rated voltage $U_n$** | V DC | 1000 |
| **Rated current $I_n$** | A DC | 25 |
| **Rated short-circuit strength** | kA | 30 |
| **Switching capacity**<br>• Utilization category | | AC-20B, DC-20B (switching without load) |
| **Max. power dissipation of the fuse link** | W | 3.4 |
| **Rated impulse withstand voltage** | kV | 6 |
| **Overvoltage category** | | II |
| **Pollution degree** | | 2 |
| **No-voltage changing of fuse links** | | Yes |
| **Sealable when installed** | | Yes |
| **Mounting position** | | Any, but preferably vertical |
| **Current direction** | | Any (signal detector with antiparallel LED) |
| **Degree of protection acc. to IEC 60529** | | IP20, with connected conductors |
| **Terminals are touch-protected according to BGVA3 at the incoming and outgoing feeder** | | Yes |
| **Ambient temperature** | °C | -5 ... +40,<br>Humidity 90 % at +20 |
| **Conductor cross-sections**<br>• finely stranded, with end sleeve $mm^2$<br>• AWG (American Wire Gauge) | | <br>0.75 ... 25<br>18 ... 4 |
| **Tightening torques** | Nm | 1.2 |

#### *Cylindrical fuse links*

| | | 3NW6 0..-4 cylindrical fuse links |
|---|---|---|
| **Size** | mm x mm | 10 x 38 |
| **Standards** | | IEC 60269-6 (draft) |
| **Approvals** | | UL 248-13 (available soon) |
| **Operational class** | | gPV |
| **Rated voltage $U_n$** | V DC | 1000 at time constant (L/R) 3 ms |
| **Rated current $I_n$** | A DC | 4 ... 16 |
| **Rated breaking capacity** | kA DC | 30 |
| **Mounting position** | | Any, but preferably vertical |
| **Ambient temperature** | °C | -5 ... +40,<br>Humidity 90 % at +20 |