

# Controlling & Switching Busbar Systems Other Accessories



Catalog



Powering Business Worldwide

**Controlling & Switching.....**

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SG10611



SG83911



SG82911



## Description

- Switches
- Installation Contactors
- Relays
- Signalling Devices
- Transformers

## Main Load Disconnect Switch (Isolator) IS

SG10611



SG10711



SG10811



SG10911



| Rated current<br>(A)                             | Poles | Type<br>Designation | Article No. | Units per<br>package |
|--------------------------------------------------|-------|---------------------|-------------|----------------------|
| <b>Main Load Disconnect Switch (Isolator) IS</b> |       |                     |             |                      |
| 16                                               | 1     | IS-16/1             | 276254      | 12/120               |
| 16                                               | 2     | IS-16/2             | 276255      | 1/60                 |
| 16                                               | 3     | IS-16/3             | 276256      | 1/40                 |
| 16                                               | 4     | IS-16/4             | 276257      | 1/30                 |
| 20                                               | 1     | IS-20/1             | 276258      | 12/120               |
| 20                                               | 2     | IS-20/2             | 276259      | 1/60                 |
| 20                                               | 3     | IS-20/3             | 276260      | 1/40                 |
| 20                                               | 4     | IS-20/4             | 276261      | 1/30                 |
| 25                                               | 1     | IS-25/1             | 276262      | 12/120               |
| 25                                               | 2     | IS-25/2             | 276263      | 1/60                 |
| 25                                               | 3     | IS-25/3             | 276264      | 1/40                 |
| 25                                               | 4     | IS-25/4             | 276265      | 1/30                 |
| 32                                               | 1     | IS-32/1             | 276266      | 12/120               |
| 32                                               | 2     | IS-32/2             | 276267      | 1/60                 |
| 32                                               | 3     | IS-32/3             | 276268      | 1/40                 |
| 32                                               | 4     | IS-32/4             | 276269      | 1/30                 |
| 40                                               | 1     | IS-40/1             | 276270      | 12/120               |
| 40                                               | 2     | IS-40/2             | 276271      | 1/60                 |
| 40                                               | 3     | IS-40/3             | 276272      | 1/40                 |
| 40                                               | 4     | IS-40/4             | 276273      | 1/30                 |
| 63                                               | 1     | IS-63/1             | 276274      | 12/120               |
| 63                                               | 2     | IS-63/2             | 276275      | 1/60                 |
| 63                                               | 3     | IS-63/3             | 276276      | 1/40                 |
| 63                                               | 4     | IS-63/4             | 276277      | 1/30                 |
| 80                                               | 1     | IS-80/1             | 276278      | 12/120               |
| 80                                               | 2     | IS-80/2             | 276279      | 1/60                 |
| 80                                               | 3     | IS-80/3             | 276280      | 1/40                 |
| 80                                               | 4     | IS-80/4             | 276281      | 1/30                 |
| 100                                              | 1     | IS-100/1            | 276282      | 12/120               |
| 100                                              | 2     | IS-100/2            | 276283      | 1/60                 |
| 100                                              | 3     | IS-100/3            | 276284      | 1/40                 |
| 100                                              | 4     | IS-100/4            | 276285      | 1/30                 |
| 125                                              | 1     | IS-125/1            | 276286      | 12/120               |
| 125                                              | 2     | IS-125/2            | 276287      | 1/60                 |
| 125                                              | 3     | IS-125/3            | 276288      | 1/40                 |
| 125                                              | 4     | IS-125/4            | 276289      | 1/30                 |

| Description        | Type<br>Designation | Article No. | Units per<br>package |
|--------------------|---------------------|-------------|----------------------|
| <b>Accessories</b> |                     |             |                      |
| Terminal cover     | Z-IS/AK-1MU         | 276290      | 10/600               |

sg01215

**Switching interlock IS/SPE-1MU**

- Without lock
- Also suitable for PFIM, PKNM

**Terminal cover Z-IS/AK-1MU**

- Can be sealed with leads
- Modular design, width 1 MU



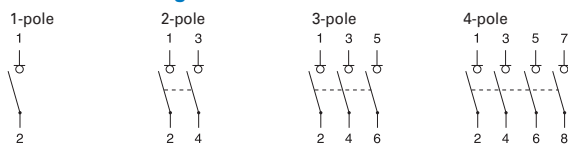
## Description Main Load Disconnecter Switch (Isolator) IS

- Load circuit breaker with isolating function
- Design according to IEC/EN 60947-3
- Highly wear resistant contacts
- Quick make, black toggle
- Terminal capacity 50 mm<sup>2</sup>
- Compatible busbars with switchgear series Xpole by use of the mouth terminal in combination with standard fork busbar

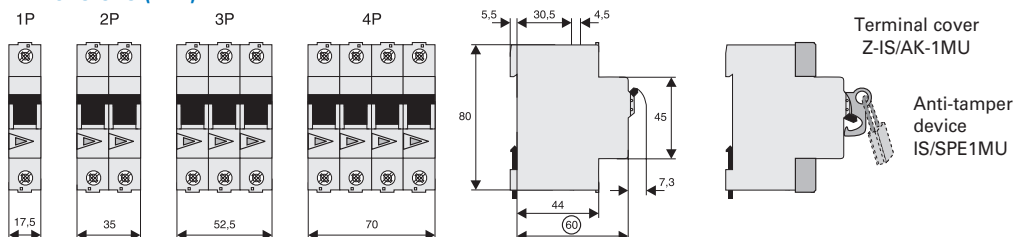
## Technical Data

|                                                                                |                  | IS-16                                                             | IS-20    | IS-25    | IS-32    | IS-40    | IS-63    | IS-80    | IS-100   | IS-125   |
|--------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Electrical</b>                                                              |                  |                                                                   |          |          |          |          |          |          |          |          |
| Design                                                                         |                  | according to IEC/EN 60947-3                                       |          |          |          |          |          |          |          |          |
| Rated voltage                                                                  |                  | 240/415 V                                                         |          |          |          |          |          |          |          |          |
| Frequency                                                                      |                  | 50/60 Hz                                                          |          |          |          |          |          |          |          |          |
| Rated insulation voltage                                                       | U <sub>i</sub>   | 690 V~                                                            |          |          |          |          |          |          |          |          |
| Rated peak withstand voltage                                                   | U <sub>imp</sub> | 6 kV                                                              |          |          |          |          |          |          |          |          |
| Pollution degree                                                               |                  | 3                                                                 |          |          |          |          |          |          |          |          |
| Rated short-time withstand current                                             | I <sub>cw</sub>  | 2 kA                                                              |          |          |          |          |          |          |          |          |
| Rated short-circuit making capacity                                            | I <sub>cm</sub>  | 2.8 kA                                                            |          |          |          |          |          |          |          |          |
| Rated current 240/415 V, AC23A                                                 |                  | 16 A                                                              | 20 A     | 25 A     | 32 A     | 40 A     | 63 A     | 80 A     | 100 A    | 125 A    |
| Number of poles                                                                |                  | 1-, 2-, 3-, 4-pole                                                |          |          |          |          |          |          |          |          |
| Maximum back-up fuse                                                           |                  | 125 A gG                                                          |          |          |          |          |          |          |          |          |
| Short-circuit current strength - with back-up fuse according to IEC/EN 60947-3 |                  | 12.5 kA                                                           | 12.5 kA  | 12.5 kA  | 12.5 kA  | 12.5 kA  | 12.5 kA  | 12.5 kA  | 10 kA    | 10 kA    |
| Endurance                                                                      |                  |                                                                   |          |          |          |          |          |          |          |          |
| operating cycles electrical components                                         |                  | ≥ 3,000                                                           | ≥ 3,000  | ≥ 3,000  | ≥ 3,000  | ≥ 3,000  | ≥ 3,000  | ≥ 3,000  | ≥ 3,000  | ≥ 2,000  |
| operating cycles mechanical components                                         |                  | ≥ 16,000                                                          | ≥ 16,000 | ≥ 16,000 | ≥ 16,000 | ≥ 16,000 | ≥ 16,000 | ≥ 16,000 | ≥ 16,000 | ≥ 14,000 |
| <b>Mechanical</b>                                                              |                  |                                                                   |          |          |          |          |          |          |          |          |
| Frame size                                                                     |                  | 45 mm                                                             |          |          |          |          |          |          |          |          |
| Device height                                                                  |                  | 80 mm                                                             |          |          |          |          |          |          |          |          |
| Device width                                                                   |                  | 17.5mm/pole                                                       |          |          |          |          |          |          |          |          |
| Mounting                                                                       |                  | quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715 |          |          |          |          |          |          |          |          |
| Degree of protection, built-in                                                 |                  | IP40                                                              |          |          |          |          |          |          |          |          |
| Terminal protection                                                            |                  | finger and hand touch safe according to DGUV VS3, EN 50274        |          |          |          |          |          |          |          |          |
| Upper and lower terminals                                                      |                  | Twin-purpose terminals                                            |          |          |          |          |          |          |          |          |
| Terminal capacity                                                              |                  | 2.5 - 50 mm <sup>2</sup>                                          |          |          |          |          |          |          |          |          |
| Busbar thickness                                                               |                  | 0.8 - 2 mm                                                        |          |          |          |          |          |          |          |          |
| Tightening torque of terminal screws                                           |                  | 2.5 - 5 Nm                                                        |          |          |          |          |          |          |          |          |
| Function                                                                       |                  | irrespective of the position of installation                      |          |          |          |          |          |          |          |          |

## Connection diagram



## Dimensions (mm)



SG00912



| Poles                       | Rated current (A) | Type Designation | Article No. | Units per package |
|-----------------------------|-------------------|------------------|-------------|-------------------|
| <b>Circuit Breaker ZP-A</b> |                   |                  |             |                   |
| 1                           | 40                | ZP-A40/1         | 248263      | 12 / 120          |
| 2                           | 40                | ZP-A40/2         | 248264      | 1 / 60            |
| 3                           | 40                | ZP-A40/3         | 248265      | 1 / 40            |
| 3+N                         | 40                | ZP-A40/3N        | 248266      | 1 / 30            |
| 1                           | 63                | ZP-A63/1         | 284906      | 12 / 120          |
| 2                           | 63                | ZP-A63/2         | 284907      | 1 / 60            |
| 3                           | 63                | ZP-A63/3         | 284908      | 1 / 40            |
| 3+N                         | 63                | ZP-A63/3N        | 284909      | 1 / 30            |

### Description Circuit Breaker ZP-A

- Design according to IEC/EN 60947-1, -3
- Poles: 1, 2, 3, 3N
- Rated current: 40 A, 63 A
- Accessories for switchgear also for ZP-A usable!

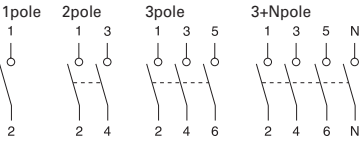
#### Accessories:

|                                                     |               |                |
|-----------------------------------------------------|---------------|----------------|
| Auxiliary switch for subsequent installation        | ZP-IHK        | 286052         |
|                                                     | ZP-WHK        | 286053         |
| Tripping signal contact for subsequent installation | ZP-NHK        | 248437         |
| Shunt trip release                                  | ZP-ASA/..     | 248438, 248439 |
| Undervoltage release                                | Z-USA/..      | 248288-248291  |
| Additional terminal 35 mm <sup>2</sup>              | BB-UL-TEPA/35 | 169823         |
| Anti-tamper device                                  | Z-IS/SPE-1MU  | 274418         |

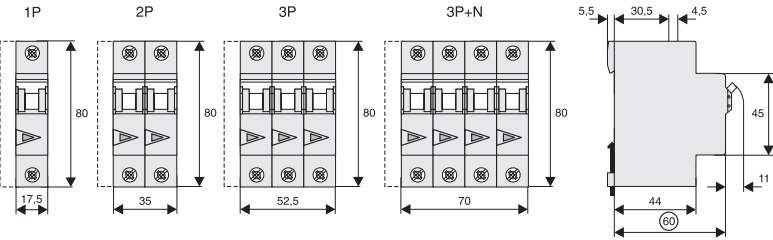
### Technical Data

| ZP-A                                                     |           |                                                            |
|----------------------------------------------------------|-----------|------------------------------------------------------------|
| <b>Electrical</b>                                        |           |                                                            |
| Rated operational voltage                                | $U_e$     | 230/400 V AC                                               |
| Rated frequency                                          |           | 50 Hz                                                      |
| Rated insulation voltage                                 | $U_i$     | 440 V AC                                                   |
| Rated peak withstand voltage (1.2/50 $\mu$ S)            | $U_{imp}$ | 4 kV                                                       |
| Conventional thermal current                             | $I_{th}$  |                                                            |
| ZP-A40                                                   |           | 40 A                                                       |
| ZP-A63                                                   |           | 63 A                                                       |
| Utilisation category AC22A                               |           |                                                            |
| Minimum voltage per contact                              | $I_e$     |                                                            |
| ZP-A40                                                   |           | 40 A AC                                                    |
| ZP-A63                                                   |           | 63 A AC                                                    |
| Utilisation category AC23A                               |           |                                                            |
| Minimum voltage per contact                              | $I_e$     | 16 A AC                                                    |
| Short-circuit current strength with back-up fuse 40 A gG |           | 3 kA ( $U = 240$ V, $\cos\varphi = 0.87$ )                 |
| Endurance                                                |           |                                                            |
| electrical components                                    |           | $\geq 8,000$ switching operations                          |
| mechanical components                                    |           | $\geq 20,000$ switching operations                         |
| <b>Mechanical</b>                                        |           |                                                            |
| Frame size                                               |           | 45 mm                                                      |
| Device height                                            |           | 80 mm                                                      |
| Device width                                             |           | 17.5mm/pole                                                |
| Mounting                                                 |           | quick fastening on DIN rail IEC/EN 60715                   |
| Degree of protection, built-in                           |           | IP40                                                       |
| Terminal protection                                      |           | finger and hand touch safe according to DGUV VS3, EN 50274 |
| Upper and lower terminals                                |           | lift terminals + guide for secure terminal                 |
| Terminal capacity                                        |           | 1.5-25 mm <sup>2</sup>                                     |
| Terminal screws                                          |           | M5 (Pozidrive) Z2                                          |
| Tightening torque of terminal screws                     |           | max. 2.4 Nm                                                |

Connection diagram



Dimensions (mm)



Practical Hint

e.g. 16(2)A ....

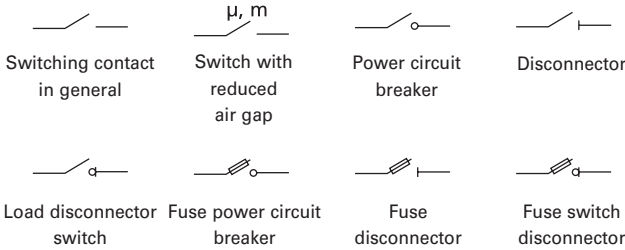


Ratings for  
resistive/inductive  
consumers

Ratings for  
incandescent lamp  
load  
(AC 5b IEC 60947-4)

ÖVE-SN45, § 305

Practical Hint



ÖVE-SN45, § 207, IEC 60947-3



SG37112



| Colour                 | Pushbutton/Function | Type Designation | Article No. | Units per package |
|------------------------|---------------------|------------------|-------------|-------------------|
| <b>Pushbutton Z-T/</b> |                     |                  |             |                   |
| green                  | 4NO                 | Z-T/4S-G         | 248328      | 12 / 120          |
| black                  | 3NO+1NC             | Z-T/3S10         | 248330      | 12 / 120          |

SG38912



| Function                     | Type Designation | Article No. | Units per package |
|------------------------------|------------------|-------------|-------------------|
| <b>Control Switch Z-S/..</b> |                  |             |                   |
| 3NO                          | Z-S/3S           | 248334      | 12 / 120          |
| 4NO                          | Z-S/4S           | 248335      | 12 / 120          |
| 2NO+2NC                      | Z-S/SS00         | 248337      | 12 / 120          |
| 3NO+1NC                      | Z-S/3S10         | 248338      | 12 / 120          |

SG39012



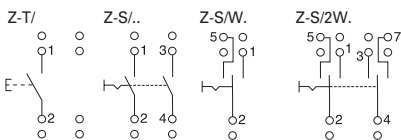
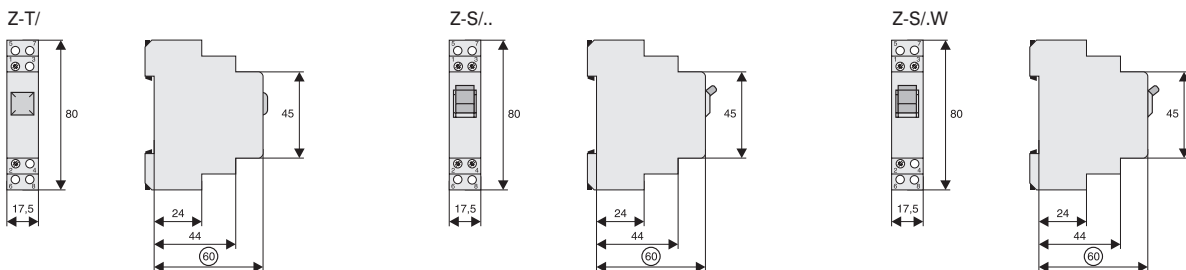
| Function                       | Type Designation | Article No. | Units per package |
|--------------------------------|------------------|-------------|-------------------|
| <b>Changeover Switch Z-S/W</b> |                  |             |                   |
| 1CO I-O-II                     | Z-S/WM           | 248345      | 12 / 120          |
| 2CO I-O-II                     | Z-S/2WM          | 248346      | 12 / 120          |
| 1CO DAY-O-NIGHT                | Z-S/WTN          | 248347      | 12 / 120          |
| 2CO DAY-O-NIGHT                | Z-S/2WTN         | 248348      | 12 / 120          |

**Description Pushbutton Z-T/; Control Switch Z-S/..; Changeover Switch Z-S/W**

- Design according to IEC 60669, IEC 60669-1
- Types Z-S/WM and /2WM with central position (0-position)
- Types Z-S/WTN and -2WTN with TAG-0-NACHT (DAY-0-NIGHT) printed onto the device

**Technical Data**

|                                      | Z-T/                                                              | Z-S/..                            | Z-S/W                             |
|--------------------------------------|-------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| <b>Electrical</b>                    |                                                                   |                                   |                                   |
| Rated voltage                        | 230 V AC                                                          | 240 V AC                          | 240 V AC                          |
| Frequency                            | 50 HZ                                                             | 50 HZ                             | 50 HZ                             |
| Rated current                        | 16 A / 230 V~                                                     | 20 A / 240 V~                     | 20 A / 240 V~                     |
| Switching capacity                   | —                                                                 | $1.25 \times I_n; 1.1 \times U_n$ | $1.25 \times I_n; 1.1 \times U_n$ |
| Short-circuit current strength       | 10 kA                                                             | 10 kA                             | 10 kA                             |
| <b>Mechanical</b>                    |                                                                   |                                   |                                   |
| Switching toggle                     | —                                                                 | black                             | black                             |
| Pushbutton colour                    | green - NO<br>black - NO/NC                                       | —                                 | —                                 |
| Frame size                           | 45 mm                                                             | 45 mm                             | 45 mm                             |
| Device height                        | 80 mm                                                             | 80 mm                             | 80 mm                             |
| Device width                         | 17.5 mm (1MU)                                                     | 17.5 mm (1MU)                     | 17.5 mm (1MU)                     |
| Mounting                             | quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715 |                                   |                                   |
| Degree of protection, built-in       | IP40                                                              | IP40                              | IP40                              |
| Upper and lower terminals            | lift terminals                                                    | lift terminals                    | lift terminals                    |
| Terminal capacity (rigid wires only) | 1-10 mm <sup>2</sup>                                              | 1-10 mm <sup>2</sup>              | 1-10 mm <sup>2</sup>              |
| Terminal protection                  | finger and hand touch safe according to DGUV VS3, EN 50274        |                                   |                                   |
| Resistance to climatic conditions    | acc. to IEC/EN 60068                                              | acc. to IEC/EN 60068              | acc. to IEC/EN 60068              |
| Load of self-ballasted lamp (SBL)    |                                                                   | 200 W cap. load                   | 200 W cap. load                   |
| Operation temperature                |                                                                   | -25° C .... +40° C                | -25° C .... +40° C                |

**Connection diagram****Dimensions (mm)**

Switch Z-SW.; Signal Lamps Z-EL, Z-DL., Z-BEL; Pushbutton Z-PU.

SG59911



| Rated voltage LED                                                                           | Function | Type Designation | Article No. | Units per package |
|---------------------------------------------------------------------------------------------|----------|------------------|-------------|-------------------|
| <b>Switch Z-SW, Z-SWL</b>                                                                   |          |                  |             |                   |
| <ul style="list-style-type: none"> <li>• Z-SWL: with LED</li> <li>• 16 A 250 VAC</li> </ul> |          |                  |             |                   |
| —                                                                                           | 1NO      | Z-SW/S           | 276300      | 2 / 120           |
| —                                                                                           | 2NO      | Z-SW/SS          | 276301      | 2 / 120           |
| —                                                                                           | 1NO+1NC  | Z-SW/SO          | 276302      | 2 / 120           |
| —                                                                                           | 1CO      | Z-SW/W           | 276303      | 2 / 120           |
| 24 V AC/DC                                                                                  | 2NO      | Z-SWL24/SS       | 276304      | 2 / 120           |
| 24 V AC/DC                                                                                  | 1NO+1NC  | Z-SWL24/SO       | 276305      | 2 / 120           |
| 230 V AC/DC                                                                                 | 1NO      | Z-SWL230/S       | 292300      | 2 / 120           |
| 230 V AC/DC                                                                                 | 2NO      | Z-SWL230/SS      | 276306      | 2 / 120           |
| 230 V AC/DC                                                                                 | 1NO+1NC  | Z-SWL230/SO      | 276307      | 2 / 120           |

Additional LED colours, voltages and contact functions upon enquiry.

wa\_sg02512



Z-EK/25

| Description                                            | Type Designation | Article No. | Units per package |
|--------------------------------------------------------|------------------|-------------|-------------------|
| <b>Busbar</b>                                          |                  |             |                   |
| 1pole angulated grey 10 mm <sup>2</sup>                | Z-SV-10/1P-F/13  | 264918      | 10                |
| 1pole angulated blue 10 mm <sup>2</sup>                | Z-SV-10/N-F/13   | 264919      | 10                |
| 1pole angulated grey 16 mm <sup>2</sup>                | Z-SV-16/1P-1MU/F | 269523      | 25                |
| 1pole angulated blue 16 mm <sup>2</sup>                | Z-SV-16/N-1MU/F  | 269524      | 25                |
| Extension terminal 25 mm <sup>2</sup> long, straight   | Z-EK/25          | 264935      | 10 / 600          |
| Extension terminal 25 mm <sup>2</sup> short, straight  | Z-EK/25/K        | 269525      | 10 / 600          |
| Extension terminal 25 mm <sup>2</sup> long, crosswise  | Z-EK/25/QL       | 264937      | 10 / 600          |
| Extension terminal 25 mm <sup>2</sup> short, crosswise | Z-EK/25/Q        | 264936      | 10 / 600          |

SG59211



Z-BEL/R230

| Rated voltage LED       | Colour | Type Designation | Article No. | Units per package |
|-------------------------|--------|------------------|-------------|-------------------|
| <b>Signal Lamps</b>     |        |                  |             |                   |
| <b>Single Lamp Z-EL</b> |        |                  |             |                   |
| 24 V AC/DC              | orange | Z-EL/OR24        | 275444      | 2 / 120           |
| 24 V AC/DC              | white  | Z-EL/WH24        | 107493      | 2 / 120           |
| 230 V AC/DC             | red    | Z-EL/R230        | 284921      | 2 / 120           |
| 230 V AC/DC             | green  | Z-EL/G230        | 284922      | 2 / 120           |
| 230 V AC/DC             | orange | Z-EL/OR230       | 275865      | 2 / 120           |
| 230 V AC/DC             | blue   | Z-EL/BL230       | 103131      | 2 / 120           |
| 230 V AC/DC             | white  | Z-EL/WH230       | 107494      | 2 / 120           |

**Twin Lamp Z-DLD**

|                 |               |             |        |         |
|-----------------|---------------|-------------|--------|---------|
| 2 x 24 V AC/DC  | red + green   | Z-DLD/2/24  | 284926 | 2 / 120 |
| 2 x 230 V AC/DC | red + green   | Z-DLD/2/230 | 284925 | 2 / 120 |
| 2 x 24 V AC/DC  | white + white | Z-DLD/WH24  | 108897 | 2 / 120 |
| 2 x 230 V AC/DC | white + white | Z-DLD/WH230 | 108898 | 2 / 120 |

**Universal Single Lamp - changeover function Z-UEL**

|             |           |          |        |         |
|-------------|-----------|----------|--------|---------|
| 24 V AC/DC  | red/green | Z-UEL24  | 284924 | 2 / 120 |
| 230 V AC/DC | red/green | Z-UEL230 | 284923 | 2 / 120 |

**Universal Twin Lamp - changeover function Z-UDL**

|                 |           |          |        |         |
|-----------------|-----------|----------|--------|---------|
| 2 x 24 V AC/DC  | red/green | Z-UDL24  | 284928 | 2 / 120 |
| 2 x 230 V AC/DC | red/green | Z-UDL230 | 284927 | 2 / 120 |

**Signal Lamp - with integrated flash function Z-BEL**

|             |       |            |        |         |
|-------------|-------|------------|--------|---------|
| 24 V AC/DC  | red   | Z-BEL/R24  | 284931 | 2 / 120 |
| 24 V AC/DC  | green | Z-BEL/G24  | 284932 | 2 / 120 |
| 230 V AC/DC | red   | Z-BEL/R230 | 284929 | 2 / 120 |
| 230 V AC/DC | green | Z-BEL/G230 | 284930 | 2 / 120 |

SG59811

**Pushbutton Z-PU, Z-PUL**

- Z-PUL: with LED
- 16 A 250 VAC

|             |         |             |        |         |
|-------------|---------|-------------|--------|---------|
| –           | 1NO     | Z-PU/S      | 276291 | 2 / 120 |
| –           | 2NO     | Z-PU/SS     | 276292 | 2 / 120 |
| –           | 1NO+1NC | Z-PU/SO     | 276293 | 2 / 120 |
| –           | 2NC     | Z-PU/OO     | 276294 | 2 / 120 |
| 24 V AC/DC  | 2NO     | Z-PUL24/SS  | 276295 | 2 / 120 |
| 24 V AC/DC  | 1NO+1NC | Z-PUL24/SO  | 276296 | 2 / 120 |
| 230 V AC/DC | 2NO     | Z-PUL230/SS | 276297 | 2 / 120 |
| 230 V AC/DC | 1NO+1NC | Z-PUL230/SO | 276298 | 2 / 120 |
| 230 V AC/DC | 2NC     | Z-PUL230/OO | 276299 | 2 / 120 |

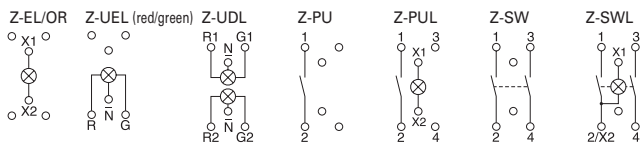
**Description Pushbutton Z-T/; Control Switch Z-S/..; Changeover Switch Z-S/W**

- Design according to IEC/EN 60669, VDE 0632
- Low power loss
- Long service life
- Twin lamp with separate connections
- Colour red/green, can be selected by alternative wiring
- Flash option by usage of different terminals only, changeover option, no additional relay necessary (Z-BEL)
- Terminals with guide for secure terminal connection
- Identical terminal screws for coil and contacts

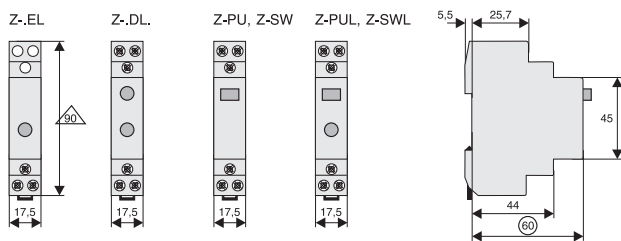
**Technical Data**

|                                        | Z-.EL, Z-.DLD, Z-BEL                                                            | Z-PU, Z-PUL                                   | Z-SW, Z-SWL                                   |
|----------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Electrical                             |                                                                                 |                                               |                                               |
| Rated voltage                          | –                                                                               | 250 V AC                                      | 250 V AC                                      |
| Frequency                              | –                                                                               | 50 HZ                                         | 50 HZ                                         |
| Rated current                          | –                                                                               | 16 A                                          | 16 A                                          |
| LED                                    |                                                                                 |                                               |                                               |
| Rated voltage                          | 230 V AC/DC<br>24 V AC/DC                                                       | 230 V AC/DC<br>24 V AC/DC                     | 230 V AC/DC<br>24 V AC/DC                     |
| Range of operational voltage           | (50 V) 110-240 V AC/DC<br>(5 V) 12-24 V AC/DC                                   | (50 V) 110-240 V AC/DC<br>(5 V) 12-24 V AC/DC | (50 V) 110-240 V AC/DC<br>(5 V) 12-24 V AC/DC |
| Luminosity                             | 15 mcd                                                                          | 15 mcd                                        | 15 mcd                                        |
| Power loss                             | 2 W / LED                                                                       | 2 W                                           | 2 W                                           |
| Switching capacity (200 operations)    | –                                                                               | 1.25 x I <sub>n</sub> , 1.1 x U <sub>n</sub>  | 1.25 x I <sub>n</sub> , 1.1 x U <sub>n</sub>  |
| Contact function                       | –                                                                               | 1S, 2S, 1NO+1NC, 2Ö                           | 1S, 2S, 1NO+1NC                               |
| Flashing frequency                     | typ. 2 Hz (Z-BEL)                                                               | –                                             | –                                             |
| Maximum back-up fuse, short circuit    | –                                                                               | 20 A gG                                       | 20 A gG                                       |
| Self-ballasted load                    | –                                                                               | 200 W cap. load                               | 200 W cap. load                               |
| Mechanical                             |                                                                                 |                                               |                                               |
| LED-Colour                             | red, green, red + green,<br>white + white,<br>red/green, orange, blue,<br>white | orange                                        | orange                                        |
| Taster-Colour                          | –                                                                               | green - NO<br>red - NC<br>black - NO/NC       | black                                         |
| Frame size                             | 45 mm                                                                           | 45 mm                                         | 45 mm                                         |
| Device height                          | 90 mm                                                                           | 90 mm                                         | 90 mm                                         |
| Device width                           | 17.5 mm (1MU)                                                                   | 17.5 mm (1MU)                                 | 17.5 mm (1MU)                                 |
| Mounting                               | quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715               |                                               |                                               |
| Degree of protection, built-ines Gerät | IP40                                                                            | IP40                                          | IP40                                          |
| Upper and lower terminals              | lift terminals with guides for secure connection                                |                                               |                                               |
| Terminal capacity                      |                                                                                 |                                               |                                               |
| one- or more wire                      | 1 x (0.5 ...10) mm²                                                             | 1 x (0.5 ...10) mm²                           | 1 x (0.5 ...10) mm²                           |
| fine wires with wire end sleeve        | 1 x (0.5 ...10) mm²                                                             | 1 x (0.5 ...10) mm²                           | 1 x (0.5 ...10) mm²                           |
| Terminal protection                    | finger and hand touch safe according to DGUV VS3, EN 50274                      |                                               |                                               |
| Resistance to climatic conditions      | acc. to IEC/EN 60068                                                            | acc. to IEC/EN 60068                          | acc. to IEC/EN 60068                          |

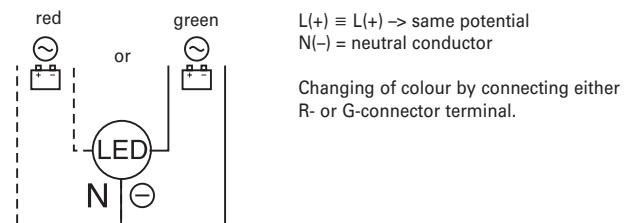
### Connection diagram



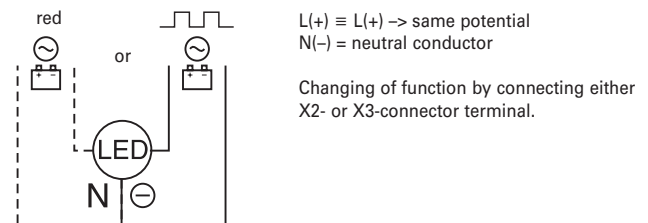
### Dimensions (mm)



### Connection example for LED red/green



### Connection example for Blinkfunktion





SG85211



Z-DSU1-102

SG85311



Z-DSA2-01-SL

| Function                  | Position    | Type Designation | Article No. | Units per package |
|---------------------------|-------------|------------------|-------------|-------------------|
| <b>Rotary Switch Z-DS</b> |             |                  |             |                   |
| 1pole OFF                 | 0 - 1       | Z-DSA1-01        | 248868      | 1 / 40            |
| 1pole CO                  | 1 - 0 - 2   | Z-DSU1-102       | 248869      | 1 / 40            |
| 1pole CO                  | HA - 0 - AU | Z-DSU1-H0A       | 248870      | 1 / 40            |
| 1pole CO                  | TA - 0 - NA | Z-DSU1-T0N       | 248871      | 1 / 40            |
| 2pole OFF                 | 0 - 1       | Z-DSA2-01        | 248872      | 1 / 40            |
| 2pole OFF                 | 0 - 1       | Z-DSA2-01-SL     | 248873      | 1 / 40            |
| 2pole CO                  | 1 - 2       | Z-DSU2-12        | 248874      | 1 / 40            |
| 2pole CO                  | 1 - 0 - 2   | Z-DSU2-102       | 248875      | 1 / 40            |
| 2pole CO                  | HA - 0 - AU | Z-DSU2-H0A       | 248876      | 1 / 40            |
| 3pole CO                  | 1 - 0 - 2   | Z-DSU3-102       | 248877      | 1 / 40            |
| Voltmeter L-N             | L1 - N...   | Z-DSV-LN         | 248878      | 1 / 40            |
| Voltmeter L-L             | L1 - L2...  | Z-DSV-LL         | 248879      | 1 / 40            |
| Voltmeter L+N             | L1 - N3...  | Z-DSV-LLLN       | 248880      | 1 / 40            |
| Ammeter                   | 0-1-2-3     | Z-DSAM-0123      | 129712      | 1 / 40            |

### Description Rotary Switch Z-DS

- Rotary switches of series Z-DS are of a modular design:

The switch proper consists of the engaging work and the switching package. The switching cams (for which it is also called cam switch) are driven by a stable, torsion-proof aluminium shaft. The switching package consists of one or several switching cells with one or two independent contacts. Connections of adjoining switch terminals (necessary in case of voltmeter changeover switch Z-DSV) are contained in the pressed switch component. Consequently, there is no obstacle when connecting the connection lines.

- Application:

Suitable for virtually any application, e.g. motor switch, garage doors, fans, shutters, heating system control, lighting fixtures, instrument switches, different control purposes, etc.

## Technical Data

|                                                                                   |           | Z-DS                                                  |
|-----------------------------------------------------------------------------------|-----------|-------------------------------------------------------|
| Data according to                                                                 |           | IEC 60947-3, IEC 60947-5-1, VDE 0660, EN 60947-3, SEV |
| Nominal thermal current                                                           |           |                                                       |
| open                                                                              | $I_{th}$  | 20 A                                                  |
| hermetically enclosed                                                             | $I_{thg}$ | 20 A                                                  |
| Nominal operational voltage                                                       | $U_e$     | 690 V                                                 |
| Rated peak withstand voltage                                                      | $U_{imp}$ | 6 kV                                                  |
| Disconnecter conditions according to ÖVE, IEC met up to                           |           | 440 V                                                 |
| Circuit breaking capacity                                                         | $I_v$     |                                                       |
| 3 x 220-440V                                                                      |           | 160 A                                                 |
| 3 x 500 V                                                                         |           | 100 A                                                 |
| 3 x 660-690V                                                                      |           | 80 A                                                  |
| Utilisation category AC21A, AC21B                                                 |           |                                                       |
| Switching resistive loads including low overloads                                 |           |                                                       |
| Nominal operational current                                                       | $I_n$     | 20 A                                                  |
| Utilisation category AC23A, AC23B                                                 |           |                                                       |
| Switching motors and other highly inductive loads                                 |           |                                                       |
| Nominal operational current 400 V                                                 | $I_n$     | 16 A                                                  |
| Nominal power 220-240 V                                                           |           | 4 kW                                                  |
| 3phase 3pole 380-440 V                                                            |           | 7.5 kW                                                |
| 3phase 3pole 500 V                                                                |           | 7.5 kW                                                |
| 3phase 3pole 660-690 V                                                            |           | 7.5 kW                                                |
| Star-delta starting switch                                                        |           |                                                       |
| for squirrel cage motors                                                          |           |                                                       |
| Nominal power                                                                     |           |                                                       |
| 3phase 3pole 220-240 V                                                            |           | 3.7 kW                                                |
| 3phase 3pole 380-415 V                                                            |           | 7.5 kW                                                |
| Utilisation category AC3                                                          |           |                                                       |
| Switching of 3phase AC motors                                                     |           |                                                       |
| Nominal operational current 400 V                                                 | $I_n$     | 12 A                                                  |
| Nominal power 220-240 V                                                           |           | 3 kW                                                  |
| 3phase 3pole 380-440 V                                                            |           | 5.5 kW                                                |
| 3phase 3pole 500 V                                                                |           | 5.5 kW                                                |
| 3phase 3pole 660-690 V                                                            |           | 5.5 kW                                                |
| Utilisation category AC15                                                         |           |                                                       |
| Switching of electromagnetic drives, contactors, valves, pull-type electromagnets |           |                                                       |
| Nominal operational current to 240 V                                              | $I_n$     | 6 A                                                   |
| Nominal operational current 380-440 V                                             | $I_n$     | 4 A                                                   |
| 2pole disconnection 500 V                                                         |           | 5 A                                                   |
| Utilisation category DC21A, DC21B                                                 |           |                                                       |
| Switching of resistive loads, time constant $L/R \leq 1$ ms                       |           |                                                       |
| Nominal operational current                                                       | $I_n$     |                                                       |
| 1pole 30 V                                                                        |           | 20 A                                                  |
| 1pole 60 V                                                                        |           | 4 A                                                   |
| 1pole 110 V                                                                       |           | 0.6 A                                                 |
| 1pole 220 V                                                                       |           | 0.3 A                                                 |
| 1pole 440 V                                                                       |           | —                                                     |
| Utilisation category DC3 - DC5                                                    |           |                                                       |
| Switching of shunt motors and series motors, time constant $L/R \leq 15$ ms       |           |                                                       |
| Nominal operational current                                                       | $I_n$     |                                                       |
| 1pole 30 V                                                                        |           | 8 A                                                   |
| 1pole 60 V                                                                        |           | 1 A                                                   |
| 1pole 110 V                                                                       |           | 0.3 A                                                 |
| Terminal capacity                                                                 |           |                                                       |
| one or several wires                                                              |           | 1 - 2.5 mm <sup>2</sup>                               |
| fine-wire                                                                         |           | 0.75 - 2.5 mm <sup>2</sup>                            |
| fine wires with wire end sleeve                                                   |           | 0.75 - 1.5 mm <sup>2</sup>                            |
| terminal screw                                                                    |           | M3.5                                                  |
| number of conductors per terminal                                                 |           | 2                                                     |

**Technical Data (continue page)**

| <b>Z-DS</b>                                                       |                         |
|-------------------------------------------------------------------|-------------------------|
| Switching of capacitive load                                      |                         |
| maximum making capacity up to 500 V                               | 140 A                   |
| Degree of protection from behind                                  | IP20                    |
| Short circuit protection                                          |                         |
| max. fuse gL (gG)                                                 | 20 A                    |
| Rated short-time withstand current (1 second current)             | 250 A                   |
| Conditional rated short circuit current                           | 10 kA <sub>r.m.s.</sub> |
| Short-time load capacity                                          |                         |
| Load duration (values applicable to already closed contacts only) |                         |
| 3 s                                                               | 100 A                   |
| 10 s                                                              | 60 A                    |
| 30 s                                                              | 35 A                    |
| 60 s                                                              | 25 A                    |

**Rotary Switch Z-DS for Lighting Systems**

| <b>Z-DS</b>                                                                                                            |                 |
|------------------------------------------------------------------------------------------------------------------------|-----------------|
| Utilisation category AC1                                                                                               |                 |
| Rated operational current 60 °C                                                                                        | $I_{BAC1}$ 20 A |
| Utilisation category AC5a                                                                                              |                 |
| Rated operational power $\cos\varphi$ 0.5                                                                              | 1.1 kW          |
| Rated operational power 220-240 V~ $\cos\varphi$ 0.9                                                                   | 0.4 A           |
| Rated operational power DUO                                                                                            | 3 kW            |
| Utilisation category AC5b                                                                                              |                 |
|  Rated operational power 220-240 V~ | 1.4 kW          |

## Incandescent Lamps

## Fluorescent Tubes, Mercury Arc Lamps

| Utilisation category AC5a                                            | Power  | Current | Capacitor | <b>Z-DS</b>                                           |
|----------------------------------------------------------------------|--------|---------|-----------|-------------------------------------------------------|
| Lamp Types                                                           | W      | A       | µF        | max. number of lamps per current path at 230 V, 50 Hz |
| Fluorescent tubes without compensation or with series compensation   | 11     | 0.16    | -         | 60                                                    |
|                                                                      | 18     | 0.37    | 2.7       | 25                                                    |
|                                                                      | 24     | 0.35    | 2.5       | 25                                                    |
|                                                                      | 36     | 0.43    | 3.4       | 20                                                    |
|                                                                      | 58     | 0.67    | 5.3       | 14                                                    |
|                                                                      | 65     | 0.67    | 5.3       | 13                                                    |
|                                                                      | 85     | 0.8     | -         | 11                                                    |
| Fluorescent tubes lead-lag circuit                                   | 11     | 0.07    | -         | 2 x 100                                               |
|                                                                      | 18     | 0.11    | -         | 2 x 50                                                |
|                                                                      | 24     | 0.14    | -         | 2 x 40                                                |
|                                                                      | 36     | 0.22    | -         | 2 x 30                                                |
|                                                                      | 58     | 0.35    | -         | 2 x 20                                                |
|                                                                      | 65     | 0.35    | -         | 2 x 15                                                |
|                                                                      | 85     | 0.47    | -         | 2 x 10                                                |
| Fluorescent tubes with parallel compensation                         | 11     | 0.16    | 2.0       | 30                                                    |
|                                                                      | 18     | 0.37    | 2.0       | 20                                                    |
|                                                                      | 24     | 0.35    | 3.0       | 15                                                    |
|                                                                      | 36     | 0.43    | 4.5       | 10                                                    |
|                                                                      | 58     | 0.67    | 7.0       | 6                                                     |
|                                                                      | 65     | 0.67    | 7.0       | 5                                                     |
|                                                                      | 85     | 0.8     | 8.0       | 4                                                     |
| Fluorescent tubes with electronic ballast                            | 18     | 0.09    | -         | 40                                                    |
|                                                                      | 36     | 0.16    | -         | 20                                                    |
|                                                                      | 58     | 0.25    | -         | 15                                                    |
|                                                                      | 2 x 18 | 0.17    | -         | 2 x 20                                                |
|                                                                      | 2 x 36 | 0.32    | -         | 2 x 10                                                |
|                                                                      | 2 x 58 | 0.49    | -         | 2 x 7                                                 |
| Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL | 50     | 0.61    | -         | 16                                                    |
|                                                                      | 80     | 0.8     | -         | 12                                                    |
|                                                                      | 125    | 1.15    | -         | 8                                                     |
|                                                                      | 250    | 2.15    | -         | 4                                                     |
|                                                                      | 400    | 3.25    | -         | 3                                                     |
|                                                                      | 700    | 5.4     | -         | 1                                                     |
|                                                                      | 1000   | 7.5     | -         | 1                                                     |
| Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL    | 50     | 0.28    | 7         | 7                                                     |
|                                                                      | 80     | 0.41    | 8         | 5                                                     |
|                                                                      | 125    | 0.65    | 10        | 3                                                     |
|                                                                      | 250    | 1.22    | 18        | 2                                                     |
|                                                                      | 400    | 1.95    | 25        | 1                                                     |
|                                                                      | 700    | 3.45    | 45        | 1                                                     |
|                                                                      | 1000   | 4.8     | 60        | -                                                     |

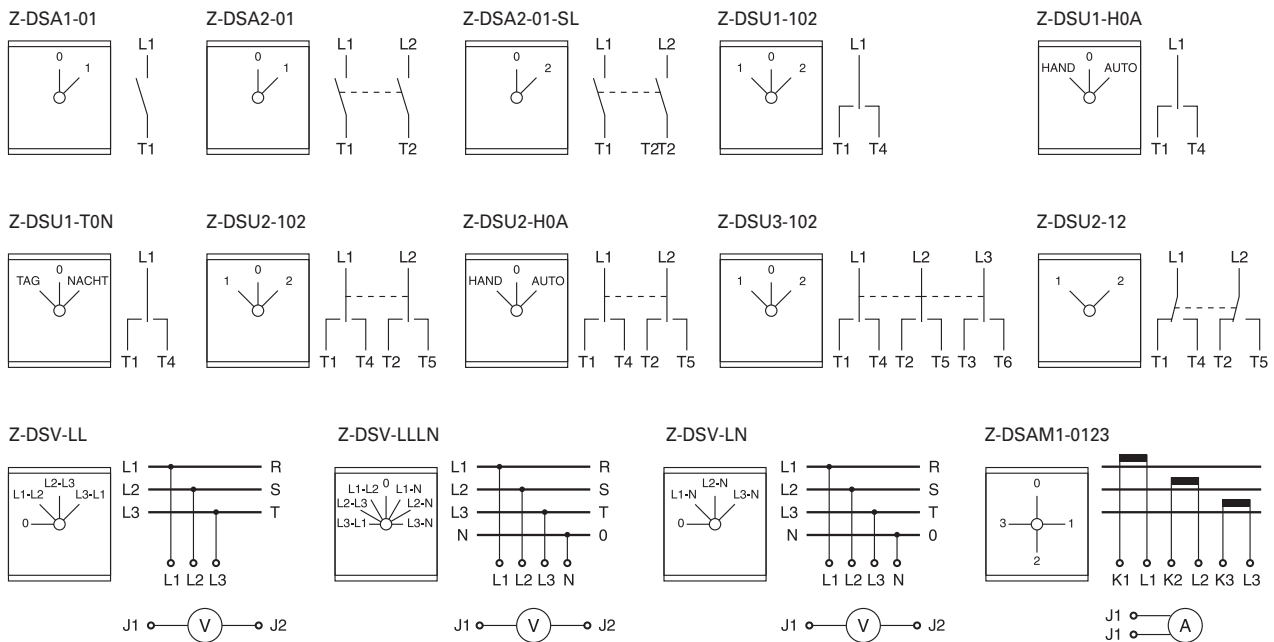
**Metal Halide Lamps**

| Lamp Types                                               | Power<br>W | Current<br>A | Capacitor<br>µF | <b>Z-DS</b><br>max. number of lamps per current path at 230 V, 50 Hz |
|----------------------------------------------------------|------------|--------------|-----------------|----------------------------------------------------------------------|
| Metal halide lamps without compensation<br>e.g. HQI, HPI | 35         | 0.53         | -               | 22                                                                   |
|                                                          | 70         | 1            | -               | 12                                                                   |
|                                                          | 150        | 1.8          | -               | 6                                                                    |
|                                                          | 250        | 3            | -               | 4                                                                    |
|                                                          | 400        | 3.5          | -               | 3                                                                    |
|                                                          | 1000       | 9.5          | -               | 1                                                                    |
|                                                          | 2000       | 16.5         | -               | -                                                                    |
| Metal halide lamps with compensation e.g.<br>HQI, HPI    | 35         | 0.25         | 6               | 8                                                                    |
|                                                          | 70         | 0.45         | 12              | 4                                                                    |
|                                                          | 150        | 0.75         | 20              | 2                                                                    |
|                                                          | 250        | 1.5          | 33              | 1                                                                    |
|                                                          | 400        | 2.1          | 35              | 1                                                                    |
|                                                          | 1000       | 5.8          | 95              | -                                                                    |
|                                                          | 2000       | 11.5         | 148             | -                                                                    |
| Transformers for low-voltage halogen lamps               | 20         | -            | -               | 40                                                                   |
|                                                          | 50         | -            | -               | 20                                                                   |
|                                                          | 75         | -            | -               | 13                                                                   |
|                                                          | 100        | -            | -               | 10                                                                   |
|                                                          | 150        | -            | -               | 7                                                                    |
|                                                          | 200        | -            | -               | 5                                                                    |
|                                                          | 300        | -            | -               | 3                                                                    |

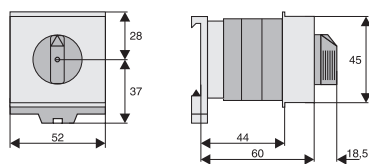
**Sodium Vapour Lamps**

| Lamp Types                                                | Power<br>W | Current<br>A | Capacitor<br>µF | <b>Z-DS</b><br>max. number of lamps per current path at 230 V, 50 Hz |
|-----------------------------------------------------------|------------|--------------|-----------------|----------------------------------------------------------------------|
| Sodium vapour lamps low-pressure without<br>compensation  | 35         | 1.5          | -               | 7                                                                    |
|                                                           | 55         | 1.5          | -               | 7                                                                    |
|                                                           | 90         | 2.4          | -               | 4                                                                    |
|                                                           | 135        | 3.5          | -               | 3                                                                    |
|                                                           | 150        | 3.3          | -               | 3                                                                    |
|                                                           | 180        | 3.3          | -               | 3                                                                    |
|                                                           | 200        | 3.3          | -               | 3                                                                    |
| Sodium vapour lamps low-pressure with<br>compensation     | 35         | 0.31         | 20              | 3                                                                    |
|                                                           | 55         | 0.42         | 20              | 2                                                                    |
|                                                           | 90         | 0.63         | 30              | 1                                                                    |
|                                                           | 135        | 0.94         | 45              | 1                                                                    |
|                                                           | 150        | 1            | 40              | 1                                                                    |
|                                                           | 180        | 1.16         | 40              | 1                                                                    |
|                                                           | 200        | 1.32         | 25              | 1                                                                    |
| Sodium vapour lamps high-pressure without<br>compensation | 150        | 1.8          | -               | 5                                                                    |
|                                                           | 250        | 3            | -               | 4                                                                    |
|                                                           | 330        | 3.7          | -               | 3                                                                    |
|                                                           | 400        | 4.7          | -               | 2                                                                    |
|                                                           | 1000       | 10.3         | -               | 1                                                                    |
| Sodium vapour lamps high pressure with<br>compensation    | 150        | 0.83         | 20              | 2                                                                    |
|                                                           | 250        | 1.5          | 33              | 2                                                                    |
|                                                           | 330        | 2            | 40              | 1                                                                    |
|                                                           | 400        | 2.4          | 48              | 1                                                                    |
|                                                           | 1000       | 6.3          | 106             | -                                                                    |

### Connection diagram



### Dimensions (mm)







Z-R30/16-10

| Control Voltage | Function | Type<br>Designation | Article No. | Units per<br>package |
|-----------------|----------|---------------------|-------------|----------------------|
|-----------------|----------|---------------------|-------------|----------------------|

Installation Relays Type Z-R PHASE OUT

- with manual operation and LED
- 16 A 240 V AC  AC1

|                     |     |              |                 |         |
|---------------------|-----|--------------|-----------------|---------|
| 230-240 V, 50/60 Hz | 1NO | Z-R230/16-10 | ICS-R16A230B100 | 2 / 120 |
| 230-240 V, 50/60 Hz | 2NO | Z-R230/16-20 | ICS-R16A230B200 | 2 / 120 |
| 24 V, 50/60 Hz      | 1NO | Z-R24/16-10  | ICS-R16A024B100 | 2 / 120 |
| 24 V, 50/60 Hz      | 2NO | Z-R24/16-20  | ICS-R16A024B200 | 2 / 120 |
| 24 V DC             | 1NO | Z-R23/16-10  | ICS-R16D024B100 | 2 / 120 |
| 24 V DC             | 2NO | Z-R23/16-20  | ICS-R16D024B200 | 2 / 120 |

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Accessories

|              |       |        |    |
|--------------|-------|--------|----|
| Spacer 0.5MU | Z-DST | 248949 | 10 |
|--------------|-------|--------|----|

### Description Installation Relays Z-R

Installation relays Z-R are suitable for switching 1-phase consumers up to 16 A. These devices for universal use in building installations and systems permit implementation of the following applications and control functions:

- Switching lighting systems and electrical heating systems
- Switching ventilation and air conditioning systems, fans
- Switching heat pumps
- Switching electrically controlled roller doors/gates, and blinds
- Switching incandescent lamps and gas discharge lamps

The installation relays of series Z-R meet the requirements of standards EN/IEC 60947.

**EN/IEC 60947** deals with „Electromagnetic contactors in electrical system manufacturing“.

#### Security:

- Manually operable test button on device for testing purpose
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Main contacts can be connected to standard pin busbar
- Made of hardly flammable materials and plastics free from chlorine and halogens
- Finger and hand touch safe according to VBG4

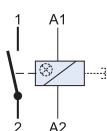
#### Advantages:

- Low power loss
- Optical operating status display by means of LED
- Low switching noise
- Easy to connect thanks to large terminals supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil feed connection

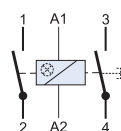
### Connection diagrams

#### 1MU

1 NO



2 NO

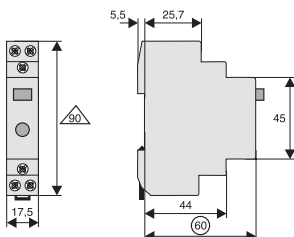


#### Version

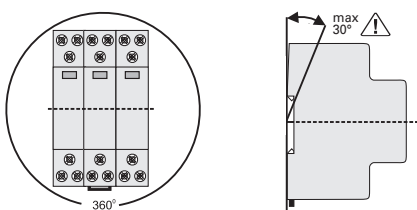
with manual operation and LED



### Dimensions (mm)

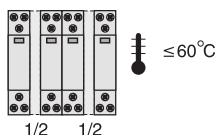


### Permitted installation positions



### Packing density

Spacers recommended! (Z-DST)



## Technical Data

| Z-R                                           |           |                                                               |
|-----------------------------------------------|-----------|---------------------------------------------------------------|
| <b>Electrical</b>                             |           |                                                               |
| Standard according                            |           | IEC/EN 60947-4-1                                              |
| Rated voltage                                 |           | 1p: 240 V AC                                                  |
| Rated operational current AC1                 | $I_e$     | 16 A                                                          |
| Rated operational power                       | $P_e$     | 3.8 kW                                                        |
| Number of poles                               |           | 1, 2                                                          |
| Main contacts                                 |           |                                                               |
| NO/NC                                         |           | 1/2                                                           |
| <b>Control circuit</b>                        |           |                                                               |
| Rated control feed voltage                    | $U_s$     |                                                               |
| AC                                            |           | 24, 230, 240 V                                                |
| DC                                            |           | 24 V                                                          |
| Minimum operational voltage                   | $U_{min}$ |                                                               |
| 230, 240 V AC                                 |           | 184 V AC                                                      |
| 24 V AC                                       |           | 19.2 V AC                                                     |
| 24 V DC                                       |           | 16.8 V DC                                                     |
| Rated frequency                               |           | 50/60 Hz                                                      |
| Operating range                               |           | 0.85-1.1 x $U_s$                                              |
| Maximum power of coils retaining              |           |                                                               |
| 24, 230, 240 V AC                             |           | 0.75 W per pole                                               |
| 24 V DC                                       |           | 0.4 W per pole                                                |
| Minimum command duration                      |           | > 50 ms                                                       |
| Operating noise                               |           | no humming                                                    |
| Rated peak withstand voltage (1.2/50 $\mu$ s) | $U_{imp}$ | 2.5 kV                                                        |
| Duty                                          |           | 100%                                                          |
| <b>Load Circuit</b>                           |           |                                                               |
| Rated operational voltage                     | $U_e$     | 240 V                                                         |
| Rated frequency                               |           | 50/60 Hz                                                      |
| Rated insulation voltage                      | $U_i$     | 240 V                                                         |
| Rated peak withstand voltage (1.2/50 $\mu$ s) | $U_{imp}$ | 2.5 kV                                                        |
| Conventional thermal current                  | $I_{th}$  | 16 A                                                          |
| Rated operational current                     | $I_e$     | 16 A                                                          |
| Rated constant current                        | $I_u$     | 16 A                                                          |
| Rated current DC                              | $I_e$     |                                                               |
| 24 V                                          |           | 16 A                                                          |
| 48 V                                          |           | 1.2 A                                                         |
| 120 V                                         |           | 0.22 A                                                        |
| 250 V                                         |           | 0.1 A                                                         |
| Conditional rated short circuit current       | $I_q$     | 1 kA (with 16 A gL/gG)                                        |
| Duration of bouncing                          |           | < 10 ms (typ. < 5 ms)                                         |
| Max. peak inrush current                      |           | 30 A                                                          |
| <b>Mechanical</b>                             |           |                                                               |
| Frame size                                    |           | 45 mm                                                         |
| Device height                                 |           | 90 mm                                                         |
| Device width                                  |           | 17.5 mm (1MU)                                                 |
| Mounting                                      |           | quick fastening on DIN rail IEC/EN 60715                      |
| Degree of protection, built-in                |           | IP20                                                          |
| Degree of protection, built-in behind panel   |           | IP40                                                          |
| Mounting position                             |           | works in any position, however not hanging                    |
| Upper and lower terminals                     |           | lift terminals (captive)                                      |
|                                               |           | M4 (combination head), captive screw                          |
| Terminal capacity                             |           |                                                               |
| Contact and coil                              |           | 1 x (0.5...10) mm <sup>2</sup> one- or more wire              |
|                                               |           | 1 x (0.5...6) mm <sup>2</sup> fine wires with wire end sleeve |
| Temperature range                             |           | -5 to +40 °C                                                  |
| Total contact gap                             |           | 0.6 mm                                                        |
| Contact material                              |           | does not contain cadmium                                      |
| Endurance                                     |           |                                                               |
| electrical components                         |           | I = 16 A AC: > 700.000 switching operations                   |
| mechanical components                         |           | > 1.000.000 switching operations                              |

| Utilisation categories              | Z-R   |                                |
|-------------------------------------|-------|--------------------------------|
| AC-1 (Δ/Δ) *)                       |       |                                |
| Rated operational voltage           | $U_e$ | 240 V AC                       |
| Rated operational current           | $I_e$ | 16 A AC                        |
| Rated operational power AC-1        |       | 3072 W ( $\cos\varphi = 0.8$ ) |
| AC-3 ☉                              |       |                                |
| Rated operational voltage           | $U_e$ | 240 V AC                       |
| Rated operational current           | $I_e$ | 3 A AC                         |
| Rated operational power AC-3        |       | 324 W ( $\cos\varphi = 0.45$ ) |
| AC-5a ☉                             |       |                                |
| Rated operational voltage           | $U_e$ | 240 V AC                       |
| Rated operational current           | $I_e$ | 5 A AC                         |
| Rated operational power AC-5a       |       | 540 W ( $\cos\varphi = 0.45$ ) |
| AC-5b ☉                             |       |                                |
| Rated operational voltage           | $U_e$ | 240 V AC                       |
| Rated operational current           | $I_e$ | 3 A AC                         |
| Rated operational power AC-5b       |       | 720 W                          |
| AC-7a (according to EN 61095) - ■■■ |       |                                |
| Rated operational voltage           | $U_e$ | 240 V AC                       |
| Rated operational current           | $I_e$ | 10 A AC                        |
| Rated operational power AC-7a       |       | 1920 W ( $\cos\varphi = 0.8$ ) |
| Make-/break-current AC-7a           | $I_c$ | 24 A AC                        |

### Max. number of lamps

|                                                                                  | Power  | Current | Capacitor | Z-R                                                   |
|----------------------------------------------------------------------------------|--------|---------|-----------|-------------------------------------------------------|
| Lamp Types                                                                       | W      | A       | μF        | max. number of lamps per current path at 230 V, 50 Hz |
| Incandescent Lamps                                                               | 60     | 0.27    | -         | 11                                                    |
| Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer | 20     | 0.09    | -         | 18                                                    |
|                                                                                  | 50     | 0.22    | -         | 7                                                     |
|                                                                                  | 75     | 0.33    | -         | 4                                                     |
|                                                                                  | 100    | 0.43    | -         | 3                                                     |
|                                                                                  | 150    | 0.65    | -         | 2                                                     |
|                                                                                  | 200    | 0.87    | -         | 1                                                     |
|                                                                                  | 300    | 1.3     | -         | 1                                                     |
| Fluorescent tubes without compensation or with series compensation               | 11     | 0.16    | 0.4       | 20                                                    |
|                                                                                  | 18     | 0.37    | 0.9       | 9                                                     |
|                                                                                  | 24     | 0.35    | 0.8       | 9                                                     |
|                                                                                  | 36     | 0.43    | 1.1       | 8                                                     |
|                                                                                  | 58     | 0.67    | 1.8       | 5                                                     |
|                                                                                  | 65     | 0.67    | 1.8       | 4                                                     |
|                                                                                  | 85     | 0.8     | 1.8       | 3                                                     |
| Fluorescent tubes lead-lag circuit                                               | 11     | 0.07    | -         | 2 x 23                                                |
|                                                                                  | 18     | 0.11    | -         | 2 x 15                                                |
|                                                                                  | 24     | 0.14    | -         | 2 x 11                                                |
|                                                                                  | 36     | 0.22    | -         | 2 x 7                                                 |
|                                                                                  | 58     | 0.35    | -         | 2 x 4                                                 |
|                                                                                  | 65     | 0.35    | -         | 2 x 4                                                 |
|                                                                                  | 85     | 0.47    | -         | 2 x 3                                                 |
| Fluorescent tubes with parallel compensation                                     | 11     | 0.16    | 1.0       | 11                                                    |
|                                                                                  | 18     | 0.37    | 1.3       | 8                                                     |
|                                                                                  | 24     | 0.35    | 1.3       | 8                                                     |
|                                                                                  | 36     | 0.43    | 1.3       | 8                                                     |
|                                                                                  | 58     | 0.67    | 2.3       | 4                                                     |
|                                                                                  | 65     | 0.67    | 2.3       | 4                                                     |
|                                                                                  | 85     | 0.8     | 2.7       | 4                                                     |
| Fluorescent tubes with electronic ballast                                        | 18     | 0.09    | -         | 10                                                    |
|                                                                                  | 36     | 0.16    | -         | 5                                                     |
|                                                                                  | 58     | 0.25    | -         | 4                                                     |
|                                                                                  | 2 x 18 | 0.17    | -         | 5                                                     |
|                                                                                  | 2 x 36 | 0.32    | -         | 2                                                     |
|                                                                                  | 2 x 58 | 0.49    | -         | 2                                                     |

| LED Lamps                                                                                      |                                                                                                                                                           |      |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Type of lamps                                                                                  | Z-R                                                                                                                                                       |      |
| LED Lamps.<br>Pay attention on the inrush current of the ballast and $\cos\varphi$ of the lamp | max. permissible inrush current of installation relay [A]                                                                                                 | 30 A |
|                                                                                                | $\frac{\text{Max. Inrush current installation relay [A]}}{\text{Inrush current lamp [A]}} = \text{max. number of lamps per pole } (I_{nLED} \leq I_{th})$ |      |

| Control Voltage | Function | MU | Type<br>Designation | Article No. | Units per<br>package |
|-----------------|----------|----|---------------------|-------------|----------------------|
|-----------------|----------|----|---------------------|-------------|----------------------|

### Installation Relays Type Z-TN

- with manual pre-selection of functions - permanently ON / AUTOM / OFF
- 20 A 250 V AC 

SG59711



Z-TN230/S0

|              |         |   |              |        |         |
|--------------|---------|---|--------------|--------|---------|
| 230 V, 50 Hz | 2NO     | 1 | Z-TN230/SS   | 265574 | 2 / 120 |
| 230 V, 50 Hz | 3NO     | 2 | Z-TN230/3S   | 265576 | 1 / 60  |
| 230 V, 50 Hz | 4NO     | 2 | Z-TN230/4S   | 265579 | 1 / 60  |
| 230 V, 50 Hz | 1NO+1NC | 1 | Z-TN230/1S10 | 267975 | 2 / 120 |
| 230 V, 50 Hz | 2NO+2NC | 2 | Z-TN230/2S20 | 103168 | 1 / 60  |
| 24 V, 50 Hz  | 2NO     | 1 | Z-TN24/SS    | 267976 | 2 / 120 |
| 24 V, 50 Hz  | 3NO     | 2 | Z-TN24/3S    | 267977 | 1 / 60  |
| 24 V, 50 Hz  | 4NO     | 2 | Z-TN24/4S    | 267978 | 1 / 60  |
| 24 V, 50 Hz  | 1NO+1NC | 1 | Z-TN24/1S10  | 267979 | 2 / 120 |

SG60111



Z-TN230/3S

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

### Accessories

|              |       |        |    |
|--------------|-------|--------|----|
| Spacer 0.5MU | Z-DST | 248949 | 10 |
|--------------|-------|--------|----|

## Description Installation Relays Z-TN

Installation relays Z-TN are suitable for switching 1-phase or 3-phases consumers up to 20 A. These devices for universal use in building installations and systems permit implementation of the following applications and control functions:

- Switching lighting systems and electrical heating systems
- Switching ventilation and air conditioning systems, fans
- Switching heat pumps
- Switching electrically controlled roller doors/gates, and blinds
- Switching incandescent lamps and gas discharge lamps

The installation relays of series Z-TN meet the requirements of standards EN/IEC 60947 and EN/IEC 1095.

**EN/IEC 1095** deals with „Electromechanical contactors for household and similar purposes.“ Compliance with this standard means meeting very high demands in terms of safety for humans and property.

**EN/IEC 60947** deals with „Electromagnetic contactors in electrical system manufacturing“.

### Security:

- Manual operation
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Main contacts can be connected to standard pin busbar
- Made of hardly flammable materials and plastics free from chlorine and halogens
- Finger and hand touch safe according to VBG4

### Advantages:

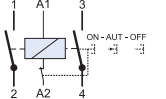
- Low switching noise
  - Easy to connect thanks to large terminals supplied open
  - Simple snap-on fastening on 35 mm DIN rail
  - High degree of flexibility thanks to a variety of contact configurations
  - Easy access for coil feed connection
  - Version with mechanical pre-selection of functions ON/AUTO/OFF
- ON/permanently ON: Contact permanently ON until a control pulse is switched on and OFF again. Then, the relay reverts to the AUT position.
- AUT/AUTOMATIC: Standard relay function by control voltage at the coil.
- OFF/permanently OFF: Contacts permanently OFF, independently of the control voltage at the coil.
- Only in AC

## Connection diagrams

### 1MU

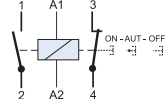
“SS”

2 NO



“SO”

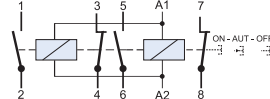
1 NO / 1 NC



### 2MU

“2S2O”

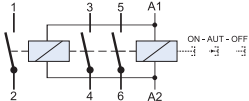
2 NO / 2 NC



### 2MU

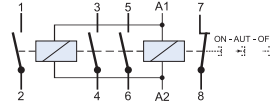
“3S”

3 NO



“4S”

4 NO

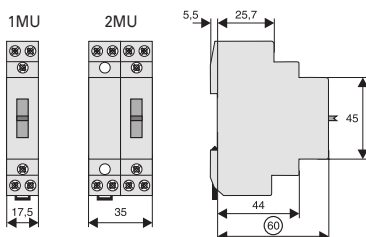


### Versions

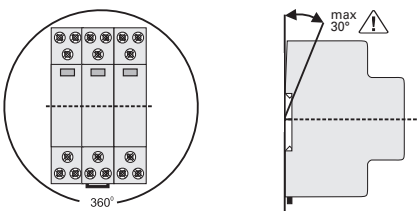
with mech.  
pre-selection



## Dimensions (mm)

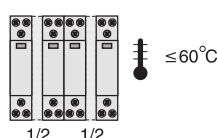


## Permitted installation positions



## Packing density

Spacers recommended! (Z-DST)



## Technical Data

| Z-TN                                          |                                                                                                       |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>                             |                                                                                                       |
| Standard according                            | IEC/EN 60947                                                                                          |
| Rated voltage                                 | 250 V, 240/415 V AC                                                                                   |
| Rated current 250 V AC                        | 20 A                                                                                                  |
| Rated current AC1                             | $I_e$ 20 A           |
| Rated operational power                       | $P_e$ 4.6 kW 415 V                                                                                    |
| Number of poles                               | 1 to 4                                                                                                |
| Main contacts                                 |                                                                                                       |
| NO/NC                                         | 1/2 (1MU), 3/4 (2MU)                                                                                  |
| EMC-Environment                               | B                                                                                                     |
| <b>Control circuit</b>                        |                                                                                                       |
| Rated control feed voltage                    | $U_s$                                                                                                 |
| AC                                            | 24, 230 V                                                                                             |
| Rated frequency                               | 50 Hz                                                                                                 |
| Operating range                               | 0.85-1.1 x $U_s$                                                                                      |
| Maximum power of coils                        |                                                                                                       |
| pick-up                                       | 10-13 VA, 6-8 W                                                                                       |
| retaining                                     | 3.4-4.0 VA, 2.0-2.4 W                                                                                 |
| Minimum command duration                      | > 50 ms                                                                                               |
| Operating noise                               | low noise                                                                                             |
| Rated peak withstand voltage (1.2/50 $\mu$ s) | $U_{imp}$ 2 kV                                                                                        |
| Duty                                          | 100%                                                                                                  |
| <b>Load Circuit</b>                           |                                                                                                       |
| Rated operational voltage                     | $U_e$                                                                                                 |
| 1p, 2p                                        | 250 VAC                                                                                               |
| 3p, 4p                                        | 240/415 VAC                                                                                           |
| Minimum operational voltage                   | $U_{min}$ 24 V AC/DC ( $U_s$ 8-110 V)                                                                 |
| Rated insulation voltage                      | $U_i$ 500 V                                                                                           |
| Rated peak withstand voltage (1.2/50 $\mu$ s) | $U_{imp}$ 4 kV                                                                                        |
| Conventional thermal current                  | $I_{th}$ 20 A AC                                                                                      |
| Rated operational current                     | $I_e$ 20 A AC                                                                                         |
| Rated constant current                        | $I_u$ 20 A AC                                                                                         |
| Rated current DC                              | $I_e$                                                                                                 |
| 24 V                                          | 16 A                                                                                                  |
| 48 V                                          | 12.5 A                                                                                                |
| 230 V                                         | 1 A                                                                                                   |
| Conditional rated short circuit current       | $I_q$ 10 kA (with 20 A gL/gG)                                                                         |
| Duration of bouncing                          | < 10 ms (typ. < 5 ms)                                                                                 |
| <b>Mechanical</b>                             |                                                                                                       |
| Frame size                                    | 45 mm                                                                                                 |
| Device height                                 | 90 mm                                                                                                 |
| Device width                                  | 17.5 mm (1MU)                                                                                         |
| Mounting                                      | quick fastening on DIN rail IEC/EN 60715                                                              |
| Degree of protection, built-in                | IP20                                                                                                  |
| Mounting position                             | works in any position, however not hanging                                                            |
| Upper and lower terminals                     | lift terminals (captive)                                                                              |
| Terminal capacity                             |                                                                                                       |
| Contact and coil                              | 0.5 - 10 mm <sup>2</sup> one- or more wire<br>0.5 - 6 mm <sup>2</sup> fine wires with wire end sleeve |
| Temperature range                             | -20 to +45 °C                                                                                         |
| Total contact gap                             | > 5 mm / independent contacts                                                                         |
| Contact material                              | does not contain cadmium                                                                              |
| Endurance                                     |                                                                                                       |
| electrical components                         | $\geq 40 \times 10^3$ switching operations                                                            |
| mechanical components                         | $\geq 1 \times 10^6$ switching operations                                                             |



| Utilisation categories 1MU, 2MU (except 3 NO, 4 NO)                                                               |       | Z-TN                                     |
|-------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------|
| AC-1  *)                         |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 250 V AC                                 |
| Rated operational current                                                                                         | $I_e$ | 20 A AC                                  |
| Rated operational power AC-1                                                                                      |       | 4000 W ( $\cos\varphi = 0.8$ ), 5000 VA  |
| AC-3                             |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 250 V AC                                 |
| Rated operational current                                                                                         | $I_e$ | 8 A AC                                   |
| Rated operational power AC-3                                                                                      |       | 4000 W ( $\cos\varphi = 0.45$ ), 2000 VA |
| AC-5a                            |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 250 V AC                                 |
| Rated operational current                                                                                         | $I_e$ | 10 A AC                                  |
| Rated operational power AC-5a                                                                                     |       | 1125 W ( $\cos\varphi = 0.45$ ), 2500 VA |
| AC-5b                            |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 230 V AC                                 |
| Rated operational current                                                                                         | $I_e$ | 8.8 A AC                                 |
| Rated operational power AC-5b                                                                                     |       | 2024 W                                   |
| AC-7a (according to EN 61095)    |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 250 V AC                                 |
| Rated operational current                                                                                         | $I_e$ | 20 A AC                                  |
| Rated operational power AC-7a                                                                                     |       | 4000 W ( $\cos\varphi = 0.8$ ), 5000 VA  |
| <b>Utilisation categories 2MU (3 NO, 4 NO)</b>                                                                    |       |                                          |
| AC-1  *)                         |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 240/415 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 20 A AC                                  |
| Rated operational power AC-1                                                                                      |       | 4000 W ( $\cos\varphi = 0.8$ ), 5000 VA  |
| AC-3                           |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 240/415 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 8 A AC                                   |
| Rated operational power AC-3                                                                                      |       | 900 W ( $\cos\varphi = 0.45$ ), 2000 VA  |
| AC-5a                          |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 240/415 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 10 A AC                                  |
| Rated operational power AC-5a                                                                                     |       | 1125 W ( $\cos\varphi = 0.45$ ), 2500 VA |
| AC-5b                          |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 230/400 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 8.8 A AC                                 |
| Rated operational power AC-5b                                                                                     |       | 2024 W                                   |
| AC-7a (according to EN 61095)  |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 240/415 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 20 A AC                                  |
| Rated operational power AC-7a                                                                                     |       | 4000 W ( $\cos\varphi = 0.8$ ), 5000 VA  |
| AC-7b (according to EN 61095)  |       |                                          |
| Rated operational voltage                                                                                         | $U_e$ | 240/415 V AC                             |
| Rated operational current                                                                                         | $I_e$ | 10 A AC                                  |
| Rated operational power AC-7b                                                                                     |       | 1125 W ( $\cos\varphi = 0.8$ ), 2500 VA  |

 \*) suitable for insulation, tested on AC-1

**Max. number of lamps**

| Lamp Types                                                                       | Power  | Current | Capacitor | <b>Z-TN</b>                                           |
|----------------------------------------------------------------------------------|--------|---------|-----------|-------------------------------------------------------|
|                                                                                  | W      | A       | µF        | max. number of lamps per current path at 230 V, 50 Hz |
| Incandescent Lamps                                                               | 60     | 0.27    | -         | 33                                                    |
| Low-voltage halogen lamps (12 or 24 V) with transformer / electronic transformer | 20     | 0.09    | -         | 55                                                    |
|                                                                                  | 50     | 0.22    | -         | 22                                                    |
|                                                                                  | 75     | 0.33    | -         | 14                                                    |
|                                                                                  | 100    | 0.43    | -         | 11                                                    |
|                                                                                  | 150    | 0.65    | -         | 7                                                     |
|                                                                                  | 200    | 0.87    | -         | 5                                                     |
|                                                                                  | 300    | 1.3     | -         | 3                                                     |
| Fluorescent tubes without compensation or with series compensation               | 11     | 0.16    | 1.3       | 62                                                    |
|                                                                                  | 18     | 0.37    | 2.7       | 27                                                    |
|                                                                                  | 24     | 0.35    | 2.5       | 27                                                    |
|                                                                                  | 36     | 0.43    | 3.4       | 24                                                    |
|                                                                                  | 58     | 0.67    | 5.3       | 15                                                    |
|                                                                                  | 65     | 0.67    | 5.3       | 14                                                    |
|                                                                                  | 85     | 0.8     | 5.3       | 12                                                    |
| Fluorescent tubes lead-lag circuit                                               | 11     | 0.07    | -         | 2 x 71                                                |
|                                                                                  | 18     | 0.11    | -         | 2 x 45                                                |
|                                                                                  | 24     | 0.14    | -         | 2 x 35                                                |
|                                                                                  | 36     | 0.22    | -         | 2 x 22                                                |
|                                                                                  | 58     | 0.35    | -         | 2 x 14                                                |
|                                                                                  | 65     | 0.35    | -         | 2 x 14                                                |
|                                                                                  | 85     | 0.47    | -         | 2 x 10                                                |
| Fluorescent tubes with parallel compensation                                     | 11     | 0.16    | 3.0       | 34                                                    |
|                                                                                  | 18     | 0.37    | 4.0       | 26                                                    |
|                                                                                  | 24     | 0.35    | 4.0       | 26                                                    |
|                                                                                  | 36     | 0.43    | 4.0       | 26                                                    |
|                                                                                  | 58     | 0.67    | 7.0       | 14                                                    |
|                                                                                  | 65     | 0.67    | 7.0       | 14                                                    |
|                                                                                  | 85     | 0.8     | 8.0       | 13                                                    |
| Fluorescent tubes with electronic ballast                                        | 18     | 0.09    | -         | 32                                                    |
|                                                                                  | 36     | 0.16    | -         | 16                                                    |
|                                                                                  | 58     | 0.25    | -         | 12                                                    |
|                                                                                  | 2 x 18 | 0.17    | -         | 16                                                    |
|                                                                                  | 2 x 36 | 0.32    | -         | 8                                                     |
|                                                                                  | 2 x 58 | 0.49    | -         | 6                                                     |

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| U <sub>c</sub> | Rating | Function | Type<br>Designation | Article No. | Units per<br>package |
|----------------|--------|----------|---------------------|-------------|----------------------|
|----------------|--------|----------|---------------------|-------------|----------------------|

### Installation Contactors, 20A

#### AC types

|          |      |           |            |           |         |
|----------|------|-----------|------------|-----------|---------|
| 230 V AC | 20 A | 1NO       | CR2010230A | EP-502131 | 2 / 120 |
| 230 V AC | 20 A | 2NO       | CR2020230A | 135182    | 2 / 120 |
| 230 V AC | 20 A | 1NC       | CR2001230A | EP-502132 | 2 / 120 |
| 230 V AC | 20 A | 2NC       | CR2002230A | 135170    | 2 / 120 |
| 230 V AC | 20 A | 1NO + 1NC | CR2011230A | 135174    | 2 / 120 |
| 24 V AC  | 20 A | 1NO       | CR2010024A | EP-502133 | 2 / 120 |
| 24 V AC  | 20 A | 2NO       | CR2020024A | 135178    | 2 / 120 |
| 24 V AC  | 20 A | 2NC       | CR2002024A | 135168    | 2 / 120 |
| 24 V AC  | 20 A | 1NO + 1NC | CR2011024A | 135172    | 2 / 120 |

#### AC/DC types

|             |      |           |           |           |         |
|-------------|------|-----------|-----------|-----------|---------|
| 230 V AC/DC | 20 A | 2NO       | CR2020230 | 135181    | 2 / 120 |
| 230 V AC/DC | 20 A | 2NC       | CR2002230 | 135169    | 2 / 120 |
| 230 V AC/DC | 20 A | 1NO + 1NC | CR2011230 | 135173    | 2 / 120 |
| 24 V AC/DC  | 20 A | 1NO       | CR2010024 | EP-502134 | 2 / 120 |
| 24 V AC/DC  | 20 A | 2NO       | CR2020024 | 135177    | 2 / 120 |
| 24 V AC/DC  | 20 A | 2NC       | CR2002024 | 176469    | 2 / 120 |
| 24 V AC/DC  | 20 A | 1NO + 1NC | CR2011024 | 135171    | 2 / 120 |
| 12 V AC/DC  | 20 A | 2NO       | CR2020012 | 135175    | 2 / 120 |
| 12 V AC/DC  | 20 A | 2NC       | CR2002012 | 193907    | 2 / 120 |
| 12 V AC/DC  | 20 A | 1NO + 1NC | CR2011012 | 193906    | 2 / 120 |
| 8 V AC/DC   | 20 A | 2NO       | CR2020008 | 193908    | 2 / 120 |
| 8 V AC/DC   | 20 A | 1NO + 1NC | CR2011008 | 193909    | 2 / 120 |

| U <sub>c</sub> | Type<br>Designation | Article No. | Units per<br>package |
|----------------|---------------------|-------------|----------------------|
|----------------|---------------------|-------------|----------------------|

### Accessories

|                                   |        |        |    |
|-----------------------------------|--------|--------|----|
| Auxiliary contacts 1NO + 1NC, 6 A | CRA611 | 135215 | 3  |
| Auxiliary contacts 2NO, 6 A       | CRA620 | 135216 | 3  |
| Spacer 0.5MU                      | Z-DST  | 248949 | 10 |

### Description Installation Contactors CR

Contactors are frequently applied for switching of lamp loads, fans or pumps in both utility as well as industrial areas. All contactors with AC/DC coils ensure silent operation which is further enhanced by a low power consumption. Optimal contacts and low heat dissipation guarantee a long lifetime of the contactor.

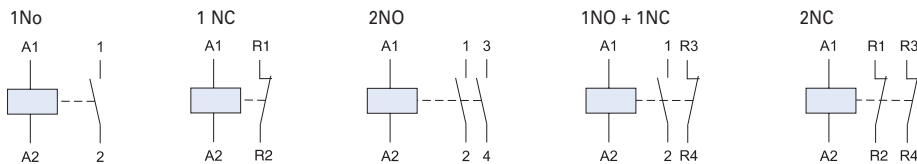
#### Technical characteristics:

- Designed according to IEC 60947-4-1 and IEC 61095 standards
- Suitable for applications in general control, heating & lighting applications
- Available in 20 A rating with 1 or 2-pole contacts
- Coil voltages: 8 V AC/DC, 12 V AC/DC, 24 V AC/DC and 230 V AC/DC
- Optional add-on auxiliary contact available
- DIN modular profile
- Spacers available to extend lifetime (it is recommended to use 1 spacer between every 2 contactors installed)

#### Advantages:

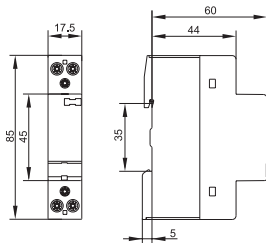
- Low inrush power for all AC/DC types
- Availability of combined AC/DC type contactors ensure silent operation (hum-free)
- Contactors of AC/DC coil type are operable on both AC and DC voltage. The versions are also available with an AC only coil type
- All combined AC/DC type versions are equipped with surge protection on the operating coil
- Equipped with contact indication
- Optimal quality of contacts and low heat dissipation ensure a long life time

### Connection diagrams

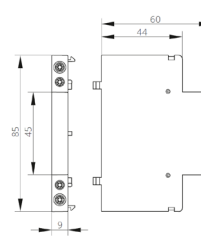


### Dimensions (mm)

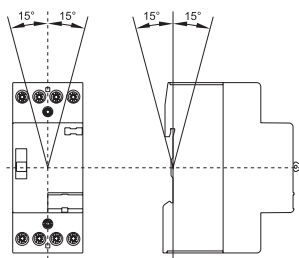
CR20



CRA

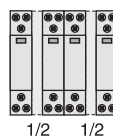


### Permitted installation positions



### Packing density

Spacers recommended! (Z-DST)



## Technical Data

| CR                                                     |           | Contactors                                              | Aux. contact             |
|--------------------------------------------------------|-----------|---------------------------------------------------------|--------------------------|
| Rating                                                 |           | 20 A                                                    | 6 A                      |
| <b>General</b>                                         |           |                                                         |                          |
| Standards                                              |           | IEC 60947-4-1, IEC 61095                                | IEC 60947-5-1            |
| Nominal operating voltage                              | $U_e$     | 400 V <sup>1/2)</sup>                                   | 230 / 400 V              |
| Mechanical endurance (switching cycles)                |           | 3,000,000 <sup>4)</sup> / 10,000,000 <sup>3)</sup>      | 3,000,000                |
| Protection class (according to DIN 40 050, IEC 529)    |           | IP20                                                    | IP20                     |
| Permissible ambient temperature                        |           | -15 °C up to +55 °C                                     | -25 °C up to +55 °C      |
| Storage temperature                                    |           | -40 °C up to +80 °C                                     | -30 °C up to +80 °C      |
| <b>Contact rating</b>                                  |           |                                                         |                          |
| Rated insulation voltage                               | $U_i$     | 440 V                                                   | 500 V                    |
| Frequency                                              | f         | 50 / 60 Hz                                              | 50 / 60 Hz               |
| Rated impulse withstand voltage                        | $U_{imp}$ | 4 kV                                                    | 4 kV                     |
| Rated thermal current                                  | $I_{th}$  | 20 A                                                    | 6 A                      |
| Power dissipation per contact at $I_n$                 |           | 1.7 W                                                   | 0.3 W                    |
| AC1 / AC7a Rated operational current                   | $I_e$     | 20 A                                                    |                          |
| AC1 / AC7a Operational power rating at $U_e = 230$ VAC | $P_e$     | 4 kW                                                    |                          |
| AC3 / AC7b Operational power rating at $U_e = 230$ VAC | $P_e$     | NO: 1.3 kW; NC: 0.75 kW                                 |                          |
| AC-15 Rated operational current                        | $I_e$     |                                                         |                          |
| Single phase 230 V                                     |           |                                                         | 6A                       |
| Single phase 400 V                                     |           |                                                         | 4A                       |
| DC-1 (L/R ≤ 1 ms) Rated operational current            | $I_e$     |                                                         |                          |
| 1-pole:                                                |           |                                                         |                          |
| at $U_e = 24$ V DC                                     |           | 20 A                                                    |                          |
| at $U_e = 110$ V DC                                    |           | 6 A                                                     |                          |
| at $U_e = 220$ V DC                                    |           | 0,6 A                                                   |                          |
| 2-poles in series:                                     |           |                                                         |                          |
| at $U_e = 24$ V DC                                     |           | 20 A                                                    |                          |
| at $U_e = 110$ V DC                                    |           | 10 A                                                    |                          |
| at $U_e = 220$ V DC                                    |           | 6 A                                                     |                          |
| DC-13 Rated operational current                        | $I_e$     |                                                         |                          |
| 1-pole:                                                |           |                                                         |                          |
| at $U_e = 24$ V DC                                     |           |                                                         | 6 A                      |
| at $U_e = 110$ V DC                                    |           |                                                         | 0.3 A                    |
| at $U_e = 220$ V DC                                    |           |                                                         | 0,05 A                   |
| 2-poles in series:                                     |           |                                                         |                          |
| at $U_e = 24$ V DC                                     |           |                                                         | 6 A                      |
| at $U_e = 110$ V DC                                    |           |                                                         | 1 A                      |
| at $U_e = 220$ V DC                                    |           |                                                         | 0.1 A                    |
| Contact material                                       |           | AgNi (80% Ag, 20% Ni)                                   |                          |
| Opening distance                                       |           | 3.6 mm                                                  |                          |
| <b>Electrical endurance</b>                            |           |                                                         |                          |
| AC-1 / AC-7a Application (maximum operating cycles)    |           | 200,000                                                 |                          |
| AC-3 / AC-7b Application (maximum operating cycles)    |           | 300,000                                                 |                          |
| AC-1/AC-3/AC-5b/AC-6b/AC-15 (max. op. cycles/hour)     |           | 600                                                     |                          |
| AC-15 / DC-13 (maximum operating cycles)               |           |                                                         | 50,000                   |
| <b>Operating coil</b>                                  |           |                                                         |                          |
| Coil inrush power (for all voltage ratings)            |           | 1.2 VA/1.0 W <sup>4)</sup> / 2.1 VA/2.1 W <sup>3)</sup> |                          |
| Coil consumption operation (for all voltage ratings)   |           | 2.8 VA/1.2 W <sup>4)</sup> / 2.1 VA/2.1 W <sup>3)</sup> |                          |
| Closing delay                                          |           | 15 – 25 ms <sup>4)</sup> / 15 – 45 ms <sup>3)</sup>     |                          |
| Opening delay                                          |           | 10 – 30 ms <sup>4)</sup> / 20 – 50 ms <sup>3)</sup>     |                          |
| Range of control voltage                               | $U_c$     | 85 up to 110%                                           |                          |
| Kind of voltage                                        |           | AC, AC / DC                                             |                          |
| Frequency (AC)                                         |           | 50/60 Hz <sup>4)</sup> / 40 .. 500 Hz <sup>3)</sup>     |                          |
| <b>Dimensions</b>                                      |           |                                                         |                          |
| Width                                                  |           | 17.5 mm                                                 | 9 mm                     |
| Height                                                 |           | 85 mm                                                   | 85 mm                    |
| Depth                                                  |           | 65 mm                                                   | 60 mm                    |
| <b>Terminals for main</b>                              |           |                                                         |                          |
| Terminal capacity - fine stranded wire                 |           | 1 to 6 mm <sup>2</sup>                                  |                          |
| Terminal capacity - solid wire                         |           | 1 to 10 mm <sup>2</sup>                                 |                          |
| Terminal screw size                                    |           | M3,5                                                    |                          |
| Terminal screw head type (Pozidrive)                   |           | PZ Size 1                                               |                          |
| Maximum torque                                         |           | 1.2 Nm                                                  |                          |
| <b>Terminals for operating coils</b>                   |           |                                                         |                          |
| Terminal capacity - fine stranded wire                 |           | 1 to 2.5 mm <sup>2</sup>                                |                          |
| Terminal capacity - solid wire                         |           | 1 to 2.5 mm <sup>2</sup>                                |                          |
| Terminal screw size                                    |           | M3                                                      |                          |
| Terminal screw head type (Pozidrive)                   |           | PZ Size 1                                               |                          |
| Maximum torque                                         |           | 0.6 Nm                                                  |                          |
| <b>Terminals for auxiliary circuit</b>                 |           |                                                         |                          |
| Terminal capacity - fine stranded wire                 |           |                                                         | 1 to 2.5 mm <sup>2</sup> |
| Terminal capacity - solid wire                         |           |                                                         | 1 to 2.5 mm <sup>2</sup> |
| Terminal screw size                                    |           |                                                         | M3                       |
| Terminal screw head type (Pozidrive)                   |           |                                                         | PZ Size 1                |
| Maximum torque                                         |           |                                                         | 0.8 Nm                   |

1) Rated operational voltage between two line (phases) conductors  
 2) Rated operational voltage for versions of contacts 1NC, 1NO is 230V

3) For combined AC/DC types only (not for AC only types)  
 4) For AC only types

|                                                                                     | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|-------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
| Lamps                                                                               | P     | I       | C         |                                                  |
| Type                                                                                | W     | A       | μF        |                                                  |
| Incandescent lamps<br>and<br>halogen lamps                                          | 11    | 0,05    | -         | 182                                              |
|                                                                                     | 15    | 0,07    | -         | 133                                              |
|                                                                                     | 18    | 0,08    | -         | 111                                              |
|                                                                                     | 20    | 0,09    | -         | 100                                              |
|                                                                                     | 25    | 0,11    | -         | 80                                               |
|                                                                                     | 28    | 0,12    | -         | 71                                               |
|                                                                                     | 30    | 0,13    | -         | 67                                               |
|                                                                                     | 33    | 0,14    | -         | 61                                               |
|                                                                                     | 35    | 0,15    | -         | 57                                               |
|                                                                                     | 40    | 0,17    | -         | 50                                               |
|                                                                                     | 42    | 0,18    | -         | 48                                               |
|                                                                                     | 46    | 0,2     | -         | 43                                               |
|                                                                                     | 48    | 0,21    | -         | 42                                               |
|                                                                                     | 50    | 0,22    | -         | 40                                               |
|                                                                                     | 53    | 0,23    | -         | 38                                               |
|                                                                                     | 57    | 0,25    | -         | 35                                               |
|                                                                                     | 60    | 0,26    | -         | 33                                               |
|                                                                                     | 70    | 0,3     | -         | 29                                               |
|                                                                                     | 75    | 0,33    | -         | 27                                               |
|                                                                                     | 77    | 0,34    | -         | 26                                               |
|                                                                                     | 80    | 0,35    | -         | 25                                               |
|                                                                                     | 100   | 0,44    | -         | 20                                               |
|                                                                                     | 116   | 0,5     | -         | 17                                               |
|                                                                                     | 120   | 0,52    | -         | 17                                               |
|                                                                                     | 150   | 0,65    | -         | 13                                               |
|                                                                                     | 160   | 0,7     | -         | 13                                               |
|                                                                                     | 200   | 0,87    | -         | 10                                               |
|                                                                                     | 205   | 0,89    | -         | 10                                               |
|                                                                                     | 230   | 1       | -         | 9                                                |
|                                                                                     | 300   | 1,3     | -         | 7                                                |
|                                                                                     | 400   | 1,74    | -         | 5                                                |
|                                                                                     | 500   | 2,17    | -         | 4                                                |
|                                                                                     | 750   | 3,26    | -         | 3                                                |
|                                                                                     | 1000  | 4,35    | -         | 2                                                |
|                                                                                     | 1500  | 6,52    | -         | 1                                                |
|                                                                                     | 2000  | 8,7     | -         | 1                                                |
| Transformators for low-voltage halogen<br>lamps<br>(electromagnetic and electronic) | 10    | 0,04    | -         | 100                                              |
|                                                                                     | 20    | 0,09    | -         | 50                                               |
|                                                                                     | 30    | 0,13    | -         | 33                                               |
|                                                                                     | 40    | 0,17    | -         | 25                                               |
|                                                                                     | 50    | 0,22    | -         | 20                                               |
|                                                                                     | 60    | 0,26    | -         | 17                                               |
|                                                                                     | 70    | 0,3     | -         | 14                                               |
|                                                                                     | 80    | 0,35    | -         | 13                                               |
|                                                                                     | 90    | 0,39    | -         | 11                                               |
|                                                                                     | 100   | 0,44    | -         | 10                                               |
|                                                                                     | 150   | 0,65    | -         | 7                                                |
|                                                                                     | 200   | 0,87    | -         | 5                                                |
|                                                                                     | 300   | 1,3     | -         | 3                                                |
|                                                                                     | 400   | 1,74    | -         | 3                                                |
| Compact fluorescent lamps with internal<br>ballasts                                 | 3     | 0,04    | -         | 150                                              |
|                                                                                     | 5     | 0,06    | -         | 90                                               |
|                                                                                     | 6     | 0,07    | -         | 75                                               |
|                                                                                     | 7     | 0,08    | -         | 64                                               |
|                                                                                     | 8     | 0,09    | -         | 56                                               |
|                                                                                     | 9     | 0,1     | -         | 50                                               |
|                                                                                     | 10    | 0,11    | -         | 45                                               |
|                                                                                     | 11    | 0,12    | -         | 41                                               |
|                                                                                     | 12    | 0,13    | -         | 38                                               |
|                                                                                     | 13    | 0,14    | -         | 35                                               |
|                                                                                     | 14    | 0,15    | -         | 32                                               |
|                                                                                     | 15    | 0,16    | -         | 30                                               |
|                                                                                     | 16    | 0,18    | -         | 28                                               |
|                                                                                     | 17    | 0,19    | -         | 26                                               |

|                                                                                          | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|------------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
|                                                                                          | 18    | 0,2     | -         | 25                                               |
|                                                                                          | 20    | 0,21    | -         | 23                                               |
|                                                                                          | 21    | 0,22    | -         | 21                                               |
|                                                                                          | 22    | 0,23    | -         | 20                                               |
|                                                                                          | 23    | 0,24    | -         | 20                                               |
|                                                                                          | 24    | 0,25    | -         | 19                                               |
|                                                                                          | 25    | 0,26    | -         | 18                                               |
|                                                                                          | 26    | 0,27    | -         | 17                                               |
|                                                                                          | 27    | 0,124   | -         | 17                                               |
|                                                                                          | 30    | 0,15    | -         | 15                                               |
|                                                                                          | 33    | 0,155   | -         | 14                                               |
|                                                                                          | 35    | 0,164   | -         | 13                                               |
|                                                                                          | 40    | 0,2     | -         | 11                                               |
|                                                                                          | 50    | 0,24    | -         | 9                                                |
|                                                                                          | 70    | 0,312   | -         | 6                                                |
| Compact fluorescent lamps with external electromagnetic ballasts<br>- uncorrected        | 5     | 0,05    | -         | 84                                               |
|                                                                                          | 2x5   | 0,07    | -         | 60                                               |
|                                                                                          | 7     | 0,05    | -         | 84                                               |
|                                                                                          | 2x7   | 0,07    | -         | 60                                               |
|                                                                                          | 9     | 0,06    | -         | 70                                               |
|                                                                                          | 2x9   | 0,08    | -         | 53                                               |
|                                                                                          | 10    | 0,07    | -         | 60                                               |
|                                                                                          | 11    | 0,08    | -         | 53                                               |
|                                                                                          | 13    | 0,08    | -         | 53                                               |
|                                                                                          | 16    | 0,1     | -         | 42                                               |
|                                                                                          | 18    | 0,12    | -         | 35                                               |
|                                                                                          | 2x18  | 0,21    | -         | 20                                               |
|                                                                                          | 21    | 0,12    | -         | 35                                               |
|                                                                                          | 22    | 0,2     | -         | 21                                               |
|                                                                                          | 24    | 0,15    | -         | 28                                               |
|                                                                                          | 26    | 0,15    | -         | 28                                               |
|                                                                                          | 28    | 0,15    | -         | 28                                               |
|                                                                                          | 32    | 0,22    | -         | 19                                               |
|                                                                                          | 36    | 0,21    | -         | 20                                               |
|                                                                                          | 38    | 0,21    | -         | 20                                               |
|                                                                                          | 40    | 0,21    | -         | 20                                               |
|                                                                                          | 58    | 0,32    | -         | 13                                               |
| Compact fluorescent lamps with external electromagnetic ballasts<br>- parallel corrected | 5     | 0,05    | 2         | 15                                               |
|                                                                                          | 2x5   | 0,07    | 2         | 15                                               |
|                                                                                          | 7     | 0,05    | 2         | 15                                               |
|                                                                                          | 2x7   | 0,07    | 2         | 15                                               |
|                                                                                          | 9     | 0,06    | 2         | 15                                               |
|                                                                                          | 2x9   | 0,08    | 2         | 15                                               |
|                                                                                          | 10    | 0,07    | 2         | 15                                               |
|                                                                                          | 11    | 0,08    | 2         | 15                                               |
|                                                                                          | 13    | 0,08    | 2         | 15                                               |
|                                                                                          | 16    | 0,1     | 2         | 15                                               |
|                                                                                          | 18    | 0,12    | 4,5       | 7                                                |
|                                                                                          | 2x18  | 0,21    | 4         | 8                                                |
|                                                                                          | 21    | 0,12    | 3         | 10                                               |
|                                                                                          | 22    | 0,2     | 4,5       | 7                                                |
|                                                                                          | 24    | 0,15    | 4,5       | 7                                                |
|                                                                                          | 26    | 0,15    | 4,5       | 7                                                |
|                                                                                          | 28    | 0,15    | 3,5       | 9                                                |
|                                                                                          | 32    | 0,22    | 4         | 8                                                |
|                                                                                          | 36    | 0,21    | 4,5       | 7                                                |
|                                                                                          | 38    | 0,21    | 4,5       | 7                                                |
|                                                                                          | 40    | 0,21    | 4,5       | 7                                                |
|                                                                                          | 58    | 0,32    | 7         | 4                                                |
| Compact fluorescent lamps with external electronic ballasts                              | 5     | 0,03    | -         | 75                                               |
|                                                                                          | 7     | 0,04    | -         | 56                                               |
|                                                                                          | 9     | 0,05    | -         | 45                                               |
|                                                                                          | 2x9   | 0,09    | -         | 25                                               |
|                                                                                          | 10    | 0,05    | -         | 45                                               |
|                                                                                          | 2x10  | 0,09    | -         | 25                                               |
|                                                                                          | 11    | 0,07    | -         | 32                                               |

|                                                                              | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
|                                                                              | 2x11  | 0,12    | -         | 19                                               |
|                                                                              | 13    | 0,07    | -         | 32                                               |
|                                                                              | 2x13  | 0,12    | -         | 19                                               |
|                                                                              | 14    | 0,08    | -         | 28                                               |
|                                                                              | 2x14  | 0,15    | -         | 15                                               |
|                                                                              | 16    | 0,07    | -         | 32                                               |
|                                                                              | 17    | 0,1     | -         | 23                                               |
|                                                                              | 2x17  | 0,18    | -         | 13                                               |
|                                                                              | 18    | 0,09    | -         | 25                                               |
|                                                                              | 2x18  | 0,17    | -         | 13                                               |
|                                                                              | 22    | 0,13    | -         | 17                                               |
|                                                                              | 2x22  | 0,21    | -         | 11                                               |
|                                                                              | 24    | 0,12    | -         | 19                                               |
|                                                                              | 2x24  | 0,23    | -         | 10                                               |
|                                                                              | 3x24  | 0,32    | -         | 7                                                |
|                                                                              | 4x24  | 0,43    | -         | 5                                                |
|                                                                              | 26    | 0,12    | -         | 19                                               |
|                                                                              | 2x26  | 0,24    | -         | 9                                                |
|                                                                              | 28    | 0,14    | -         | 16                                               |
|                                                                              | 32    | 0,16    | -         | 14                                               |
|                                                                              | 2x32  | 0,31    | -         | 7                                                |
|                                                                              | 36    | 0,16    | -         | 14                                               |
|                                                                              | 2x36  | 0,31    | -         | 7                                                |
|                                                                              | 38    | 0,17    | -         | 13                                               |
|                                                                              | 2x38  | 0,35    | -         | 6                                                |
|                                                                              | 40    | 0,2     | -         | 11                                               |
|                                                                              | 2x40  | 0,39    | -         | 6                                                |
|                                                                              | 42    | 0,2     | -         | 11                                               |
|                                                                              | 2x42  | 0,41    | -         | 5                                                |
|                                                                              | 55    | 0,27    | -         | 8                                                |
|                                                                              | 2x55  | 0,52    | -         | 4                                                |
|                                                                              | 57    | 0,28    | -         | 8                                                |
|                                                                              | 2x57  | 0,57    | -         | 4                                                |
|                                                                              | 60    | 0,31    | -         | 7                                                |
|                                                                              | 2x60  | 0,61    | -         | 4                                                |
|                                                                              | 70    | 0,34    | -         | 7                                                |
|                                                                              | 80    | 0,38    | -         | 6                                                |
|                                                                              | 2x80  | 0,76    | -         | 3                                                |
|                                                                              | 85    | 0,42    | -         | 5                                                |
|                                                                              | 100   | 0,46    | -         | 5                                                |
|                                                                              | 120   | 0,58    | -         | 4                                                |
|                                                                              | 150   | 0,69    | -         | 3                                                |
| Fluorescent lamps with external<br>electromagnetic ballasts<br>- uncorrected | 4     | 0,17    | -         | 52                                               |
|                                                                              | 6     | 0,16    | -         | 55                                               |
|                                                                              | 8     | 0,15    | -         | 59                                               |
|                                                                              | 10    | 0,17    | -         | 52                                               |
|                                                                              | 11    | 0,16    | -         | 55                                               |
|                                                                              | 13    | 0,17    | -         | 52                                               |
|                                                                              | 14    | 0,4     | -         | 22                                               |
|                                                                              | 15    | 0,33    | -         | 27                                               |
|                                                                              | 16    | 0,2     | -         | 44                                               |
|                                                                              | 18    | 0,37    | -         | 24                                               |
|                                                                              | 20    | 0,38    | -         | 23                                               |
|                                                                              | 22    | 0,37    | -         | 24                                               |
|                                                                              | 25    | 0,29    | -         | 30                                               |
|                                                                              | 30    | 0,37    | -         | 24                                               |
|                                                                              | 32    | 0,43    | -         | 20                                               |
|                                                                              | 36    | 0,43    | -         | 20                                               |
|                                                                              | 38    | 0,43    | -         | 20                                               |
|                                                                              | 40    | 0,43    | -         | 20                                               |
|                                                                              | 58    | 0,67    | -         | 13                                               |
|                                                                              | 65    | 0,67    | -         | 13                                               |
|                                                                              | 75    | 0,67    | -         | 13                                               |
|                                                                              | 80    | 0,8     | -         | 11                                               |
|                                                                              | 85    | 0,8     | -         | 11                                               |
|                                                                              | 100   | 0,96    | -         | 9                                                |
|                                                                              | 125   | 0,94    | -         | 9                                                |



|                                                                                                        | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|--------------------------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
| Fluorescent lamps with external electromagnetic ballasts<br>- parallel corrected                       | 4     | 0,09    | 2         | 15                                               |
|                                                                                                        | 6     | 0,08    | 2         | 15                                               |
|                                                                                                        | 8     | 0,08    | 2         | 15                                               |
|                                                                                                        | 10    | 0,09    | 2         | 15                                               |
|                                                                                                        | 11    | 0,08    | 2         | 15                                               |
|                                                                                                        | 13    | 0,09    | 2         | 15                                               |
|                                                                                                        | 14    | 0,2     | 4,5       | 7                                                |
|                                                                                                        | 15    | 0,17    | 4,5       | 7                                                |
|                                                                                                        | 16    | 0,1     | 2,5       | 12                                               |
|                                                                                                        | 18    | 0,19    | 4,5       | 7                                                |
|                                                                                                        | 20    | 0,19    | 4,5       | 7                                                |
|                                                                                                        | 22    | 0,19    | 5         | 6                                                |
|                                                                                                        | 25    | 0,15    | 3,5       | 9                                                |
|                                                                                                        | 30    | 0,24    | 4,5       | 7                                                |
|                                                                                                        | 32    | 0,29    | 5         | 6                                                |
|                                                                                                        | 36    | 0,29    | 4,5       | 7                                                |
|                                                                                                        | 38    | 0,29    | 4,5       | 7                                                |
|                                                                                                        | 40    | 0,29    | 4,5       | 7                                                |
|                                                                                                        | 58    | 0,46    | 7         | 4                                                |
|                                                                                                        | 65    | 0,46    | 7         | 4                                                |
|                                                                                                        | 75    | 0,46    | 6         | 5                                                |
|                                                                                                        | 80    | 0,57    | 7         | 4                                                |
|                                                                                                        | 85    | 0,57    | 8         | 4                                                |
|                                                                                                        | 100   | 0,66    | 10        | 3                                                |
|                                                                                                        | 125   | 0,65    | 18        | 2                                                |
| Series circuit for two fluorescent lamps with external electromagnetic ballast<br>- uncorrected        | 2x4   | 0,34    | -         | 26                                               |
|                                                                                                        | 2x6   | 0,32    | -         | 28                                               |
|                                                                                                        | 2x8   | 0,3     | -         | 29                                               |
|                                                                                                        | 2x10  | 0,34    | -         | 26                                               |
|                                                                                                        | 2x11  | 0,32    | -         | 28                                               |
|                                                                                                        | 2x13  | 0,34    | -         | 26                                               |
|                                                                                                        | 2x14  | 0,8     | -         | 11                                               |
|                                                                                                        | 2x15  | 0,66    | -         | 13                                               |
|                                                                                                        | 2x16  | 0,4     | -         | 22                                               |
|                                                                                                        | 2x18  | 0,74    | -         | 12                                               |
|                                                                                                        | 2x20  | 0,76    | -         | 12                                               |
|                                                                                                        | 2x22  | 0,74    | -         | 12                                               |
|                                                                                                        | 2x25  | 0,58    | -         | 15                                               |
|                                                                                                        | 2x30  | 0,74    | -         | 12                                               |
|                                                                                                        | 2x32  | 0,86    | -         | 10                                               |
|                                                                                                        | 2x36  | 0,86    | -         | 10                                               |
|                                                                                                        | 2x38  | 0,86    | -         | 10                                               |
|                                                                                                        | 2x40  | 0,86    | -         | 10                                               |
|                                                                                                        | 2x58  | 1,34    | -         | 7                                                |
|                                                                                                        | 2x65  | 1,34    | -         | 7                                                |
|                                                                                                        | 2x75  | 1,34    | -         | 7                                                |
|                                                                                                        | 2x80  | 1,6     | -         | 6                                                |
|                                                                                                        | 2x85  | 1,6     | -         | 6                                                |
|                                                                                                        | 2x100 | 1,92    | -         | 5                                                |
|                                                                                                        | 2x125 | 1,88    | -         | 5                                                |
| Series circuit for two fluorescent lamps with external electromagnetic ballast<br>- parallel corrected | 2x4   | 0,17    | 2         | 15                                               |
|                                                                                                        | 2x6   | 0,16    | 2         | 15                                               |
|                                                                                                        | 2x8   | 0,15    | 2         | 15                                               |
|                                                                                                        | 2x10  | 0,17    | 2         | 15                                               |
|                                                                                                        | 2x11  | 0,16    | 2         | 15                                               |
|                                                                                                        | 2x13  | 0,17    | 2         | 15                                               |
|                                                                                                        | 2x14  | 0,4     | 4,5       | 7                                                |
|                                                                                                        | 2x15  | 0,33    | 4,5       | 7                                                |
|                                                                                                        | 2x16  | 0,2     | 2,5       | 12                                               |
|                                                                                                        | 2x18  | 0,37    | 4,5       | 7                                                |
|                                                                                                        | 2x20  | 0,38    | 4,5       | 7                                                |
|                                                                                                        | 2x22  | 0,37    | 5         | 6                                                |
|                                                                                                        | 2x25  | 0,29    | 3,5       | 9                                                |
|                                                                                                        | 2x30  | 0,37    | 4,5       | 7                                                |
|                                                                                                        | 2x32  | 0,43    | 5         | 6                                                |

|                                                                                                     | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|-----------------------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
|                                                                                                     | 2x36  | 0,43    | 4,5       | 7                                                |
|                                                                                                     | 2x38  | 0,43    | 4,5       | 7                                                |
|                                                                                                     | 2x40  | 0,43    | 4,5       | 7                                                |
|                                                                                                     | 2x58  | 0,67    | 7         | 4                                                |
|                                                                                                     | 2x65  | 0,67    | 7         | 4                                                |
|                                                                                                     | 2x75  | 0,67    | 6         | 5                                                |
|                                                                                                     | 2x80  | 0,8     | 7         | 4                                                |
|                                                                                                     | 2x85  | 0,8     | 8         | 4                                                |
|                                                                                                     | 2x100 | 0,96    | 10        | 3                                                |
|                                                                                                     | 2x125 | 0,94    | 18        | 2                                                |
| Lead-lag circuit for fluorescent lamps with external electromagnetic ballasts<br>- series corrected | 2x18  | 0,26    | 2,7       | 31                                               |
|                                                                                                     | 2x36  | 0,48    | 4,5       | 17                                               |
|                                                                                                     | 2x40  | 0,48    | 4,5       | 17                                               |
|                                                                                                     | 2x58  | 0,78    | 7         | 10                                               |
|                                                                                                     | 2x65  | 0,78    | 7         | 10                                               |
|                                                                                                     | 2x80  | 0,96    | 9         | 8                                                |
|                                                                                                     | 2x85  | 0,96    | 9         | 8                                                |
|                                                                                                     | 2x125 | 1,2     | 18        | 7                                                |
| Fluorescent lamps with external electronic ballasts                                                 | 4     | 0,03    | -         | 117                                              |
|                                                                                                     | 6     | 0,033   | -         | 106                                              |
|                                                                                                     | 2x6   | 0,06    | -         | 58                                               |
|                                                                                                     | 8     | 0,04    | -         | 88                                               |
|                                                                                                     | 2x8   | 0,08    | -         | 44                                               |
|                                                                                                     | 10    | 0,05    | -         | 70                                               |
|                                                                                                     | 2x10  | 0,09    | -         | 39                                               |
|                                                                                                     | 11    | 0,06    | -         | 58                                               |
|                                                                                                     | 13    | 0,07    | -         | 50                                               |
|                                                                                                     | 14    | 0,08    | -         | 44                                               |
|                                                                                                     | 2x14  | 0,15    | -         | 23                                               |
|                                                                                                     | 3x14  | 0,21    | -         | 17                                               |
|                                                                                                     | 4x14  | 0,28    | -         | 13                                               |
|                                                                                                     | 15    | 0,08    | -         | 44                                               |
|                                                                                                     | 2x15  | 0,13    | -         | 27                                               |
|                                                                                                     | 16    | 0,07    | -         | 50                                               |
|                                                                                                     | 2x16  | 0,14    | -         | 25                                               |
|                                                                                                     | 3x16  | 0,2     | -         | 18                                               |
|                                                                                                     | 4x16  | 0,28    | -         | 13                                               |
|                                                                                                     | 18    | 0,09    | -         | 39                                               |
|                                                                                                     | 2x18  | 0,17    | -         | 21                                               |
|                                                                                                     | 3x18  | 0,24    | -         | 15                                               |
|                                                                                                     | 4x18  | 0,31    | -         | 11                                               |
|                                                                                                     | 19    | 0,11    | -         | 32                                               |
|                                                                                                     | 2x19  | 0,22    | -         | 16                                               |
|                                                                                                     | 20    | 0,11    | -         | 32                                               |
|                                                                                                     | 2x20  | 0,22    | -         | 16                                               |
|                                                                                                     | 21    | 0,11    | -         | 32                                               |
|                                                                                                     | 2x21  | 0,22    | -         | 16                                               |
|                                                                                                     | 22    | 0,11    | -         | 32                                               |
|                                                                                                     | 2x22  | 0,23    | -         | 15                                               |
|                                                                                                     | 24    | 0,12    | -         | 29                                               |
|                                                                                                     | 2x24  | 0,22    | -         | 16                                               |
|                                                                                                     | 3x24  | 0,33    | -         | 11                                               |
|                                                                                                     | 4x24  | 0,43    | -         | 8                                                |
|                                                                                                     | 25    | 0,15    | -         | 23                                               |
|                                                                                                     | 2x25  | 0,28    | -         | 13                                               |
|                                                                                                     | 28    | 0,14    | -         | 25                                               |
|                                                                                                     | 2x28  | 0,27    | -         | 13                                               |
|                                                                                                     | 30    | 0,14    | -         | 25                                               |
|                                                                                                     | 2x30  | 0,27    | -         | 13                                               |
|                                                                                                     | 32    | 0,17    | -         | 21                                               |
|                                                                                                     | 2x32  | 0,35    | -         | 10                                               |
|                                                                                                     | 34    | 0,17    | -         | 21                                               |
|                                                                                                     | 2x34  | 0,35    | -         | 10                                               |

|                                                                                                | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|------------------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
|                                                                                                | 35    | 0,17    | -         | 21                                               |
|                                                                                                | 2x35  | 0,34    | -         | 10                                               |
|                                                                                                | 36    | 0,16    | -         | 22                                               |
|                                                                                                | 2x36  | 0,31    | -         | 11                                               |
|                                                                                                | 3x36  | 0,46    | -         | 8                                                |
|                                                                                                | 38    | 0,15    | -         | 23                                               |
|                                                                                                | 2x38  | 0,31    | -         | 11                                               |
|                                                                                                | 39    | 0,19    | -         | 18                                               |
|                                                                                                | 2x39  | 0,36    | -         | 10                                               |
|                                                                                                | 40    | 0,21    | -         | 17                                               |
|                                                                                                | 2x40  | 0,42    | -         | 8                                                |
|                                                                                                | 45    | 0,24    | -         | 15                                               |
|                                                                                                | 2x45  | 0,46    | -         | 8                                                |
|                                                                                                | 49    | 0,24    | -         | 15                                               |
|                                                                                                | 2x49  | 0,46    | -         | 8                                                |
|                                                                                                | 50    | 0,25    | -         | 14                                               |
|                                                                                                | 2x50  | 0,48    | -         | 7                                                |
|                                                                                                | 51    | 0,22    | -         | 16                                               |
|                                                                                                | 2x51  | 0,42    | -         | 8                                                |
|                                                                                                | 54    | 0,26    | -         | 13                                               |
|                                                                                                | 2x54  | 0,52    | -         | 7                                                |
|                                                                                                | 55    | 0,28    | -         | 13                                               |
|                                                                                                | 2x55  | 0,55    | -         | 6                                                |
|                                                                                                | 58    | 0,25    | -         | 14                                               |
|                                                                                                | 2x58  | 0,48    | -         | 7                                                |
|                                                                                                | 65    | 0,25    | -         | 14                                               |
|                                                                                                | 2x65  | 0,48    | -         | 7                                                |
|                                                                                                | 70    | 0,3     | -         | 12                                               |
|                                                                                                | 2x70  | 0,57    | -         | 6                                                |
|                                                                                                | 73    | 0,38    | -         | 9                                                |
|                                                                                                | 2x73  | 0,7     | -         | 5                                                |
|                                                                                                | 80    | 0,4     | -         | 9                                                |
|                                                                                                | 2x80  | 0,76    | -         | 5                                                |
| High pressure mercury vapour lamps with external electromagnetic ballasts - uncorrected        | 50    | 0,6     | -         | 14                                               |
|                                                                                                | 80    | 0,8     | -         | 10                                               |
|                                                                                                | 125   | 1,2     | -         | 7                                                |
|                                                                                                | 250   | 2,2     | -         | 4                                                |
|                                                                                                | 400   | 3,3     | -         | 2                                                |
|                                                                                                | 700   | 5,4     | -         | 1                                                |
| High pressure mercury vapour lamps with external electromagnetic ballasts - parallel corrected | 1000  | 7,5     | -         | 1                                                |
|                                                                                                | 50    | 0,3     | 7         | 4                                                |
|                                                                                                | 80    | 0,4     | 8         | 4                                                |
|                                                                                                | 125   | 0,6     | 10        | 3                                                |
|                                                                                                | 250   | 1,2     | 18        | 1                                                |
|                                                                                                | 400   | 1,8     | 25        | 1                                                |
| High pressure mercury vapour lamps which do not require ballasts                               | 700   | 3,4     | 40        | 0                                                |
|                                                                                                | 1000  | 4,8     | 60        | 0                                                |
|                                                                                                | 160   | 0,8     | -         | 11                                               |
| Metal halide lamps with external electromagnetic ballasts - uncorrected                        | 250   | 1,2     | -         | 7                                                |
|                                                                                                | 500   | 2,4     | -         | 4                                                |
|                                                                                                | 35    | 0,5     | -         | 18                                               |
|                                                                                                | 70    | 1       | -         | 10                                               |
|                                                                                                | 100   | 1,2     | -         | 8                                                |
|                                                                                                | 150   | 1,8     | -         | 5                                                |
|                                                                                                | 250   | 3       | -         | 3                                                |
|                                                                                                | 400   | 4,6     | -         | 3                                                |
|                                                                                                | 600   | 6,2     | -         | 1                                                |
|                                                                                                | 1000  | 9,7     | -         | 1                                                |
|                                                                                                | 2000  | 12,2    | -         | 0                                                |

|                                                                                                  | Power | Current | Capacitor | Maximum number of lamps per pole at 230 V, 50 Hz |
|--------------------------------------------------------------------------------------------------|-------|---------|-----------|--------------------------------------------------|
| Metal halide lamps with external electromagnetic ballasts<br>- parallel corrected                | 35    | 0,23    | 6         | 5                                                |
|                                                                                                  | 70    | 0,42    | 12        | 2                                                |
|                                                                                                  | 100   | 0,55    | 12        | 2                                                |
|                                                                                                  | 150   | 0,77    | 20        | 1                                                |
|                                                                                                  | 250   | 1,26    | 32        | 0                                                |
|                                                                                                  | 400   | 2       | 45        | 0                                                |
|                                                                                                  | 600   | 3       | 65        | 0                                                |
|                                                                                                  | 1000  | 5       | 85        | 0                                                |
|                                                                                                  | 2000  | 10,5    | 125       | 0                                                |
| Metal halide lamps with external electronic ballasts                                             | 20    | 0,11    | -         | 18                                               |
|                                                                                                  | 35    | 0,21    | -         | 10                                               |
|                                                                                                  | 2x35  | 0,38    | -         | 5                                                |
|                                                                                                  | 50    | 0,29    | -         | 7                                                |
|                                                                                                  | 70    | 0,38    | -         | 5                                                |
|                                                                                                  | 2x70  | 0,71    | -         | 3                                                |
|                                                                                                  | 100   | 0,56    | -         | 4                                                |
|                                                                                                  | 150   | 0,72    | -         | 3                                                |
|                                                                                                  | 250   | 1,3     | -         | 2                                                |
|                                                                                                  | 400   | 2       | -         | 1                                                |
|                                                                                                  | 1000  | 5       | -         | 0                                                |
|                                                                                                  | 2000  | 6       | -         | 0                                                |
| High pressure sodium vapour lamps with external electromagnetic ballasts<br>- uncorrected        | 35    | 0,53    | -         | 15                                               |
|                                                                                                  | 50    | 0,8     | -         | 11                                               |
|                                                                                                  | 70    | 1       | -         | 9                                                |
|                                                                                                  | 100   | 1,2     | -         | 7                                                |
|                                                                                                  | 150   | 1,8     | -         | 5                                                |
|                                                                                                  | 250   | 3       | -         | 3                                                |
|                                                                                                  | 400   | 4,4     | -         | 2                                                |
|                                                                                                  | 600   | 6,2     | -         | 1                                                |
|                                                                                                  | 1000  | 10,3    | -         | 0                                                |
| High pressure sodium vapour lamps with external electromagnetic ballasts<br>- parallel corrected | 35    | 0,22    | 6         | 5                                                |
|                                                                                                  | 50    | 0,3     | 8         | 3                                                |
|                                                                                                  | 70    | 0,4     | 12        | 2                                                |
|                                                                                                  | 100   | 0,55    | 12        | 2                                                |
|                                                                                                  | 150   | 0,77    | 20        | 1                                                |
|                                                                                                  | 250   | 1,26    | 32        | 0                                                |
|                                                                                                  | 400   | 2       | 45        | 0                                                |
|                                                                                                  | 600   | 2,9     | 65        | 0                                                |
|                                                                                                  | 1000  | 5,1     | 100       | 0                                                |
| High pressure sodium vapour lamps with external electronic ballasts                              | 35    | 0,21    | -         | 10                                               |
|                                                                                                  | 50    | 0,25    | -         | 8                                                |
|                                                                                                  | 70    | 0,38    | -         | 5                                                |
|                                                                                                  | 100   | 0,56    | -         | 4                                                |
|                                                                                                  | 150   | 0,72    | -         | 3                                                |
|                                                                                                  | 250   | 1,3     | -         | 2                                                |
|                                                                                                  | 400   | 2       | -         | 1                                                |
|                                                                                                  | 600   | 3,1     | -         | 0                                                |
|                                                                                                  | 1000  | 5       | -         | 0                                                |
| Low pressure sodium vapour lamps with external electromagnetic ballasts<br>- uncorrected         | 18    | 0,4     | -         | 22                                               |
|                                                                                                  | 35    | 0,6     | -         | 7                                                |
|                                                                                                  | 55    | 0,6     | -         | 7                                                |
|                                                                                                  | 90    | 0,9     | -         | 4                                                |
|                                                                                                  | 135   | 0,9     | -         | 3                                                |
|                                                                                                  | 180   | 0,9     | -         | 3                                                |
| Low pressure sodium vapour lamps with external electromagnetic ballasts<br>- parallel corrected  | 18    | 0,35    | 5         | 6                                                |
|                                                                                                  | 35    | 0,28    | 20        | 1                                                |
|                                                                                                  | 55    | 0,35    | 20        | 1                                                |
|                                                                                                  | 90    | 0,55    | 26        | 1                                                |
|                                                                                                  | 135   | 0,8     | 40        | 0                                                |
|                                                                                                  | 180   | 1       | 40        | 0                                                |
| Low pressure sodium vapour lamps with ECG                                                        | 35    | 0,16    | -         | 13                                               |
|                                                                                                  | 55    | 0,25    | -         | 8                                                |
| LED lamps                                                                                        | -     | -       | -         | max. 2,4 A per pole                              |
| Power supplies for LEDs                                                                          |       |         |           |                                                  |

| $U_s$ | $I_n$ AC1 | Function | Type<br>Designation | Article No. | Units per<br>package |
|-------|-----------|----------|---------------------|-------------|----------------------|
|-------|-----------|----------|---------------------|-------------|----------------------|

### Installation Contactors Z-SCH

SG84511



Z-SCH230/1/25-20

SG84611



Z-SCH230/25-40

SG84711



Z-SCH230/63-40

|          |      |         |                  |        |         |
|----------|------|---------|------------------|--------|---------|
| 230 V AC | 25 A | 2NO     | Z-SCH230/1/25-20 | 120853 | 2 / 120 |
| 230 V AC | 25 A | 1NO+1NC | Z-SCH230/1/25-11 | 193886 | 2 / 120 |
| 230 V AC | 25 A | 2NC     | Z-SCH230/1/25-02 | 193887 | 2 / 120 |
| 24 V AC  | 25 A | 2NO     | Z-SCH24/1/25-20  | 193885 | 2 / 120 |
| 24 V AC  | 25 A | 1NO+1NC | Z-SCH24/1/25-11  | 193888 | 2 / 120 |
| 24 V AC  | 25 A | 2NC     | Z-SCH24/1/25-02  | 193984 | 2 / 120 |
| 230 V AC | 25 A | 4NO     | Z-SCH230/25-40   | 248847 | 1 / 60  |
| 230 V AC | 25 A | 4NC     | Z-SCH230/25-04   | 248848 | 1 / 60  |
| 230 V AC | 25 A | 3NO+1NC | Z-SCH230/25-31   | 248846 | 1 / 60  |
| 230 V AC | 25 A | 2NO+2NC | Z-SCH230/25-22   | 248849 | 1 / 60  |
| 24 V AC  | 25 A | 4NO     | Z-SCH24/25-40    | 248851 | 1 / 60  |
| 24 V AC  | 25 A | 2NO+2NC | Z-SCH24/25-22    | 248850 | 1 / 60  |
| 230 V AC | 40 A | 4NO     | Z-SCH230/40-40   | 248852 | 1 / 40  |
| 230 V AC | 40 A | 3NO+1NC | Z-SCH230/40-31   | 248854 | 1 / 40  |
| 230 V AC | 40 A | 2NO+2NC | Z-SCH230/40-22   | 248853 | 1 / 40  |
| 230 V AC | 40 A | 2NO     | Z-SCH230/40-20   | 248855 | 1 / 40  |
| 230 V AC | 63 A | 4NO     | Z-SCH230/63-40   | 248856 | 1 / 40  |
| 230 V AC | 63 A | 4NC     | Z-SCH230/63-04   | 285735 | 1 / 40  |
| 230 V AC | 63 A | 3NO+1NC | Z-SCH230/63-31   | 248858 | 1 / 40  |
| 230 V AC | 63 A | 2NO+2NC | Z-SCH230/63-22   | 248857 | 1 / 40  |
| 230 V AC | 63 A | 2NO     | Z-SCH230/63-20   | 248859 | 1 / 40  |

### Installation Contactors CMUC

- Universal Control Voltage  $U_s$  AC/DC

SG28812



CMUC230/25-40

|             |      |         |               |        |        |
|-------------|------|---------|---------------|--------|--------|
| 230 V AC/DC | 25 A | 4NO     | CMUC230/25-40 | 137309 | 1 / 60 |
| 230 V AC/DC | 25 A | 4NC     | CMUC230/25-04 | 137405 | 1 / 60 |
| 230 V AC/DC | 25 A | 3NO+1NC | CMUC230/25-31 | 137401 | 1 / 60 |
| 230 V AC/DC | 25 A | 2NO+2NC | CMUC230/25-22 | 137403 | 1 / 60 |
| 24 V AC/DC  | 25 A | 4NO     | CMUC24/25-40  | 137308 | 1 / 60 |
| 24 V AC/DC  | 25 A | 4NC     | CMUC24/25-04  | 137404 | 1 / 60 |
| 24 V AC/DC  | 25 A | 3NO+1NC | CMUC24/25-31  | 137400 | 1 / 60 |
| 24 V AC/DC  | 25 A | 2NO+2NC | CMUC24/25-22  | 137402 | 1 / 60 |

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

### Accessories suitable for Z-SCH / CMUC

SG84311



Z-SC

|                                              |             |        |         |
|----------------------------------------------|-------------|--------|---------|
| Sealing cover                                | Z-SCHAK-2TE | 248860 | 10      |
| Sealing cover                                | Z-SCHAK-3TE | 248861 | 10      |
| Auxiliary Switch 1NO+1NC for Z-SCH series *) | Z-SC        | 248862 | 3       |
| Auxiliary Switch 1NO+1NC for CMUC series     | CMUCA       | 303643 | 3       |
| Spacer 0.5MU                                 | Z-DST       | 248949 | 10      |
| Suppressor RC-Combination 12-250 VAC         | Z-RC/230    | 101428 | 2 / 120 |

\*) NOT suitable for Z-SCH.../1/...- types

### Description Installation Contactors Z-SCH, CMUC

These Installation Contactors are design to cover all applications in residential and commercial sites as for as example:

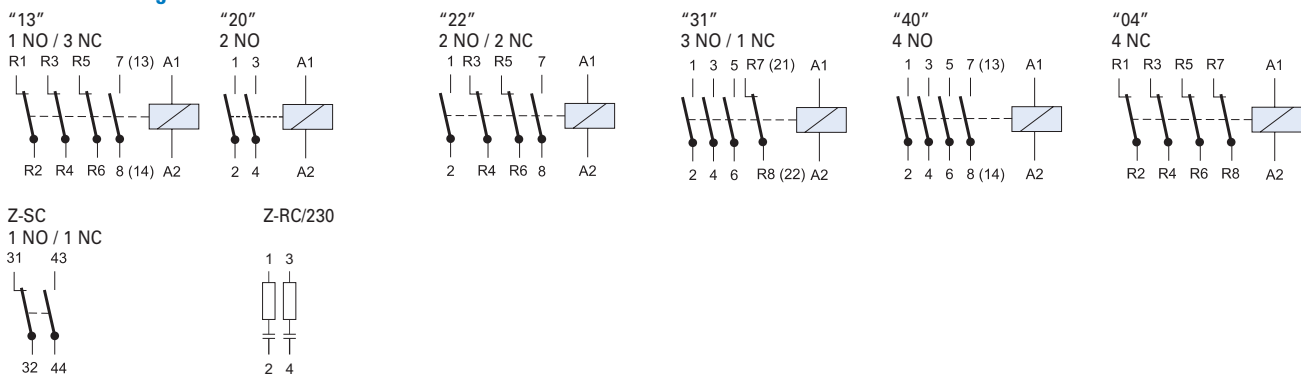
- Switching of lighting systems
- Switching of electrical heating systems
- Switching of ventilation systems
- Switching of air conditioning systems and fans
- Switching of heat pumps
- Switching of roller doors/gates and blinds
- etc. etc.

#### Advantages and Safety:

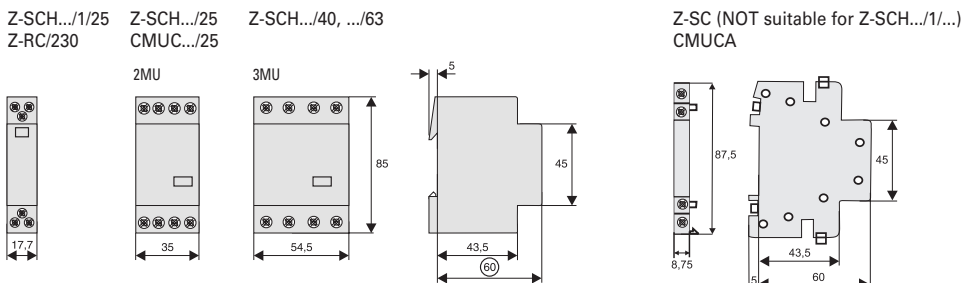
- Front-side switch position indicator
- Compact frame
- Large terminals
- Low switching noise
- Z-SCH low noise
- CMUC no humming
- High contact force for high switching capacity
- Simple snap-on fastening of 35 mm DIN rail
- Finger and hand touch safe according to VGB 4
- Hardly flammable materials and chlorine-free and halogen-free plastics are used
- Z-SCH: Innovative AC magnet system
- CMUC: Innovative AC/DC magnet system

These products meets the requirement of the standards IEC/EN 60947-4-1 and IEC/EN 61095

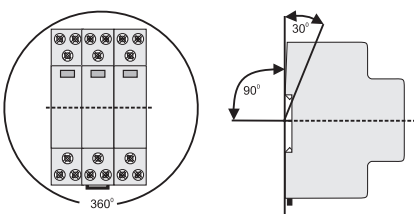
### Connection diagram



### Dimensions (mm)



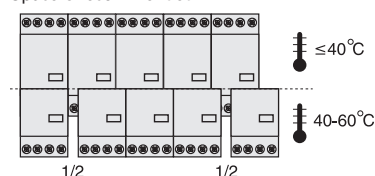
### Permitted installation positions



### Packing Density at full contact load

Z-SCH / CMUC

Spacers recommended!



## Technical Data

|                                                                                                      |                | Z-SCH/25/... CMUC.../25/                                        | Z-SCH/40/..              | Z-SCH/63/..              | Z-SC, CMUCA         |
|------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------|--------------------------|--------------------------|---------------------|
| Data according to                                                                                    |                | IEC 61095, EN 61095, VDE 0660, IEC 60947-4-1, EN 60947-4-1, VDE |                          |                          |                     |
| Utilisation category AC1 (e.g. heating system)                                                       |                |                                                                 |                          |                          |                     |
| Rated operational current (= I <sub>th</sub> )                                                       | I <sub>n</sub> |                                                                 |                          |                          |                     |
| open at 60 °C                                                                                        |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| Service life of switching element                                                                    |                | 0.1 S x 10 <sup>6</sup>                                         | 0.1 S x 10 <sup>6</sup>  | 0.1 S x 10 <sup>6</sup>  | -                   |
| Rated operational power AC1 220 - 240 V                                                              |                | 9.5 kW                                                          | 16 kW                    | 25 kW                    | -                   |
| Rated operational power AC1 380 - 415 V                                                              |                | 17 kW                                                           | 27.5 kW                  | 43 kW                    | -                   |
| Lowest switching power                                                                               |                | 24 V / 100 mA                                                   | 24 V / 100 mA            | 24 V / 100 mA            | 17 V / 5 mA         |
| Utilisation category AC3 (Switching of 3phase AC motors)                                             |                |                                                                 |                          |                          |                     |
| Rated operational current                                                                            | I <sub>n</sub> | 9 A                                                             | 27 A                     | 30 A                     | -                   |
| Service life of switching element                                                                    |                | 0.15 S x 10 <sup>6</sup>                                        | 0.15 S x 10 <sup>6</sup> | 0.15 S x 10 <sup>6</sup> | -                   |
| Rated power of 3phase AC motors 50-60 Hz, 220 V                                                      |                | 2.2 kW                                                          | 7.5 kW                   | 8 kW                     | -                   |
| Rated power of 3phase AC motors 50-60 Hz, 230-240 V                                                  |                | 2.5 kW                                                          | 8 kW                     | 8.5 kW                   | -                   |
| Rated power of 3phase AC motors 50-60 Hz, 380-415 V                                                  |                | 4 kW                                                            | 12.5 kW                  | 15 kW                    | -                   |
| Utilisation category DC1 (Switching of resistive loads, L/R ≤ 15 ms), values for NO contacts         |                |                                                                 |                          |                          |                     |
| 1pole 24 V DC                                                                                        |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 1pole 48 V DC                                                                                        |                | 22 A                                                            | 25 A                     | 26 A                     | -                   |
| 1pole 60 V DC                                                                                        |                | 18 A                                                            | 19 A                     | 21 A                     | -                   |
| 1pole 110 V DC                                                                                       |                | 5 A                                                             | 7 A                      | 8 A                      | -                   |
| 1pole 220 V DC                                                                                       |                | 0.5 A                                                           | 0.7 A                    | 0.7 A                    | -                   |
| 2pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 2pole in series 48 V DC                                                                              |                | 25 A                                                            | 40 A                     | 44 A                     | -                   |
| 2pole in series 60 V DC                                                                              |                | 25 A                                                            | 33 A                     | 36 A                     | -                   |
| 2pole in series 110 V DC                                                                             |                | 16 A                                                            | 17 A                     | 18 A                     | -                   |
| 2pole in series 220 V DC                                                                             |                | 4 A                                                             | 5 A                      | 6 A                      | -                   |
| 3pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 3pole in series 48 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 3pole in series 60 V DC                                                                              |                | 25 A                                                            | 40 A                     | 61 A                     | -                   |
| 3pole in series 110 V DC                                                                             |                | 25 A                                                            | 31 A                     | 34 A                     | -                   |
| 3pole in series 220 V DC                                                                             |                | 10 A                                                            | 15 A                     | 16 A                     | -                   |
| 4pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 48 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 60 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 110 V DC                                                                             |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 220 V DC                                                                             |                | 15 A                                                            | 20 A                     | 21 A                     | -                   |
| Utilisation category DC3 and DC5 (Switching of resistive loads, L/R ≤ 15 ms), values for NO contacts |                |                                                                 |                          |                          |                     |
| 1pole 24 V DC                                                                                        |                | 15 A                                                            | 23 A                     | 25 A                     | -                   |
| 1pole 48 V DC                                                                                        |                | 5 A                                                             | 10 A                     | 10 A                     | -                   |
| 1pole 60 V DC                                                                                        |                | 4 A                                                             | 5 A                      | 5 A                      | -                   |
| 1pole 110 V DC                                                                                       |                | 1 A                                                             | 1.5 A                    | 1.5 A                    | -                   |
| 1pole 220 V DC                                                                                       |                | 0.1 A                                                           | 0.3 A                    | 0.3 A                    | -                   |
| 2pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 45 A                     | -                   |
| 2pole in series 48 V DC                                                                              |                | 17 A                                                            | 23 A                     | 25 A                     | -                   |
| 2pole in series 60 V DC                                                                              |                | 13 A                                                            | 15 A                     | 15 A                     | -                   |
| 2pole in series 110 V DC                                                                             |                | 5 A                                                             | 5 A                      | 5 A                      | -                   |
| 2pole in series 220 V DC                                                                             |                | 0.5 A                                                           | 1 A                      | 1 A                      | -                   |
| 3pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 3pole in series 48 V DC                                                                              |                | 25 A                                                            | 40 A                     | 45 A                     | -                   |
| 3pole in series 60 V DC                                                                              |                | 25 A                                                            | 30 A                     | 30 A                     | -                   |
| 3pole in series 110 V DC                                                                             |                | 15 A                                                            | 15 A                     | 15 A                     | -                   |
| 3pole in series 220 V DC                                                                             |                | 3 A                                                             | 4 A                      | 4 A                      | -                   |
| 4pole in series 24 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 48 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 60 V DC                                                                              |                | 25 A                                                            | 40 A                     | 63 A                     | -                   |
| 4pole in series 110 V DC                                                                             |                | 25 A                                                            | 40 A                     | 45 A                     | -                   |
| 4pole in series 220 V DC                                                                             |                | 8 A                                                             | 10 A                     | 10 A                     | -                   |
| Main switching elements (U <sub>imp</sub> = 4 kV, Duty Cycle: 100%)                                  |                |                                                                 |                          |                          |                     |
| Rated insulation voltage                                                                             | U <sub>i</sub> | 440 V AC                                                        | 440 V AC                 | 440 V AC                 | 440 V AC            |
| Rated operational voltage                                                                            | U <sub>e</sub> | 440 V AC                                                        | 440 V AC                 | 440 V AC                 | 440 V AC            |
| Permissible switching frequency AC1, AC3                                                             | z              | 300 x/h                                                         | 600 x/h                  | 600 x/h                  | 600 x/h             |
| Endurance mechanical components                                                                      |                | 1 x 10 <sup>6</sup>                                             | 1 x 10 <sup>6</sup>      | 1 x 10 <sup>6</sup>      | 1 x 10 <sup>6</sup> |

## Technical Data (continue page)

|                                                                                         |            | Z-SCH/25/.., CMUC.../25/   | Z-SCH/40/..                | Z-SCH/63/..                | Z-SC, CMUCA               |
|-----------------------------------------------------------------------------------------|------------|----------------------------|----------------------------|----------------------------|---------------------------|
| Auxiliary switching elements ( $U_{imp} = 4 \text{ kV}$ , Duty Cycle: 100%)             |            |                            |                            |                            |                           |
| Rated insulation voltage                                                                | $U_i$      | 440 V AC                   | 440 V AC                   | 440 V AC                   | 440 V AC                  |
| Nominal thermal current = $I_{tr}$ , 40°C                                               |            | 25 A                       | 40 A                       | 63 A                       | 10 A                      |
| Nominal thermal current = $I_{tr}$ , 60°C                                               |            | 25 A                       | 40 A                       | 63 A                       | 6 A                       |
| Utilisation category AC15 (Controlling of electromagnetic load)                         |            |                            |                            |                            |                           |
| Rated operational current 220-240 V                                                     | $I_e$      | -                          | -                          | -                          | 3 A                       |
| Rated operational current 380-415 V                                                     | $I_e$      | -                          | -                          | -                          | 2 A                       |
| Rated operational current 440 V                                                         | $I_e$      | -                          | -                          | -                          | 1.6 A                     |
| Utilisation category DC13 (Controlling of electromagnetic load at DC)                   |            |                            |                            |                            |                           |
| Rated operational current per pole 24-60 V                                              | $I_e$      | -                          | -                          | -                          | 2 A                       |
| Rated operational current per pole 110 V                                                | $I_e$      | -                          | -                          | -                          | 0.4 A                     |
| Rated operational current per pole 220 V                                                | $I_e$      | -                          | -                          | -                          | 0.1 A                     |
| Trip Coil Power                                                                         |            |                            |                            |                            |                           |
|  Z-SCH |            |                            |                            |                            |                           |
| Switching on                                                                            |            | 14 - 18 VA                 | 33 - 45 VA                 | 33 - 45 VA                 | -                         |
| Holding                                                                                 |            | 4.4 - 8.4 VA               | 7 VA                       | 7 VA                       | -                         |
|                                                                                         |            | 1.6 - 3.2 W                | 2.6 W                      | 2.6 W                      | -                         |
|  CMUC  |            | 3 - 4 W                    | -                          | -                          | -                         |
| Operating range of trip coils multiple of $U_e$ (-40 to +40°C)                          |            |                            |                            |                            |                           |
|  Z-SCH |            |                            |                            |                            |                           |
| Coil voltage 50 Hz                                                                      |            | 24, 220 - 240 V            | 220 - 240 V                | 220 - 240 V                | -                         |
| Coil voltage 60 Hz                                                                      |            | 24, 230 - 264 V            | 230 - 264 V                | 230 - 264 V                | -                         |
|  CMUC  |            |                            |                            |                            |                           |
| Coil voltage 50/60 Hz                                                                   |            | 24, 220-240 V              | -                          | -                          | -                         |
| DC                                                                                      |            | 24, 220 V                  |                            |                            |                           |
| Power loss per current path                                                             |            |                            |                            |                            |                           |
|                                                                                         | $P_v$      | 2 W                        | 3 W                        | 7 W                        | 0.5 W                     |
| Power loss per device at nominal current load 1pole                                     | $P_{vges}$ | 5.2 W                      | 5.6 W                      | 5.6 W                      | -                         |
| Power loss per device at nominal current load 2pole                                     | $P_{vges}$ | 7.2 W                      | 8.6 W                      | 16.6 W                     | -                         |
| Power loss per device at nominal current load 3pole                                     | $P_{vges}$ | 9.2 W                      | 11.6 W                     | 23.6 W                     | -                         |
| Power loss per device at nominal current load 4pole                                     | $P_{vges}$ | 11.2 W                     | 14.6 W                     | 30.6 W                     | -                         |
| Switching noise (on and off), typical mean values                                       |            | 80 dB                      | 78 dB                      | 78 dB                      | -                         |
| Terminal capacity                                                                       |            |                            |                            |                            |                           |
| Main conductor                                                                          |            |                            |                            |                            |                           |
| one or several wires                                                                    |            | 1.5 - 10 mm <sup>2</sup>   | 2.5 - 25 mm <sup>2</sup>   | 2.5 - 25 mm <sup>2</sup>   | 0.5 - 2.5 mm <sup>2</sup> |
| fine-wire                                                                               |            | 1.5 - 6 mm <sup>2</sup>    | 2.5 - 16 mm <sup>2</sup>   | 2.5 - 16 mm <sup>2</sup>   | 0.5 - 2.5 mm <sup>2</sup> |
| fine wires with wire end sleeve                                                         |            | 1.5 - 6 mm <sup>2</sup>    | 2.5 - 16 mm <sup>2</sup>   | 2.5 - 16 mm <sup>2</sup>   | 0.5 - 1.5 mm <sup>2</sup> |
| number of conductors per terminal                                                       |            | 1                          | 1                          | 1                          | 2                         |
| Coil                                                                                    |            |                            |                            |                            |                           |
| one or several wires                                                                    |            | 0.75 - 2.5 mm <sup>2</sup> | 0.75 - 2.5 mm <sup>2</sup> | 0.75 - 2.5 mm <sup>2</sup> | -                         |
| fine-wire                                                                               |            | 0.5 - 2.5 mm <sup>2</sup>  | 0.5 - 2.5 mm <sup>2</sup>  | 0.5 - 2.5 mm <sup>2</sup>  | -                         |
| fine wires with wire end sleeve                                                         |            | 0.5 - 1.5 mm <sup>2</sup>  | 0.5 - 1.5 mm <sup>2</sup>  | 0.5 - 1.5 mm <sup>2</sup>  | -                         |
| number of conductors per terminal                                                       |            | 1                          | 1                          | 1                          | -                         |
| Weight                                                                                  |            | 0.22 kg/unit               | 0.36 kg/unit               | 0.36 kg/unit               | 0.026 kg/unit             |
| Tightening torque of terminal screws                                                    |            |                            |                            |                            |                           |
| Main contacts                                                                           |            | 0.8 - 1.4 Nm               | 2.5 - 3.0 Nm               | 2.5 - 3.0 Nm               | -                         |
| Coil                                                                                    |            | 0.6 - 1.2 Nm               | 0.6 - 1.2 Nm               | 0.6 - 1.2 Nm               | -                         |
| Short circuit protection (main circuit), maximum nominal current of fuse                |            |                            |                            |                            |                           |
| Co-ordination type (1), gL (gG)                                                         |            | 35 A                       | 63 A                       | 80 A                       | -                         |
| Short circuit protection (auxiliary circuit), maximum nominal current of fuses          |            |                            |                            |                            |                           |
| Short-circuit current 1 kA, without fusing of contacts, gL (gG)                         |            | -                          | -                          | -                          | 10 A                      |
| Switching times at control voltage $U_s \pm 10\%$                                       |            |                            |                            |                            |                           |
| Make delay                                                                              |            | 9 - 15 ms                  | 11 - 15 ms                 | 11 - 15 ms                 | -                         |
| Break delay                                                                             |            | 4 - 8 ms                   | 6 - 13 ms                  | 6 - 13 ms                  | -                         |
| Arc duration                                                                            |            | 10 - 15 ms                 | 10 - 15 ms                 | 10 - 15 ms                 | -                         |
| Pollution degree                                                                        |            | 3                          | 3                          | 3                          | 3                         |
| Overvoltage category (grounded neutral system)                                          |            | 1 - 3                      | 1 - 3                      | 1 - 3                      | 1 - 3                     |



### Installation Contactors Z-SCH, CMUC for Lighting Systems

The decisive factors are the type, connection and current consumption of lamps during switch-on and in permanent operation. Only 90 % of the continuous current of switching devices should be used in view of higher current consumption as a result of increases of voltage. The maximum number of lamps per phase that can be operated

by a switching device is dependent on the nominal current and making current of lamps on the one hand, and on the continuous current and making capacity of the switching devices on the other. Thus, e.g. in lead-lag circuits, the continuous current of contactors can be used, while this is not possible in fluorescent tubes with separate compensation.

|                                                                                                                 |              | Z-SCH/25/... CMUC.../25/ | Z-SCH/40/..  | Z-SCH/63/..  | Z-SC, CMUCA |
|-----------------------------------------------------------------------------------------------------------------|--------------|--------------------------|--------------|--------------|-------------|
| Utilisation category AC1                                                                                        |              |                          |              |              |             |
| Rated operational current                                                                                       | $I_e$        | 25 A (60 °C)             | 40 A (60 °C) | 63 A (60 °C) | -           |
| Making capacity root mean square                                                                                | $I_{r.m.s.}$ | 200 A                    | 360 A        | 480 A        | -           |
| Making capacity peak value                                                                                      | $I_{peak}$   | 280 A                    | 510 A        | 680 A        | -           |
| Utilisation category AC5a                                                                                       |              |                          |              |              |             |
| Rated operational power 250 V $\cos\phi = 0.45$                                                                 |              | 1.3 kW                   | 3.4 kW       | 5.5 kW       | -           |
| Rated operational power 220-240 V $\sim \cos\phi = 0.90$                                                        |              | 1.2 kW                   | 3.1 kW       | 5.1 kW       | -           |
| DUO                                                                                                             |              | 3.7 kW                   | 6.3 kW       | 10 kW        | -           |
| Utilisation category AC5b                                                                                       |              |                          |              |              |             |
|  Rated operational power 240V~ |              | 3 kW                     | 5.7 kW       | 8 kW         | -           |

### Incandescent Lamps

The incandescent lamp filament has a very low ohmic resistance when it is cold. Therefore, when switching on, there is a high peak current (up to  $20 \times I_n$ ). When switching off, only the nominal current is switched off.

| Utilisation category AC5b                                                           | Power | Current | Z-SCH/25/... CMUC.../25/                              | Z-SCH/40/.. | Z-SCH/63/.. | Z-SC |
|-------------------------------------------------------------------------------------|-------|---------|-------------------------------------------------------|-------------|-------------|------|
|                                                                                     | W     | A       | max. number of lamps per current path at 230 V, 50 Hz |             |             |      |
| Incandescent Lamps AC5B (with or except halogen)                                    | 60    | 0.27    | 50                                                    | 92          | 129         | -    |
|  | 100   | 0.45    | 30                                                    | 55          | 77          | -    |
|                                                                                     | 200   | 0.91    | 15                                                    | 27          | 38          | -    |
|                                                                                     | 300   | 1.36    | 10                                                    | 19          | 26          | -    |
|                                                                                     | 500   | 2.27    | 6                                                     | 11          | 16          | -    |
|                                                                                     | 1000  | 4.5     | 3                                                     | 6           | 8           | -    |
| Low voltage halogen lamps (12 or 24V) with transformer                              | 0.09  | 52      | 110                                                   | 174         | -           | -    |
| (with electronic transformer)                                                       | 0.22  | 24      | 50                                                    | 80          | -           | -    |
|                                                                                     | 75    | 0.33    | 16                                                    | 35          | 54          | -    |
|                                                                                     | 100   | 0.43    | 12                                                    | 27          | 43          | -    |
|                                                                                     | 150   | 0.65    | 9                                                     | 19          | 29          | -    |
|                                                                                     | 200   | 0.87    | 6                                                     | 14          | 23          | -    |
|                                                                                     | 300   | 1.30    | 4                                                     | 9           | 14          | -    |

### LED Lamps

| Lamp Types                                                                               |                                                                                                                                                             | Z-SCH/25/... CMUC.../25/ | Z-SCH/40/.. | Z-SCH/63/.. | Z-SC |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------|-------------|------|
| LED Lamp. Pay attention on the inrush current of the ballast and $\cos\phi$ of the lamp. | max. permissible inrush current contactor [A]                                                                                                               | 233                      | 424         | 565         | -    |
| max. number of lamps per current path                                                    | $\frac{\text{inrush current contactor [A]}}{\text{inrush current lamp/ballast [A]}} = \text{max. number of lamps per current path } (I_{nLED} \leq I_{th})$ |                          |             |             |      |

**Fluorescent Tubes, Mercury Arc Lamps**

High- and low pressure discharge lamps with mercury vapour, with or without fluorescent-coated glass body are perfectly identical in their electrical behaviour.

In order to limit the operational current and pre-conduction current, and to achieve the initial peak voltage, reactance coils are used as ballast. Capacitors are used for compensation of the resulting reactive current, which are either connected in series

with the coil (lead-lag circuit) or parallel to the mains (separate compensation, very rarely used now). The high making current in case of separate compensation (max. 30 x nominal current of the capacitor) which goes down quickly is usually attenuated considerably by the feed line.

**Utilisation category AC5a**

|                                                                |                                                      |                                                                 |
|----------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------|
| $I / I_{Lampe}$ = number of connectable lamps per current path | Fluorescent lamps without comp. or with series comp. | $I = I_{eAC1} \times 0.5$                                       |
|                                                                | Lead-lag circuit (2x..)                              | $I = I_{eAC1} \times 0.35$                                      |
|                                                                | Fluorescent tubes with parallel compensation         | $I = I_{peak} / 100$ (take into account compensation capacitor) |
|                                                                | Fluorescent tubes with electronic ballast            | $I = I_{peak} / 50$                                             |
|                                                                | Mercury arc lamps, HD without compensation           | $I = I_{eAC1} \times 0.5$                                       |
|                                                                | Mercury arc lamps, HD with compensation              | $I = I_{peak} / 100$ (take into account compensation capacitor) |

| Utilisation category AC5a                                            | Power  | Current | Capacitor | Z-SCH/25/..<br>CMUC.../25/                            | Z-SCH/40/.. | Z-SCH/63/.. | Z-SC,<br>CMUCA |
|----------------------------------------------------------------------|--------|---------|-----------|-------------------------------------------------------|-------------|-------------|----------------|
| Lamp Types                                                           | W      | A       | µF        | max. number of lamps per current path at 230 V, 50 Hz |             |             |                |
| Fluorescent tubes without compensation or with series compensation   | 11     | 0.16    | 1.3       | 75                                                    | 210         | 310         | -              |
|                                                                      | 18     | 0.37    | 2.7       | 34                                                    | 90          | 140         | -              |
|                                                                      | 24     | 0.35    | 2.5       | 34                                                    | 90          | 140         | -              |
|                                                                      | 36     | 0.43    | 3.4       | 30                                                    | 70          | 140         | -              |
|                                                                      | 58     | 0.67    | 5.3       | 20                                                    | 45          | 70          | -              |
|                                                                      | 65     | 0.67    | 5.3       | 19                                                    | 40          | 65          | -              |
|                                                                      | 85     | 0.8     | 5.3       | 16                                                    | 35          | 60          | -              |
| Fluorescent tubes lead-lag circuit                                   | 11     | 0.07    | -         | 2 x 110                                               | 2 x 220     | 2 x 250     | -              |
|                                                                      | 18     | 0.11    | -         | 2 x 55                                                | 2 x 130     | 2 x 200     | -              |
|                                                                      | 24     | 0.14    | -         | 2 x 44                                                | 2 x 110     | 2 x 160     | -              |
|                                                                      | 36     | 0.22    | -         | 2 x 33                                                | 2 x 70      | 2 x 100     | -              |
|                                                                      | 58     | 0.35    | -         | 2 x 22                                                | 2 x 46      | 2 x 70      | -              |
|                                                                      | 65     | 0.35    | -         | 2 x 16                                                | 2 x 40      | 2 x 60      | -              |
|                                                                      | 85     | 0.47    | -         | 2 x 11                                                | 2 x 30      | 2 x 40      | -              |
| Fluorescent tubes with parallel compensation                         | 11     | 0.16    | 3.0       | 43                                                    | 67          | 107         | -              |
|                                                                      | 18     | 0.37    | 4.0       | 32                                                    | 50          | 80          | -              |
|                                                                      | 24     | 0.35    | 4.0       | 32                                                    | 50          | 80          | -              |
|                                                                      | 36     | 0.43    | 4.0       | 32                                                    | 50          | 80          | -              |
|                                                                      | 58     | 0.67    | 7.0       | 18                                                    | 36          | 46          | -              |
|                                                                      | 65     | 0.67    | 7.0       | 18                                                    | 36          | 46          | -              |
|                                                                      | 85     | 0.8     | 8.0       | 16                                                    | 33          | 44          | -              |
| Fluorescent tubes with electronic ballast                            | 18     | 0.09    | -         | 40                                                    | 100         | 150         | -              |
|                                                                      | 36     | 0.16    | -         | 20                                                    | 50          | 75          | -              |
|                                                                      | 58     | 0.25    | -         | 15                                                    | 30          | 55          | -              |
|                                                                      | 80     | 0.4     | -         | 10                                                    | 20          | 30          | -              |
|                                                                      | 2 x 18 | 0.17    | -         | 20                                                    | 50          | 60          | -              |
|                                                                      | 2 x 36 | 0.32    | -         | 10                                                    | 25          | 30          | -              |
|                                                                      | 2 x 58 | 0.49    | -         | 7                                                     | 15          | 20          | -              |
| Mercury arc lamps, high pressure without compensation e.g.: HQL, HPL | 50     | 0.61    | -         | 21                                                    | 38          | 55          | -              |
|                                                                      | 80     | 0.8     | -         | 16                                                    | 28          | 40          | -              |
|                                                                      | 125    | 1.15    | -         | 11                                                    | 20          | 28          | -              |
|                                                                      | 250    | 2.15    | -         | 6                                                     | 11          | 15          | -              |
|                                                                      | 400    | 3.25    | -         | 4                                                     | 7           | 10          | -              |
|                                                                      | 700    | 5.4     | -         | 2                                                     | 4           | 6           | -              |
|                                                                      | 1000   | 7.5     | -         | 1                                                     | 3           | 4           | -              |
| Mercury arc lamps, high pressure with compensation e.g.: HQL, HPL    | 50     | 0.28    | 7         | 18                                                    | 36          | 50          | -              |
|                                                                      | 80     | 0.41    | 8         | 16                                                    | 31          | 44          | -              |
|                                                                      | 125    | 0.65    | 10        | 13                                                    | 25          | 35          | -              |
|                                                                      | 250    | 1.22    | 18        | 7                                                     | 14          | 19          | -              |
|                                                                      | 400    | 1.95    | 25        | 5                                                     | 10          | 14          | -              |
|                                                                      | 700    | 3.45    | 45        | 3                                                     | 6           | 8           | -              |
|                                                                      | 1000   | 4.8     | 60        | 2                                                     | 4           | 6           | -              |

**Metal Halide Lamps**

Metal halide lamps are a version of high-pressure mercury arc lamps with higher luminous efficiency and fidelity of colour (metalloids [halogens] added to the mercury fill up the Hg-spectrum with its many gaps). Ballast and ignition devices are necessary. Starting time 3 ... 5 minutes at 1.4 - 2 x I.  
After switching on, it is not possible to light the lamp again immediately (lamp extinguishes after a power cut-off of only 1/2 period). Therefore, in many cases in important

facilities ionisation of part of the lamps is maintained by switching over to 415 V, 500 Hz (e.g. to an emergency power supply). In this case, the lamp lights immediately after the mains voltage is on again. Otherwise, this would take several minutes. When using suitable ignition devices, the lamps can be lit again immediately.

|                                                                       |                                               |                                                                        |
|-----------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|
| $I / I_{\text{Lampe}}$ = number of connectable lamps per current path | Metal halide lamps (HQI) without compensation | $I = I_{\text{eACT}} \times 0.5$                                       |
|                                                                       | Metal halide lamps (HQI) with compensation    | $I = I_{\text{peak}} / 100$ (take into account compensation capacitor) |
|                                                                       | Transformer for low voltage halogen lamps     | $I = I_{\text{peak}} / 50$                                             |

|                                                                                   | Power | Current | Capacitor | Z-SCH/25/..<br>CMUC.../25/                            | Z-SCH/40/.. | Z-SCH/63/.. | Z-SC,<br>CMUCA |
|-----------------------------------------------------------------------------------|-------|---------|-----------|-------------------------------------------------------|-------------|-------------|----------------|
| Lamp Types                                                                        | W     | A       | µF        | max. number of lamps per current path at 230 V, 50 Hz |             |             |                |
| Metal halide lamps without compensation<br>e.g. HQI, HPI                          | 35    | 0.53    | -         | 28                                                    | 57          | -           | -              |
|                                                                                   | 70    | 1       | -         | 15                                                    | 30          | -           | -              |
|                                                                                   | 150   | 1.8     | -         | 8                                                     | 17          | -           | -              |
|                                                                                   | 250   | 3       | -         | 5                                                     | 10          | -           | -              |
|                                                                                   | 400   | 3.5     | -         | 4                                                     | 8           | -           | -              |
|                                                                                   | 1000  | 9.5     | -         | 1                                                     | 3           | -           | -              |
|                                                                                   | 2000  | 16.5    | -         | -                                                     | 2           | -           | -              |
| 400 V per pole                                                                    | 2000  | 10.5    | -         | -                                                     | 2           | -           | -              |
|                                                                                   | 3500  | 18      | -         | -                                                     | 1           | -           | -              |
| Metal halide lamps with electronic ballast<br>(50-125 x I <sub>n</sub> ) HQI      | 20    | 0.1     | i         | 9                                                     | 18          | 20          | -              |
|                                                                                   | 35    | 0.2     | i         | 6                                                     | 11          | 13          | -              |
|                                                                                   | 70    | 0.36    | i         | 5                                                     | 12          | 12          | -              |
|                                                                                   | 150   | 0.7     | i         | 4                                                     | 10          | 10          | -              |
| Metal halide lamps with compensation, with<br>parallel compensation e.g. HQI, HPI | 35    | 0.25    | 6         | 21                                                    | 42          | 58          | -              |
|                                                                                   | 70    | 0.45    | 12        | 11                                                    | 21          | 29          | -              |
|                                                                                   | 150   | 0.75    | 20        | 7                                                     | 13          | 18          | -              |
|                                                                                   | 250   | 1.5     | 33        | 4                                                     | 9           | 11          | -              |
|                                                                                   | 400   | 2.1     | 35        | 4                                                     | 9           | 10          | -              |
|                                                                                   | 1000  | 5.8     | 95        | 1                                                     | 3           | 4           | -              |
|                                                                                   | 2000  | 11.5    | 148       | -                                                     | 2           | 2           | -              |
| 400 V per pole                                                                    | 2000  | 6.6     | 58        | -                                                     | 3           | 4           | -              |
|                                                                                   | 3500  | 11.6    | 100       | -                                                     | 2           | 3           | -              |
| Transformers for low-voltage halogen lamps                                        | 20    | -       | -         | 52                                                    | 110         | 174         | -              |
|                                                                                   | 50    | -       | -         | 24                                                    | 50          | 80          | -              |
|                                                                                   | 75    | -       | -         | 16                                                    | 35          | 54          | -              |
|                                                                                   | 100   | -       | -         | 12                                                    | 27          | 43          | -              |
|                                                                                   | 150   | -       | -         | 9                                                     | 19          | 29          | -              |
|                                                                                   | 200   | -       | -         | 5                                                     | 14          | 23          | -              |
|                                                                                   | 300   | -       | -         | 4                                                     | 9           | 14          | -              |

**Sodium Vapour Lamps**

For 200 W, 1200 mm high-pressure lamps and low-pressure lamps, reactance coils are used as ballast. For smaller lamps, stray field transformers can be used as ballast. Take into account, the long starting period.

**Low pressure lamps:**

Without compens.: Making current  $1 \times X_{l_g}$ ,  $\cos\varphi$  0.3; starting time 5 ... 10min  
Decisive for selection of device: 60% Constant current  
 $I = I_{eAC1} \times 0.6$

With compensation: Making current  $20 \times X_{l_g}$ ,  $\cos\varphi$  0.45; starting time 5 ... 10min  
(at  $1.6 \times I_n$ ),  $I = I_{peak}/200$

**High pressure lamps:**

Without compens.: Making current  $1.4 \times X_{l_g}$ ,  $\cos\varphi$  0.5; starting time 5 ... 10min  
Decisive for selection of device: 60% Constant current  
 $I = I_{eAC1} \times 0.6$

With compensation: Making current  $20 \times X_{l_g}$ ,  $\cos\varphi$  0.95; starting time 5 ... 10min  
(at  $1.6 \times I_n$ )

|                                                                                     | Power | Current | Capacitor | Z-SCH/25/..<br>CMUC.../25/                            | Z-SCH/40/.. | Z-SCH/63/.. | Z-SC,<br>CMUCA |
|-------------------------------------------------------------------------------------|-------|---------|-----------|-------------------------------------------------------|-------------|-------------|----------------|
| Lamp Types                                                                          | W     | A       | µF        | max. number of lamps per current path at 230 V, 50 Hz |             |             |                |
| Sodium vapour lamps low-pressure without compensation                               | 35    | 1.5     | -         | 9                                                     | 22          | 30          | -              |
|                                                                                     | 55    | 1.5     | -         | 9                                                     | 22          | 30          | -              |
|                                                                                     | 90    | 2.4     | -         | 6                                                     | 13          | 19          | -              |
|                                                                                     | 135   | 3.3     | -         | 4                                                     | 10          | 14          | -              |
|                                                                                     | 150   | 3.3     | -         | 4                                                     | 10          | 14          | -              |
|                                                                                     | 180   | 3.3     | -         | 4                                                     | 10          | 14          | -              |
|                                                                                     | 200   | 3.3     | -         | 4                                                     | 10          | 14          | -              |
| Sodium vapour lamps low-pressure with compensation, with parallel compensation      | 35    | 0.31    | 20        | 6                                                     | 15          | 18          | -              |
|                                                                                     | 55    | 0.42    | 20        | 6                                                     | 15          | 18          | -              |
|                                                                                     | 90    | 0.63    | 30        | 4                                                     | 10          | 12          | -              |
|                                                                                     | 135   | 0.94    | 45        | 3                                                     | 7           | 8           | -              |
|                                                                                     | 150   | 1       | 40        | 3                                                     | 8           | 9           | -              |
|                                                                                     | 180   | 1.16    | 40        | 3                                                     | 8           | 9           | -              |
|                                                                                     | 200   | 1.32    | 30        | -                                                     | 10          | 12          | -              |
| Sodium vapour lamps high-pressure without compensation                              | 150   | 1.8     | -         | 8                                                     | 15          | 22          | -              |
|                                                                                     | 250   | 3       | -         | 5                                                     | 10          | 13          | -              |
|                                                                                     | 330   | 3.7     | -         | 4                                                     | 8           | 10          | -              |
|                                                                                     | 400   | 4.7     | -         | 3                                                     | 6           | 8           | -              |
|                                                                                     | 1000  | 10.3    | -         | 1                                                     | 3           | 4           | -              |
| Sodium vapour lamps high pressure with compensation, with parallel compensation     | 150   | 0.83    | 20        | 7                                                     | 20          | 25          | -              |
|                                                                                     | 250   | 1.5     | 33        | 4                                                     | 12          | 15          | -              |
|                                                                                     | 330   | 2       | 40        | 3                                                     | 10          | 13          | -              |
|                                                                                     | 400   | 2.4     | 48        | 2                                                     | 8           | 12          | -              |
|                                                                                     | 1000  | 6.3     | 106       | 1                                                     | 4           | 6           | -              |
| Sodium vapour lamps high pressure with electronic ballast (50-125 xI <sub>n</sub> ) | 20    | 0.1     | i         | 9                                                     | 18          | 20          | -              |
|                                                                                     | 35    | 0.2     | i         | 6                                                     | 11          | 13          | -              |
|                                                                                     | 70    | 0.36    | i         | 5                                                     | 12          | 12          | -              |
|                                                                                     | 150   | 0.7     | i         | 4                                                     | 10          | 10          | -              |

## Utilisation Categories of Contactors

| Type of current | Utilisation category | Typical Applications<br><br>I = Making current, I <sub>c</sub> = Breaking current,<br>I <sub>e</sub> = Rated operational current, U = Voltage,<br>U <sub>e</sub> = Rated operational voltage,<br>U <sub>r</sub> = Recovery voltage | Verification of electrical service life    |        |        |              |                     |                     |              | Verification of switching capacity           |                   |                    |              |                     |                     |              |
|-----------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------|--------|--------------|---------------------|---------------------|--------------|----------------------------------------------|-------------------|--------------------|--------------|---------------------|---------------------|--------------|
|                 |                      |                                                                                                                                                                                                                                    | Switching on                               |        |        |              | Switching off       |                     |              | Switching on                                 |                   |                    |              | Switching off       |                     |              |
|                 |                      |                                                                                                                                                                                                                                    | I <sub>e</sub><br>A                        | I<br>A | U<br>V | cosφ         | I <sub>c</sub><br>A | U <sub>r</sub><br>V | cosφ         | I <sub>e</sub><br>A                          | I<br>A            | U<br>V             | cosφ         | I <sub>c</sub><br>A | U <sub>r</sub><br>V | cosφ         |
| AC              | AC-1                 | Non-inductive or slightly inductive load<br>Resistance furnaces                                                                                                                                                                    | all values                                 | 1      | 1      | 0.95         | 1                   | 1                   | 0.95         | all values                                   | 1.5               | 1.05               | 0.8          | 1.5                 | 1.05                | 0.8          |
|                 | AC-2                 | Slip ring motors: starting, switching off                                                                                                                                                                                          | all values                                 | 2.5    | 1      | 0.65         | 2.5                 | 1                   | 0.65         | all values                                   | 4                 | 1.05               | 0.65         | 4                   | 1.05                | 0.8          |
|                 | AC-3                 | Squirrel cage motors: starting, switching off (running motors <sup>4)</sup> )                                                                                                                                                      | I <sub>e</sub> ≤ 17<br>I <sub>e</sub> > 17 | 6<br>6 | 1<br>1 | 0.65<br>0.35 | 1<br>1              | 0.17<br>0.17        | 0.65<br>0.35 | I <sub>e</sub> ≤ 100<br>I <sub>e</sub> > 100 | 10<br>8           | 1.05<br>1.05       | 0.45<br>0.35 | 8<br>6              | 1.05<br>1.05        | 0.45<br>0.35 |
|                 | AC-4                 | Squirrel cage motors: starting, plugging reversing, inching                                                                                                                                                                        | I <sub>e</sub> ≤ 17<br>I <sub>e</sub> > 17 | 6<br>6 | 1<br>1 | 0.65<br>0.35 | 6<br>6              | 1<br>1              | 0.65<br>0.35 | I <sub>e</sub> ≤ 100<br>I <sub>e</sub> > 100 | 12<br>10          | 1.05<br>1.05       | 0.45<br>0.35 | 10<br>8             | 1.05<br>1.05        | 0.45<br>0.35 |
|                 | AC-5                 | Switching of electric discharge lamp controls                                                                                                                                                                                      |                                            |        |        |              |                     |                     |              |                                              | 3.0               | 1.05               | 0.45         | 3.0                 | 1.05                | 0.45         |
|                 | AC-5b                | Switching of incandescent lamps                                                                                                                                                                                                    |                                            |        |        |              |                     |                     |              |                                              | 1.5 <sup>2)</sup> | 1.05 <sup>2)</sup> |              | 1.05 <sup>2)</sup>  | 1.05 <sup>2)</sup>  |              |
|                 | AC-6a <sup>3)</sup>  | Switching of transformers                                                                                                                                                                                                          |                                            |        |        |              |                     |                     |              |                                              |                   |                    |              |                     |                     |              |
|                 | AC-6b <sup>3)</sup>  | Switching of capacitor banks                                                                                                                                                                                                       |                                            |        |        |              |                     |                     |              |                                              |                   |                    |              |                     |                     |              |
|                 | AC-7a                | Slightly inductive loads in household appliances and similar applications                                                                                                                                                          | according to manufacturer specifications   |        |        |              |                     |                     |              | 1.5                                          | 1.05              | 0.8                | 1.5          | 1.05                | 0.8                 |              |
|                 | AC-7b                | Motor loads for household appliances                                                                                                                                                                                               |                                            |        |        |              |                     |                     |              |                                              | 8,0               | 1.05 <sup>1)</sup> |              | 8,0                 | 1.05 <sup>1)</sup>  |              |
|                 | AC-8a                | Switching of hermetically enclosed refrigerant compressor motors with manual reset of overload releases <sup>5)</sup>                                                                                                              |                                            |        |        |              |                     |                     |              |                                              | 6,0               | 1.05 <sup>1)</sup> |              | 6,0                 | 1.05 <sup>1)</sup>  |              |
|                 | AC-8b                | Switching of hermetically enclosed refrigerant compressor motors with automatic reset of overload releases <sup>5)</sup>                                                                                                           |                                            |        |        |              |                     |                     |              |                                              | 6,0               | 1.05 <sup>1)</sup> |              | 6,0                 | 1.05 <sup>1)</sup>  |              |
| DC              | DC-1                 | Non-inductive or slightly inductive load, Resistance furnaces                                                                                                                                                                      | all values                                 | 1      | 1      | 1            | 1                   | 1                   | 1            | all values                                   | 1.5               | 1.05               | 1            | 1.5                 | 1.05                | 1            |
|                 | DC-3                 | Shunt motors: starting, plugging, reversing, inching, dynamic braking                                                                                                                                                              | all values                                 | 2.5    | 1      | 2            | 2.5                 | 1                   | 2            | all values                                   | 4                 | 1.05               | 2.5          | 4                   | 1.05                | 2.5          |
|                 | DC-5                 | Series motors: starting, plugging, reversing, inching, dynamic braking                                                                                                                                                             | all values                                 | 2      | 1      | 7.5          | 2.5                 | 1                   | 7.5          | all values                                   | 4                 | 1.05               | 2.5          | 4                   | 1.05                | 2.5          |
|                 | DC-6                 | Switching of incandescent lamps                                                                                                                                                                                                    |                                            |        |        |              |                     |                     |              |                                              | 1.5 <sup>2)</sup> | 1.05 <sup>2)</sup> |              | 1.5 <sup>2)</sup>   | 1.05 <sup>2)</sup>  |              |

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

<sup>1)</sup> cosφ = 0.45 for I<sub>e</sub> ≤ 100 A; cosφ = 0.35 for I<sub>e</sub> ≤ 100 A.<sup>2)</sup> The tests must be carried out with an incandescent lamp load connected.<sup>3)</sup> In this case, the test data must be derived from the test values for AC-3 or AC-4 according to a special table.<sup>4)</sup> Devices for utilisation category AC-3 may be used for occasional inching or plugging during a limited period, such as for setting up a machine. However, during this limited period of time, the number of operations must not exceed five per minute or ten in a ten minute period.<sup>5)</sup> Hermetically enclosed refrigerant compressor motor means a combination of a compressor and a motor both of which are housed in the same enclosure with no external shaft or shaft seals, the motor running in the refrigerant.

## Utilisation Categories of Auxiliary Switches

| Type of current | Utilisation category | Typical Applications<br><br>I = Making current, I <sub>c</sub> = Breaking current,<br>I <sub>e</sub> = Rated operational current, U = Voltage,<br>U <sub>e</sub> = Rated operational voltage,<br>U <sub>r</sub> = Recovery voltage,<br>t <sub>0.95</sub> = the time in ms until 95% of the stationary current has been reached,<br>P = U <sub>e</sub> x I <sub>e</sub> = Rated power in Watts | Normal conditions of use |                |                   |                |                |                   | Divergent conditions of use |                |                   |                |                |                   |
|-----------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|-------------------|----------------|----------------|-------------------|-----------------------------|----------------|-------------------|----------------|----------------|-------------------|
|                 |                      |                                                                                                                                                                                                                                                                                                                                                                                               | Switching on             |                |                   | Switching off  |                |                   | Switching on                |                |                   | Switching off  |                |                   |
|                 |                      |                                                                                                                                                                                                                                                                                                                                                                                               | I                        | U              | cosφ              | I <sub>c</sub> | U <sub>r</sub> | cosφ              | I                           | U              | cosφ              | I <sub>c</sub> | U <sub>r</sub> | cosφ              |
|                 |                      |                                                                                                                                                                                                                                                                                                                                                                                               | I <sub>e</sub>           | U <sub>e</sub> |                   | I <sub>e</sub> | U <sub>e</sub> |                   | I <sub>e</sub>              | U <sub>e</sub> |                   | I <sub>e</sub> | U <sub>e</sub> |                   |
| AC              | AC-12                | Control of resistive and solid state loads in optocoupler input circuits                                                                                                                                                                                                                                                                                                                      | 1                        | 1              | 0.9               | 1              | 1              | 0.9               | -                           | -              | -                 | -              | -              | -                 |
|                 | AC-13                | Control of solid state loads with transformer isolation                                                                                                                                                                                                                                                                                                                                       | 2                        | 1              | 0.65              | 1              | 1              | 0.65              | 10                          | 1.1            | 0.65              | 1.1            | 1.1            | 0.65              |
|                 | AC-14                | Control of small electromagnetic loads (max. 72 VA)                                                                                                                                                                                                                                                                                                                                           | 6                        | 1              | 0.3               | 1              | 1              | 0.3               | 6                           | 1.1            | 0.7               | 6              | 1.1            | 0.7               |
|                 | AC-15                | Control of electromagnetic loads (above 72 VA)                                                                                                                                                                                                                                                                                                                                                | 10                       | 1              | 0.3               | 1              | 1              | 0.3               | 10                          | 1.1            | 0.3               | 10             | 1.1            | 0.3               |
|                 |                      |                                                                                                                                                                                                                                                                                                                                                                                               | I                        | U              | t <sub>0.95</sub> | I <sub>c</sub> | U <sub>r</sub> | t <sub>0.95</sub> | I                           | U              | t <sub>0.95</sub> | I <sub>c</sub> | U <sub>r</sub> | t <sub>0.95</sub> |
|                 |                      |                                                                                                                                                                                                                                                                                                                                                                                               | I <sub>e</sub>           | U <sub>e</sub> |                   | I <sub>e</sub> | U <sub>e</sub> |                   | I <sub>e</sub>              | U <sub>e</sub> |                   | I <sub>e</sub> | U <sub>e</sub> |                   |
| DC              | DC-12                | Control of resistive and solid state loads in optocoupler input circuits                                                                                                                                                                                                                                                                                                                      | 1                        | 1              | 1 ms              | 1              | 1              | 1 ms              | -                           | -              | -                 | -              | -              | -                 |
|                 | DC-13                | Control of electromagnets                                                                                                                                                                                                                                                                                                                                                                     | 1                        | 1              | 6xP <sup>1)</sup> | 1              | 1              | 6xP <sup>1)</sup> | 1.1                         | 1.1            | 6xP <sup>1)</sup> | 1.1            | 1.1            | 6xP <sup>1)</sup> |
|                 | DC-14                | Control of electromagnetic loads with economy resistors in the circuit                                                                                                                                                                                                                                                                                                                        | 10                       | 1              | 15 ms             | 1              | 1              | 15 ms             | 10                          | 1.1            | 15 ms             | 10             | 1.1            | 15 ms             |

acc. to IEC 947-4-1, EN 60 947 VDE 0660 Part 102

<sup>1)</sup> The value „6xP“ is the result of an empirical relationship which is found to represent most direct current magnetic loads up to an upper limit of P = 50W with 6 [ms]/[W] = 200 [ms]. Loads with a rated power above 50 W are composed of small loads located parallel to each other. Therefore, 300 ms is an upper limit independent of the power rating.

SG59611



Z-S230/SO

## Impulse Relays Z-S

• 16 A 250 VAC

|               |         |   |             |        |         |
|---------------|---------|---|-------------|--------|---------|
| 240 V 50Hz    | 1NO     | 1 | Z-S240/S    | 265261 | 2 / 120 |
| 240 V 50Hz    | 2NO     | 1 | Z-S240/SS   | 265269 | 2 / 120 |
| 240 V 50Hz    | 1NO+1NC | 1 | Z-S240/SO   | 265282 | 2 / 120 |
| 240 V 50Hz    | 2NO+2NC | 2 | Z-S240/2S20 | 265304 | 1 / 60  |
| 240 V 50Hz    | 1CO     | 1 | Z-S240/W    | 265289 | 2 / 120 |
| 240 V 50Hz    | 2CO     | 2 | Z-S240/WW   | 265311 | 1 / 60  |
| 240 V 60Hz    | 2NO     | 1 | Z-S241/SS   | 265268 | 2 / 120 |
| 230 V 50Hz    | 1NO     | 1 | Z-S230/S    | 265262 | 2 / 120 |
| 230 V 50Hz    | 2NO     | 1 | Z-S230/SS   | 265271 | 2 / 120 |
| 230 V 50Hz    | 4NO     | 2 | Z-S230/4S   | 270335 | 1 / 60  |
| 230 V 50Hz    | 1NO+1NC | 1 | Z-S230/SO   | 265283 | 2 / 120 |
| 230 V 50Hz    | 2NO+2NC | 2 | Z-S230/2S20 | 265305 | 1 / 60  |
| 230 V 50Hz    | 1CO     | 1 | Z-S230/W    | 265290 | 2 / 120 |
| 230 V 50Hz    | 2CO     | 2 | Z-S230/WW   | 265312 | 1 / 60  |
| 230 V 60Hz    | 2NO     | 1 | Z-S231/SS   | 265270 | 2 / 120 |
| 110 V 50Hz    | 1NO     | 1 | Z-S110/S    | 265263 | 2 / 120 |
| 110 V 50Hz    | 2NO     | 1 | Z-S110/SS   | 265273 | 2 / 120 |
| 110 V 50Hz    | 1NO+1NC | 1 | Z-S110/SO   | 265284 | 2 / 120 |
| 110 V 50Hz    | 2NO+2NC | 2 | Z-S110/2S20 | 265306 | 1 / 60  |
| 110 V 50Hz    | 1CO     | 1 | Z-S110/W    | 265291 | 2 / 120 |
| 110 V 50Hz    | 2CO     | 2 | Z-S110/WW   | 265313 | 1 / 60  |
| 110 V 60Hz    | 2NO     | 1 | Z-S111/SS   | 265272 | 2 / 120 |
| 110 V DC      | 2NO     | 1 | Z-S109/SS   | 265274 | 2 / 120 |
| 110 V DC      | 1CO     | 1 | Z-S109/W    | 265292 | 2 / 120 |
| 110 V DC      | 2CO     | 2 | Z-S109/WW   | 265314 | 1 / 60  |
| 48VAC/24VDC*) | 1NO     | 1 | Z-S48/S     | 265534 | 2 / 120 |
| 48VAC/24VDC*) | 2NO     | 1 | Z-S48/SS    | 265536 | 2 / 120 |
| 48VAC/24VDC*) | 4NO     | 2 | Z-S48/4S    | 100665 | 1 / 60  |
| 48VAC/24VDC*) | 1NO+1NC | 1 | Z-S48/SO    | 265538 | 2 / 120 |
| 48VAC/24VDC*) | 2NO+2NC | 2 | Z-S48/2S20  | 265540 | 1 / 60  |
| 48VAC/24VDC*) | 1CO     | 1 | Z-S48/W     | 265544 | 2 / 120 |
| 48VAC/24VDC*) | 2CO     | 2 | Z-S48/WW    | 265542 | 1 / 60  |
| 24VAC/12VDC*) | 1NO     | 1 | Z-S24/S     | 265535 | 2 / 120 |
| 24VAC/12VDC*) | 2NO     | 1 | Z-S24/SS    | 265537 | 2 / 120 |
| 24VAC/12VDC*) | 1NO+1NC | 1 | Z-S24/SO    | 265539 | 2 / 120 |
| 24VAC/12VDC*) | 2NO+2NC | 2 | Z-S24/2S20  | 265541 | 1 / 60  |
| 24VAC/12VDC*) | 1CO     | 1 | Z-S24/W     | 265545 | 2 / 120 |
| 24VAC/12VDC*) | 2CO     | 2 | Z-S24/WW    | 265543 | 1 / 60  |
| 24 V 60Hz     | 2NO     | 1 | Z-S25/SS    | 265276 | 2 / 120 |
| 12 V 50Hz     | 1NO     | 1 | Z-S12/S     | 265266 | 2 / 120 |
| 12 V 50Hz     | 2NO     | 1 | Z-S12/SS    | 265278 | 2 / 120 |
| 12 V 50Hz     | 1NO+1NC | 1 | Z-S12/SO    | 265287 | 2 / 120 |
| 12 V 50Hz     | 2NO+2NC | 2 | Z-S12/2S20  | 265309 | 1 / 60  |
| 12 V 50Hz     | 1CO     | 1 | Z-S12/W     | 265296 | 2 / 120 |
| 12 V 50Hz     | 2CO     | 2 | Z-S12/WW    | 265317 | 1 / 60  |
| 8 V 50Hz      | 1NO     | 1 | Z-S8/S      | 265267 | 2 / 120 |
| 8 V 50Hz      | 2NO     | 1 | Z-S8/SS     | 265280 | 2 / 120 |
| 8 V 50Hz      | 1NO+1NC | 1 | Z-S8/SO     | 265288 | 2 / 120 |
| 8 V 50Hz      | 2NO+2NC | 2 | Z-S8/2S20   | 265310 | 1 / 60  |
| 8 V 50Hz      | 1CO     | 1 | Z-S8/W      | 265297 | 2 / 120 |
| 8 V 50Hz      | 2CO     | 2 | Z-S8/WW     | 265318 | 1 / 60  |
| 8 V DC        | 2NO     | 1 | Z-S7/SS     | 265281 | 2 / 120 |
| 8 V DC        | 1CO     | 1 | Z-S7/W      | 265298 | 2 / 120 |
| 8 V DC        | 2CO     | 2 | Z-S7/WW     | 265319 | 1 / 60  |

\*) Doppelspannung AC/DC

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Z-SC230/S

| Control Voltage                                 | Function | MU | Type Designation | Article No. | Units per package |
|-------------------------------------------------|----------|----|------------------|-------------|-------------------|
| <b>Impulse Relays with central control Z-SC</b> |          |    |                  |             |                   |
| 240 V AC 50/60Hz                                | 3NO      | 2  | Z-SC240/3S       | 265320      | 1 / 60            |
| 240 V AC 50/60Hz                                | 1NO+1CO  | 2  | Z-SC240/1S1W     | 265323      | 1 / 60            |
| 240 V AC 50/60Hz                                | 2NO+1NC  | 2  | Z-SC240/2S1O     | 265326      | 1 / 60            |
| 230 V AC 50/60Hz                                | 1NO      | 1  | Z-SC230/S        | 265299      | 2 / 120           |
| 230 V AC 50/60Hz                                | 3NO      | 2  | Z-SC230/3S       | 265321      | 1 / 60            |
| 230 V AC 50/60Hz                                | 1NO+1CO  | 2  | Z-SC230/1S1W     | 265324      | 1 / 60            |
| 230 V AC 50/60Hz                                | 2NO+1NC  | 2  | Z-SC230/2S1O     | 265327      | 1 / 60            |
| 24 V AC 50/60Hz                                 | 1NO      | 1  | Z-SC24/S         | 265300      | 2 / 120           |

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Z-SB230/SS

|                                                |     |   |            |        |         |
|------------------------------------------------|-----|---|------------|--------|---------|
| <b>Impulse Relays with switchable LED Z-SB</b> |     |   |            |        |         |
| 230 V 50Hz                                     | 2NO | 1 | Z-SB230/SS | 265301 | 2 / 120 |
| 24 V 50Hz                                      | 2NO | 1 | Z-SB24/SS  | 265302 | 2 / 120 |
| 24 V DC                                        | 2NO | 1 | Z-SB23/SS  | 265303 | 2 / 120 |

| Description | MU | Type Designation | Article No. | Units per package |
|-------------|----|------------------|-------------|-------------------|
|-------------|----|------------------|-------------|-------------------|

**Accessories for Z-S./.**

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Z-S/KO

|             |   |         |        |         |
|-------------|---|---------|--------|---------|
| Compensator | 1 | Z-S/KO  | 270588 | 2 / 120 |
| Group block | 1 | Z-SC/GP | 270587 | 2 / 120 |

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Z-EK/25

|                                                        |  |                  |        |          |  |
|--------------------------------------------------------|--|------------------|--------|----------|--|
| <b>Busbar</b>                                          |  |                  |        |          |  |
| 1pole angulated grey 10 mm <sup>2</sup>                |  | Z-SV-10/1P-F/13  | 264918 | 10       |  |
| 1pole angulated blue 10 mm <sup>2</sup>                |  | Z-SV-10/N-F/13   | 264919 | 10       |  |
| 1pole angulated grey 16 mm <sup>2</sup>                |  | Z-SV-16/1P-1MU/F | 269523 | 25       |  |
| 1pole angulated blue 16 mm <sup>2</sup>                |  | Z-SV-16/N-1MU/F  | 269524 | 25       |  |
| Extension terminal 25 mm <sup>2</sup> long, straight   |  | Z-EK/25          | 264935 | 10 / 600 |  |
| Extension terminal 25 mm <sup>2</sup> short, straight  |  | Z-EK/25/K        | 269525 | 10 / 600 |  |
| Extension terminal 25 mm <sup>2</sup> long, crosswise  |  | Z-EK/25/QL       | 264937 | 10 / 600 |  |
| Extension terminal 25 mm <sup>2</sup> short, crosswise |  | Z-EK/25/Q        | 264936 | 10 / 600 |  |



### Description Impulse Relays Z-S

- Impulse relays according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Separately switchable LED (Z-SB../SS) for signalling purposes
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard pin busbar

#### Security:

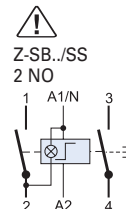
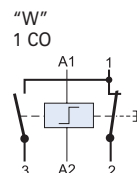
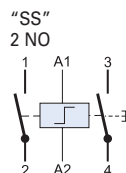
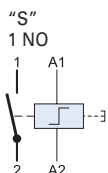
- Optional optical operating status display by means of LED
- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4

#### Advantages:

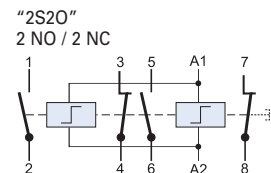
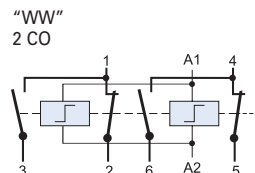
- Available in two versions (Z-S., Z-SB.)
- Low switching noise
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

### Connection diagram

#### 1MU Z-S./.

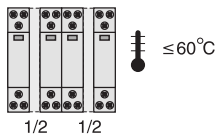


#### 2MU Z-S./.

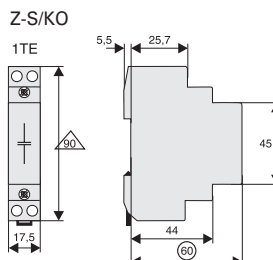
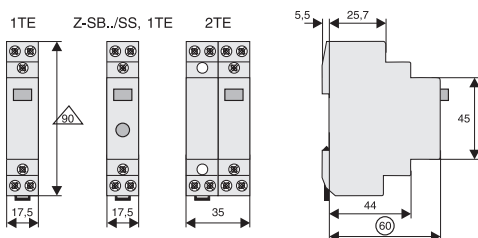


### Packing density

Spacers obligatory! (Z-DST)



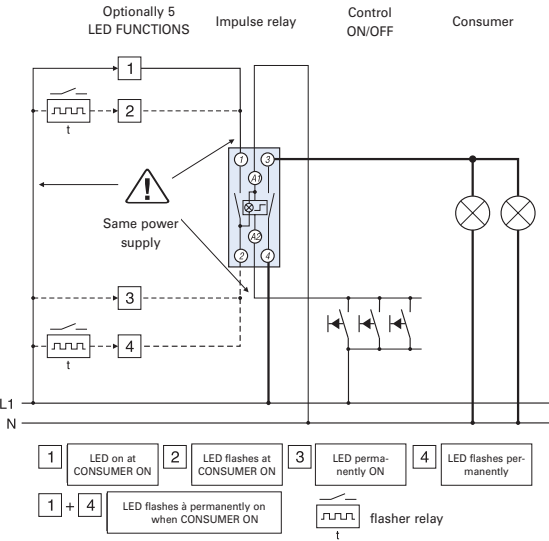
### Dimensions (mm)



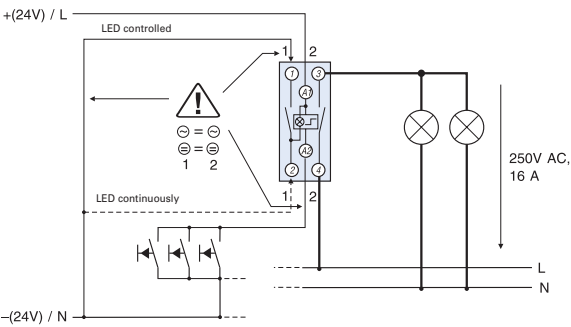
## Technical Data

|                                                                                  |           | Z-S                                                                                                   |
|----------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>                                                                |           |                                                                                                       |
| Rated current (IEC/EN 60669-2-2) 250 V AC                                        |           | 16 A                                                                                                  |
| Number of poles                                                                  |           | 1 to 4                                                                                                |
| Main contacts                                                                    |           |                                                                                                       |
| NO/NC                                                                            |           | 1/2 (1MU), 3/4 (2MU)                                                                                  |
| CO                                                                               |           | 1 (1MU), 2 (2MU)                                                                                      |
| <b>Control circuit</b>                                                           |           |                                                                                                       |
| Rated control feed voltage                                                       | $U_s$     |                                                                                                       |
| AC                                                                               |           | 8, 12, 24, 48, 230 V                                                                                  |
| DC                                                                               |           | 8, 12, 24, 110 V                                                                                      |
| Alternative control voltages, frequencies, and contact arrangements upon enquiry |           |                                                                                                       |
| Rated frequency                                                                  |           | 50 Hz                                                                                                 |
| Operating range                                                                  |           | 0.9-1.1 x $U_s$                                                                                       |
| Pickup power of coils                                                            |           | 12 VA / 7 W typ.                                                                                      |
| Max. number of parallel pushbutton units                                         |           | unlimited                                                                                             |
| Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.           |           |                                                                                                       |
| without compensation                                                             |           | 8 units (1MU), 15 units (2MU)                                                                         |
| with compensation 1 x Z-SC/KO (Z-S/KO)                                           |           | 23 units (1MU), –                                                                                     |
| with compensation 2 x Z-SC/KO (Z-S/KO)                                           |           | 46 units (1MU), 43 units (2MU)                                                                        |
| Minimum command duration                                                         |           | > 200 ms                                                                                              |
| Operating noise                                                                  |           | no humming                                                                                            |
| Rated peak withstand voltage (1.2/50 $\mu$ s)                                    | $U_{imp}$ | 2 kV                                                                                                  |
| Duty max. (only in case of breakdown of control system)                          |           | 1 h, 100% with spacer                                                                                 |
| <b>Load Circuit</b>                                                              |           |                                                                                                       |
| Rated operational voltage                                                        | $U_e$     |                                                                                                       |
| 1p, 2p                                                                           |           | 250 VAC                                                                                               |
| 3p, 4p                                                                           |           | 240/415 VAC                                                                                           |
| Minimum operational voltage                                                      | $U_{min}$ | 24 V AC/DC ( $U_s$ 8-110 V)                                                                           |
| Rated insulation voltage                                                         | $U_i$     | 500 V                                                                                                 |
| Rated peak withstand voltage (1.2/50 $\mu$ s)                                    | $U_{imp}$ | 4 kV                                                                                                  |
| Conventional thermal current                                                     | $I_{th}$  | 16 A AC                                                                                               |
| Rated operational current                                                        | $I_e$     | 16 A AC                                                                                               |
| Rated constant current                                                           | $I_u$     | 16 A AC                                                                                               |
| Rated current DC                                                                 | $I_e$     |                                                                                                       |
| 24 V                                                                             |           | 16 A                                                                                                  |
| 48 V                                                                             |           | 12.5 A                                                                                                |
| 230 V                                                                            |           | 1 A                                                                                                   |
| Conditional rated short circuit current                                          | $I_q$     | 10 kA (with 20 A gL/gG)                                                                               |
| Duration of bouncing                                                             |           | < 10 ms (typ. < 5 ms)                                                                                 |
| Endurance                                                                        |           |                                                                                                       |
| electrical components                                                            |           | $\geq 40 \times 10^3$ switching operations                                                            |
| mechanical components                                                            |           | $\geq 1 \times 10^6$ switching operations                                                             |
| <b>Mechanical</b>                                                                |           |                                                                                                       |
| Frame size                                                                       |           | 45 mm                                                                                                 |
| Device height                                                                    |           | 90 mm                                                                                                 |
| Device width                                                                     |           | 17.5 mm pro MU                                                                                        |
| Mounting                                                                         |           | quick fastening on DIN rail IEC/EN 60715                                                              |
| Degree of protection, built-in                                                   |           | IP20                                                                                                  |
| Mounting position                                                                |           | as required                                                                                           |
| Upper and lower terminals                                                        |           | lift terminals (captive)                                                                              |
| Terminal capacity                                                                |           |                                                                                                       |
| Contact and coil                                                                 |           | 0.5 - 10 mm <sup>2</sup> one- or more wire<br>0.5 - 6 mm <sup>2</sup> fine wires with wire end sleeve |
| Temperature range                                                                |           | -20 to +45 °C                                                                                         |
| Total contact gap                                                                |           | > 5mm / independent contacts                                                                          |
| Contact material                                                                 |           | does not contain cadmium                                                                              |
| <b>Accessories</b>                                                               |           |                                                                                                       |
| Capacitor block                                                                  |           | 1.5 $\mu$ F, 240 V AC                                                                                 |

Impulse Relays with switchable LED



24 V AC and DC Application



### Description Impulse Relays Z-SC with Central Control

- Impulse relay according to EN/IEC 60669 for switching electrical consumers in impulse operation.
- Local and central control, capable of switching 2-stage groups
- Shape and terminal compatible with the installation relay range
- Manual operation for testing purposes is possible
- Glow lamps of illuminated pushbuttons connected parallel produce reactive currents which may be compensated by a capacitor block in order to prevent excessive heating of coils in case of high numbers of glow lamps.
- Glow lamps parallel to control keys according to table
- Main contacts can be connected to standard busbar

#### Security:

- Switching position indicated on the front side by manual operating key
- All terminals - coil and contacts - equipped with guide for secure terminal connection. Misplacement of wires impossible.
- Made of hardly flammable materials and plastics free from chlorine and halogens.
- Finger and hand touch safe according to VBG4.

#### Advantages:

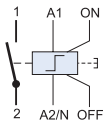
- Low switching noise
- Easy to connect thanks to large terminals which are supplied open
- Simple snap-on fastening on 35 mm DIN rail
- High degree of flexibility thanks to a variety of contact configurations
- Easy access for coil connection

### Connection diagram

#### 1MU Z-SC./S

"S"

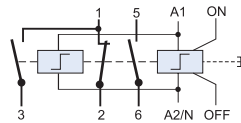
1 NO



#### 2MU Z-SC./.

"1S1W"

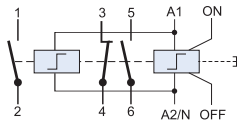
1 NO / 1 CO



#### 2MU Z-SC./.

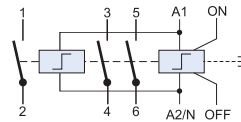
"2S1O"

2 NO / 1 NC



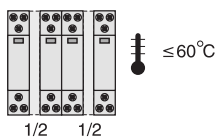
"3S"

3 NO

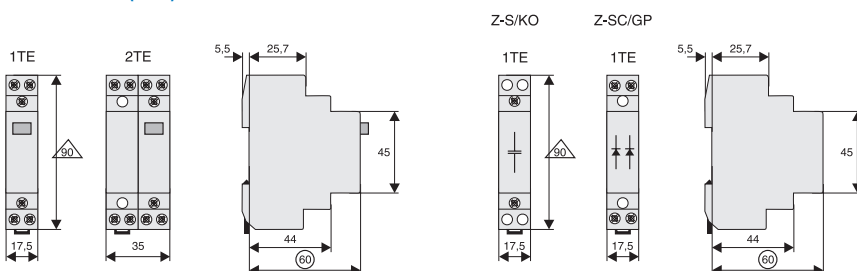


### Packing density

Spacers obligatory! (Z-DST)



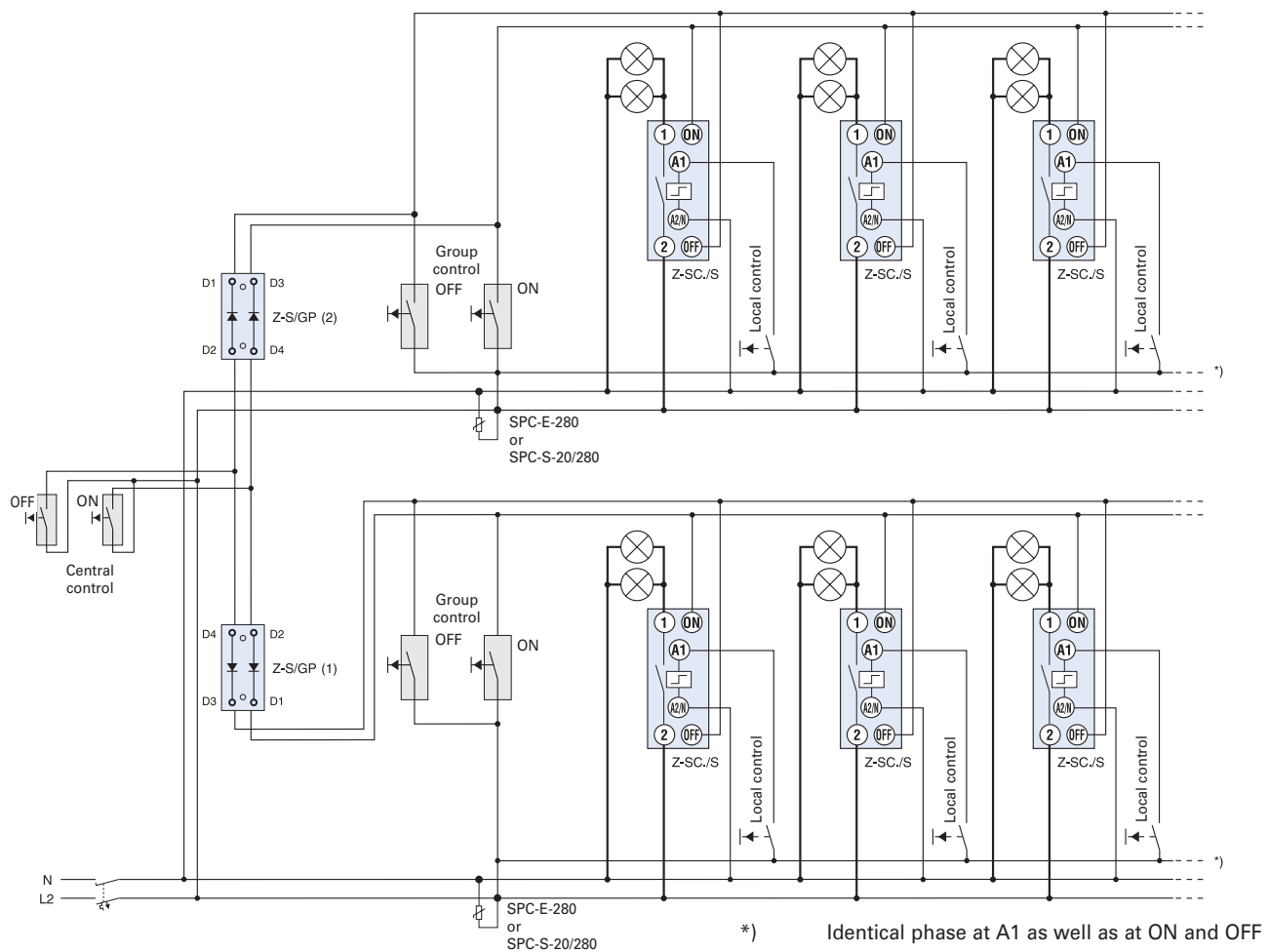
### Dimensions (mm)



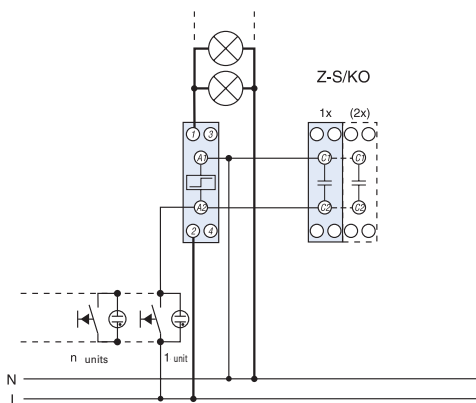
## Technical Data

| Z-SC                                                                             |                                                                                                       |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>                                                                |                                                                                                       |
| Rated current (IEC/EN 60669-2-2) 250 V AC                                        | 16 A                                                                                                  |
| Number of poles                                                                  | 1 to 3                                                                                                |
| Main contacts                                                                    |                                                                                                       |
| NO                                                                               | 1 (1MU), 3 (2MU)                                                                                      |
| NO/NC                                                                            | 2+1 (2MU)                                                                                             |
| CO/NO                                                                            | 1 (2MU)                                                                                               |
| <b>Control circuit</b>                                                           |                                                                                                       |
| Rated control feed voltage                                                       | $U_s$                                                                                                 |
| AC                                                                               | 12, 24, 230, 240 V                                                                                    |
| Alternative control voltages, frequencies, and contact arrangements upon enquiry |                                                                                                       |
| Rated frequency                                                                  | 50 Hz; 50-60 Hz 240 V                                                                                 |
| Operating range                                                                  | $0.9-1.1 \times U_s$                                                                                  |
| Maximum power of coils, pick-up                                                  |                                                                                                       |
| $U_s = 24 \text{ V}$                                                             | 25 VA (15W)                                                                                           |
| $U_s = 230 \text{ V}$                                                            | 32 VA (19W)                                                                                           |
| Max. number of parallel pushbutton units                                         | unlimited                                                                                             |
| Max. number of parallel illuminated pushbutton units 230 V 0.6 mA typ.           |                                                                                                       |
| without compensation                                                             | 4 units (1MU, 2MU)                                                                                    |
| with compensation 1 x Z-SC/KO (Z-S/KO)                                           | 19 units (1MU), 9 units (2MU)                                                                         |
| with compensation 2 x Z-SC/KO (Z-S/KO)                                           | 30 units (1MU), 18 units (2MU)                                                                        |
| Minimum command duration                                                         | > 200 ms                                                                                              |
| Operating noise                                                                  | no humming                                                                                            |
| Rated peak withstand voltage (1.2/50 $\mu$ s)                                    | $U_{imp}$ 2 kV                                                                                        |
| Duty max. (only in case of breakdown of control system)                          | 100% (1MU), <100% (2MU), 1h max. with spacer                                                          |
| <b>Load Circuit</b>                                                              |                                                                                                       |
| Rated operational voltage                                                        | $U_e$                                                                                                 |
| 1p, 2p                                                                           | 250 VAC                                                                                               |
| 3p                                                                               | 240/415 VAC                                                                                           |
| Minimum operational voltage                                                      | $U_{min}$ 24 V AC/DC ( $U_s$ 8-110 V)                                                                 |
| Rated insulation voltage                                                         | $U_i$ 500 V                                                                                           |
| Rated peak withstand voltage (1.2/50 $\mu$ s)                                    | $U_{imp}$ 4 kV                                                                                        |
| Conventional thermal current                                                     | $I_{th}$ 16 A AC                                                                                      |
| Rated operational current                                                        | $I_e$ 16 A AC                                                                                         |
| Rated constant current                                                           | $I_u$ 16 A AC                                                                                         |
| Rated current DC                                                                 | $I_e$                                                                                                 |
| 24 V                                                                             | 16 A                                                                                                  |
| 48 V                                                                             | 12.5 A                                                                                                |
| 230 V                                                                            | 1 A                                                                                                   |
| Conditional rated short circuit current                                          | $I_q$ 10 kA (with 20 A gL/gG)                                                                         |
| Duration of bouncing                                                             | < 10 ms (typ. < 5 ms)                                                                                 |
| Endurance                                                                        |                                                                                                       |
| electrical components                                                            | $\geq 40 \times 10^3$ switching operations                                                            |
| mechanical components                                                            | $\geq 1 \times 10^6$ switching operations                                                             |
| <b>Mechanical</b>                                                                |                                                                                                       |
| Frame size                                                                       | 45 mm                                                                                                 |
| Device height                                                                    | 90 mm                                                                                                 |
| Device width                                                                     | 17.5 mm (1MU), 35 mm (2MU)                                                                            |
| Mounting                                                                         | quick fastening on DIN rail IEC/EN 60715                                                              |
| Degree of protection, built-in                                                   | IP20                                                                                                  |
| Mounting position                                                                | as required                                                                                           |
| Upper and lower terminals                                                        | lift terminals (captive)                                                                              |
| Terminal capacity                                                                |                                                                                                       |
| Contact and coil                                                                 | 0.5 - 10 mm <sup>2</sup> one- or more wire<br>0.5 - 6 mm <sup>2</sup> fine wires with wire end sleeve |
| Temperature range                                                                | -20 to +45 °C                                                                                         |
| Total contact gap                                                                | > 5mm / independent contacts                                                                          |
| Contact material                                                                 | does not contain cadmium                                                                              |
| <b>Accessories</b>                                                               |                                                                                                       |
| Capacitor block                                                                  | 1.5 $\mu$ F, 240 V AC                                                                                 |
| Group block                                                                      | 240 V AC                                                                                              |

## Block Diagram for Central, Group, and Local Control



## Compensation by means of Capacitor Block



**Utilisation categories (according to IEC/EN 60947-4-1)****Utilisation categories 1MU (1S, 2S, 1S+10, 1W), 2MU (2S+20, 2W, 3S+10) Z-S, Z-ZC, Z-SB**

|                                                                |       |                                          |  |
|----------------------------------------------------------------|-------|------------------------------------------|--|
| AC-1 $\text{--}\triangle\triangle\text{--}$                    |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 250 V AC                                 |  |
| Rated operational current                                      | $I_e$ | 16 A AC                                  |  |
| Rated operational power AC-1                                   |       | 3200 W ( $\cos\varphi = 0.8$ ), 4000 VA  |  |
| Make-/break-current AC-1                                       | $I_c$ | 24 A AC                                  |  |
| AC-3 $\text{Ⓢ}$                                                |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 250 V AC                                 |  |
| Rated operational current                                      | $I_e$ | 8 A AC                                   |  |
| Rated operational power AC-3                                   |       | 900 W ( $\cos\varphi = 0.45$ ), 2000 VA  |  |
| Make-/break-current AC-3                                       | $I_c$ | 80 A AC                                  |  |
| AC-5a $\text{ⓧ}$                                               |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 250 V AC                                 |  |
| Rated operational current                                      | $I_e$ | 10 A AC                                  |  |
| Rated operational power AC-5a                                  |       | 1125 W ( $\cos\varphi = 0.45$ ), 2500 VA |  |
| Make-/break-current AC-5a                                      | $I_c$ | 30 A AC                                  |  |
| AC-5b $\text{ⓧ}$                                               |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 230 V AC                                 |  |
| Rated operational current                                      | $I_e$ | 8.8 A AC                                 |  |
| Rated operational power AC-5b                                  |       | 2024 W                                   |  |
| Make-/break-current AC-5b                                      | $I_c$ | 13.2 A AC                                |  |
| AC-7a (according to EN 61095) $\text{--}\blacksquare\text{--}$ |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 250 V AC                                 |  |
| Rated operational current                                      | $I_e$ | 16 A AC                                  |  |
| Rated operational power AC-7a                                  |       | 3200 W ( $\cos\varphi = 0.8$ ), 4000 VA  |  |
| Make-/break-current AC-7a                                      | $I_c$ | 24 A AC                                  |  |

**Utilisation categories 2MU (3S, 4S)**

|                                                                |       |                                          |  |
|----------------------------------------------------------------|-------|------------------------------------------|--|
| AC-1 $\text{--}\triangle\triangle\text{--}$                    |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 240/415 V AC                             |  |
| Rated operational current                                      | $I_e$ | 16 A AC                                  |  |
| Rated operational power AC-1                                   |       | 3200 W ( $\cos\varphi = 0.8$ ), 4000 VA  |  |
| Make-/break-current AC-1                                       | $I_c$ | 24 A AC                                  |  |
| AC-3 $\text{Ⓢ}$                                                |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 240/415 V AC                             |  |
| Rated operational current                                      | $I_e$ | 8 A AC                                   |  |
| Rated operational power AC-3                                   |       | 900 W ( $\cos\varphi = 0.45$ ), 2000 VA  |  |
| Make-/break-current AC-3                                       | $I_c$ | 80 A AC / 64 A AC                        |  |
| AC-5a $\text{ⓧ}$                                               |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 240/415 V AC                             |  |
| Rated operational current                                      | $I_e$ | 10 A AC                                  |  |
| Rated operational power AC-5a                                  |       | 1125 W ( $\cos\varphi = 0.45$ ), 2500 VA |  |
| Make-/break-current AC-5a                                      | $I_c$ | 30 A AC                                  |  |
| AC-5b $\text{ⓧ}$                                               |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 230/400 V AC                             |  |
| Rated operational current                                      | $I_e$ | 8.8 A AC                                 |  |
| Rated operational power AC-5b                                  |       | 2024 W                                   |  |
| Make-/break-current AC-5b                                      | $I_c$ | 13.2 A AC                                |  |
| AC-7a (according to EN 61095) $\text{--}\blacksquare\text{--}$ |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 240/415 V AC                             |  |
| Rated operational current                                      | $I_e$ | 16 A AC                                  |  |
| Rated operational power AC-7a                                  |       | 3200 W ( $\cos\varphi = 0.8$ ), 4000 VA  |  |
| Make-/break-current AC-7a                                      | $I_c$ | 24 A AC                                  |  |
| AC-7b (according to EN 61095) $\text{Ⓢ}$                       |       |                                          |  |
| Rated operational voltage                                      | $U_e$ | 240/415 V AC                             |  |
| Rated operational current                                      | $I_e$ | 10 A AC                                  |  |
| Rated operational power AC-7b                                  |       | 1125 W ( $\cos\varphi = 0.8$ ), 2500 VA  |  |
| Make-/break-current AC-7b                                      | $I_c$ | 30 A AC                                  |  |

| Lamp Types                                                                          | Power<br>W | Current<br>A | Capacitor<br>μF | <b>Z-S, Z-ZC, Z-SB</b><br>max. number of lamps per current path at 230 V, 50 Hz |
|-------------------------------------------------------------------------------------|------------|--------------|-----------------|---------------------------------------------------------------------------------|
| Incandescent Lamps                                                                  | 60         | 0.27         |                 | 33                                                                              |
| Low-voltage halogen lamps (12 or 24 V)<br>with transformer / electronic transformer | 20         | 0.09         | -               | 55                                                                              |
|                                                                                     | 50         | 0.22         | -               | 22                                                                              |
|                                                                                     | 75         | 0.33         | -               | 14                                                                              |
|                                                                                     | 100        | 0.43         | -               | 11                                                                              |
|                                                                                     | 150        | 0.65         | -               | 7                                                                               |
|                                                                                     | 200        | 0.87         | -               | 5                                                                               |
|                                                                                     | 300        | 1.3          | -               | 3                                                                               |
| Fluorescent tubes without compensation or<br>with series compensation               | 11         | 0.16         | 1.3             | 62                                                                              |
|                                                                                     | 18         | 0.37         | 2.7             | 27                                                                              |
|                                                                                     | 24         | 0.35         | 2.5             | 27                                                                              |
|                                                                                     | 36         | 0.43         | 3.4             | 24                                                                              |
|                                                                                     | 58         | 0.67         | 5.3             | 15                                                                              |
|                                                                                     | 65         | 0.67         | 5.3             | 14                                                                              |
|                                                                                     | 85         | 0.8          | 5.3             | 12                                                                              |
| Fluorescent tubes lead-lag circuit                                                  | 11         | 0.07         | -               | 2 x 71                                                                          |
|                                                                                     | 18         | 0.11         | -               | 2 x 45                                                                          |
|                                                                                     | 24         | 0.14         | -               | 2 x 35                                                                          |
|                                                                                     | 36         | 0.22         | -               | 2 x 22                                                                          |
|                                                                                     | 58         | 0.35         | -               | 2 x 14                                                                          |
|                                                                                     | 65         | 0.35         | -               | 2 x 14                                                                          |
|                                                                                     | 85         | 0.47         | -               | 2 x 10                                                                          |
| Fluorescent tubes with parallel compensa-<br>tion                                   | 11         | 0.16         | 3.0             | 34                                                                              |
|                                                                                     | 18         | 0.37         | 4.0             | 26                                                                              |
|                                                                                     | 24         | 0.35         | 4.0             | 26                                                                              |
|                                                                                     | 36         | 0.43         | 4.0             | 26                                                                              |
|                                                                                     | 58         | 0.67         | 7.0             | 14                                                                              |
|                                                                                     | 65         | 0.67         | 7.0             | 14                                                                              |
|                                                                                     | 85         | 0.8          | 8.0             | 13                                                                              |
| Fluorescent tubes with electronic ballast                                           | 18         | 0.09         | -               | 32                                                                              |
|                                                                                     | 36         | 0.16         | -               | 16                                                                              |
|                                                                                     | 58         | 0.25         | -               | 12                                                                              |
|                                                                                     | 2 x 18     | 0.17         | -               | 16                                                                              |
|                                                                                     | 2 x 36     | 0.32         | -               | 8                                                                               |
|                                                                                     | 2 x 58     | 0.49         | -               | 6                                                                               |

**LED Lamps**

|                                                                                                | <b>Z-S</b>                                                                                                                                   |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| LED Lamps.<br>Pay attention on the inrush current of the<br>ballast and $\cos\phi$ of the lamp | max. permissible inrush current<br>of installation relay (A)<br><u>Max. Inrush current installation relay (A)</u><br>Inrush current lamp (A) |
|                                                                                                | 80 A<br><br><br>= max. number of lamps per pole ( $I_{nLED} \leq I_{th}$ )                                                                   |



Function

Type  
Designation

Article No.

Units per  
package

### Staircase Switch with switch-off warning and stop function TL

SG07312



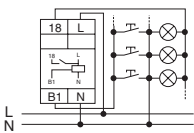
|                                                                                                |     |        |         |
|------------------------------------------------------------------------------------------------|-----|--------|---------|
| Staircase switch with switchoff warning and stop function                                      | TLE | 101064 | 2 / 120 |
| Staircase switch as TLE, with additional control input for central control, zero-voltage proof | TLK | 101066 | 2 / 120 |

### Description Staircase Switch with switch-off warning and stop function TL

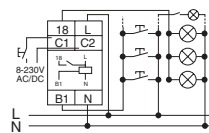
- Automatic electronic staircase switch
- Switch-off warning can be switched off (type TLK)
- Subsequent switching is possible, programmable long-time function
- Power saving function, low switching noise
- Automatic 3-/4 wire circuit recognition
- Zero voltage safety thanks to memory function (type TLK)
- Central control function (type TLK)
- External voltage control input (type TLK)

### Connection diagram

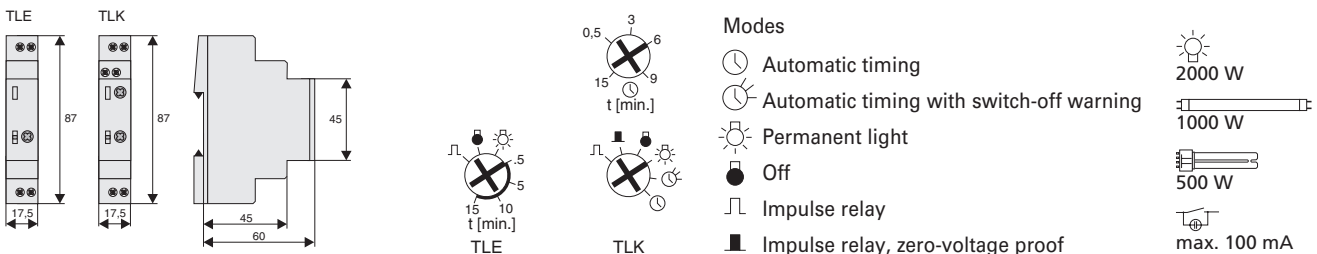
e.g. 3 wire circuit TLE



e.g. 4 wire circuit with attic lighting TLK



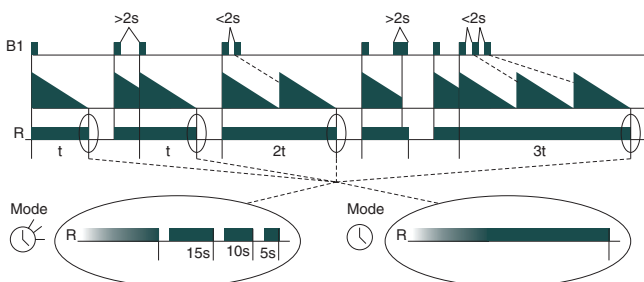
### Dimensions (mm)



### Functional Description

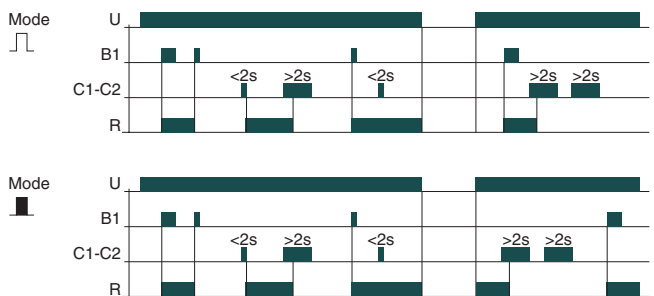
#### Automatic timing ⌚ ⌚/⌚:

After pushing the button the output relay closes (terminals L-18) and the set time starts to run. If the button is pushed again before the time  $t$  has lapsed the time re-starts from zero (subsequent switching function in accordance with EN 60669-2-3). Repeated quick pressing of the pushbutton („pumping“) leads to the addition of 2, 3 or more time intervals up to 60 min. Pushing the button once for a long time ( $> 2$  s) stops the running lighting period, and the relay switches off (power saving function). In the ⌚/⌚ function, the device generates short pulses (flickering) as a switch-off warning (according to DIN 18015-2), 15 s, 10 s, and 5 s prior to switching off.



#### Impulse mode ⏏ ⏏:

In the impulse mode each push of the button makes the output relay switch over. In the function ⏏ the output relay is always open after the feed voltage has been applied. In the function ⏏ the relay immediately picks up when the feed voltage is applied provided that it was closed prior to the power failure. By applying a short voltage pulse ( $< 2$  s) to the additional control input C1-C2 the relay R is switched on (central ON). A longer voltage pulse ( $> 2$  s) causes the relay R to switch off (central OFF).



The additional control input permits activating the staircase switch e.g. from an intercom system by means of a voltage from 8 to 230 V AC/DC in the modes ⌚ and ⌚/⌚. This input channel permits starting the lighting time, as well as subsequent switching. Switching off (power saving function) and programming of longer lighting periods („pumping“) is not possible via this input channel.

## Technical Data

|                                         | TL                                                                 |
|-----------------------------------------|--------------------------------------------------------------------|
| <b>Electrical</b>                       |                                                                    |
| Feed voltage                            | 230 V AC                                                           |
| Rated voltage tolerance                 | -15%, +10%                                                         |
| Power consumption                       | 6 VA (0.8 W)                                                       |
| Rated frequency                         | 48-63 Hz                                                           |
| Duty                                    | 100%                                                               |
| Reset time                              | 500 ms                                                             |
| Adjustment range                        | 0.5 - 15 min.                                                      |
| Overvoltage category                    | III (in accordance with IEC 60664-1)                               |
| Rated surge voltage                     | 4 kV                                                               |
| <b>Output</b>                           |                                                                    |
| Switching contact                       | 1 NO (Terminals L-18)                                              |
| Rated voltage                           | 250 VAC                                                            |
| Constant current                        | 16 A                                                               |
| Switch on peak current (20 ms)          | 80 A                                                               |
| Breaking capacity AC                    | 4000 VA / AC1, 384 W / DC                                          |
| Maximum current                         | 30 A / < 3s                                                        |
| Switching voltage                       | 250 V AC1 / 24 V DC                                                |
| Min. Breaking capacity DC               | 500 mW                                                             |
| Output indication                       | yellow LED (发)                                                     |
| Mechanical endurance                    | 30 x 10 <sup>6</sup> switching operations                          |
| Electrical endurance (AC1)              | 10 x 10 <sup>5</sup> switching operations 16 A / 250 V             |
| <b>Control input B1</b>                 |                                                                    |
| Connection (carrying voltage)           | Pushbutton T-N (3-wire circuit)<br>Pushbutton T-L (4-wire circuit) |
| Glow lamps parallel to control keys     | max. 100 mA                                                        |
| Overload protection                     | electronic                                                         |
| <b>Control input</b>                    |                                                                    |
| C1-C2 (Type TLK)                        | 8-230 V AC/DC                                                      |
| <b>Mechanical</b>                       |                                                                    |
| Frame size                              | 45 mm                                                              |
| Device height                           | 87 mm                                                              |
| Device width                            | 17.5 mm (1MU)                                                      |
| Mounting                                | quick fastening on DIN rail IEC/EN 60715                           |
| Degree of protection / Pollution degree | IP20 / 2                                                           |
| Type of connection                      | lift terminals according to VBG 4 (PZ1 required)                   |
| Terminal capacity                       | 1x 0.5-4 mm <sup>2</sup> , 2x 0.5-2.5 mm <sup>2</sup>              |
| Tightening torque                       | max. 1 Nm                                                          |
| Temperature range                       | -25 to +55 °C                                                      |
| Operation position                      | as required                                                        |

SG07412



ZRMF1/W

SG07912



ZRMF2/WW

| Function                 | Contactors | Type Designation | Article No. | Units per package |
|--------------------------|------------|------------------|-------------|-------------------|
| <b>Time-Lag Relay ZR</b> |            |                  |             |                   |
| E, R                     | 1CO        | ZRER/W           | 110405      | 2 / 120           |
| E, R, Ws, Wa, Es, Wu, Bp | 1CO        | ZRMF1/W          | 110406      | 2 / 120           |
| E, R, Ws, Wa, Es, Wu, Bp | 2CO        | ZRMF2/WW         | 110408      | 1 / 60            |
| Ip, li                   | 1CO        | ZRTAK/W          | 110747      | 2 / 120           |

Description Time-Lag Relay ZR

Functions

- **ZRER/W**
  - E ON delay
  - R OFF delay
- **ZRMF1/W, ZRMF2/WW**
  - E ON delay
  - R OFF delay
  - Ws Single shot leading edge with control input
  - Wa Single shot trailing edge with control input
  - Es ON delay with control input
  - Wu Single shot leading edge voltage controlled
  - Bp Flasher pause first
- **ZRTAK/W**
  - Ip Asymmetric flasher pause first
  - li Asymmetric flasher pulse first (with bridge A1-B1)

Indicators

ZRER/W, ZRMF1/W, ZRMF2/WW

- Green LED U/t ON: indication of supply voltage
- Green LED U/t flashes: indication of time period
- Gelbe LED R ON/OFF: indication of output relay

ZRTAK/W

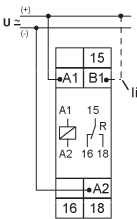
- Green LED U/t ON: indication of supply voltage
- Green LED U/t slow flashing: indication of time period t1
- Green LED U/t fast flashing: indication of time period t2
- Gelbe LED R ON/OFF: indication of output relay

Time Ranges

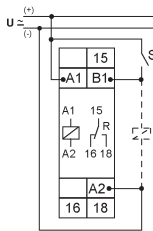
| Absolute time range | Adjustment range |       |
|---------------------|------------------|-------|
| 1s                  | 50ms             | 1s    |
| 10s                 | 500ms            | 10s   |
| 1min                | 3s               | 1min  |
| 10min               | 30s              | 10min |
| 1h                  | 3min             | 1h    |
| 10h                 | 30min            | 10h   |
| 100h                | 5h               | 100h  |

Connection diagram

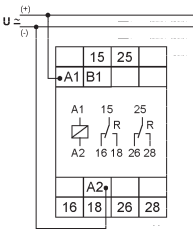
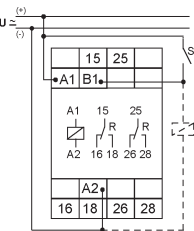
Type ZRTAK/W



Type ZRER/W, ZRMF1/W



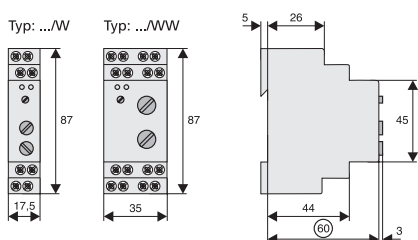
Type ZRMF2/WW



## Technical Data

| ZR                                                                         |                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>                                                          |                                                                                                                                                                                                                                                   |
| Standard according                                                         | EN 60669                                                                                                                                                                                                                                          |
| Basic accuracy                                                             | ±1% (of scale end value)                                                                                                                                                                                                                          |
| Setting accuracy                                                           | <5% (of scale end value)                                                                                                                                                                                                                          |
| Repeating accuracy:                                                        | <0.5% or ±5ms                                                                                                                                                                                                                                     |
| Effect of voltage                                                          | —                                                                                                                                                                                                                                                 |
| Effect of temperature                                                      | ≤0.01% / °C                                                                                                                                                                                                                                       |
| <b>Input circuit</b>                                                       |                                                                                                                                                                                                                                                   |
| Feed voltage Terminals A1-A2                                               | 24 V to 240 V AC/DC, 24 V / -15% to 240 V / +10%                                                                                                                                                                                                  |
| Rated frequency                                                            | 48 to 63 Hz                                                                                                                                                                                                                                       |
| Power consumption                                                          |                                                                                                                                                                                                                                                   |
| Type: .../W                                                                | 4 VA (1.5 W)                                                                                                                                                                                                                                      |
| Type: .../WW                                                               | 6 VA (2 W)                                                                                                                                                                                                                                        |
| Duty                                                                       | 100%                                                                                                                                                                                                                                              |
| Reset time                                                                 | 100 ms                                                                                                                                                                                                                                            |
| Residual ripple in case of DC                                              | 10%                                                                                                                                                                                                                                               |
| Release voltage                                                            | >30% of min. feed voltage                                                                                                                                                                                                                         |
| <b>Output circuit</b>                                                      |                                                                                                                                                                                                                                                   |
| Breaking capacity                                                          | 2000 VA (8 A / 250 V AC)                                                                                                                                                                                                                          |
| Fuse protection                                                            | 8 A fast                                                                                                                                                                                                                                          |
| Endurance                                                                  |                                                                                                                                                                                                                                                   |
| electrical components at a resistive load of 1000 VA                       | 2 x 10 <sup>5</sup> switching operations                                                                                                                                                                                                          |
| mechanical components                                                      | 20 x 10 <sup>6</sup> switching operations                                                                                                                                                                                                         |
| Switching frequency                                                        |                                                                                                                                                                                                                                                   |
| at a resistive load of 100 VA                                              | max. 60/min                                                                                                                                                                                                                                       |
| at a resistive load of 1000 VA (in accordance with IEC 60947-5-1)          | max. 6/min                                                                                                                                                                                                                                        |
| Rated surge voltage                                                        | 4 kV                                                                                                                                                                                                                                              |
| Overvoltage category                                                       | III (in accordance with IEC 60664-1)                                                                                                                                                                                                              |
| <b>Control contact</b>                                                     |                                                                                                                                                                                                                                                   |
| Input carrying potential                                                   | Terminals A1-B1                                                                                                                                                                                                                                   |
| loadable                                                                   | yes                                                                                                                                                                                                                                               |
| Maximum line length                                                        | 10 m                                                                                                                                                                                                                                              |
| Overload protection                                                        | electronic                                                                                                                                                                                                                                        |
| Minimum control pulse length                                               |                                                                                                                                                                                                                                                   |
| DC                                                                         | 50 ms                                                                                                                                                                                                                                             |
| AC                                                                         | 100 ms                                                                                                                                                                                                                                            |
| Trigger level (sensitivity)                                                | automatic adaption to supply voltage                                                                                                                                                                                                              |
| <b>Mechanical</b>                                                          |                                                                                                                                                                                                                                                   |
| Frame size                                                                 | 45 mm                                                                                                                                                                                                                                             |
| Device height                                                              | 87 mm                                                                                                                                                                                                                                             |
| Device width                                                               | 17.5 mm (/W) and 35 mm (/WW)                                                                                                                                                                                                                      |
| Degree of protection, built-in                                             | IP40                                                                                                                                                                                                                                              |
| Operation position                                                         | as required                                                                                                                                                                                                                                       |
| Upper and lower terminals                                                  | lift terminals                                                                                                                                                                                                                                    |
| Terminal protection                                                        | finger and hand touch safe according to DGUV VS3, EN 50274                                                                                                                                                                                        |
| Terminal capacity                                                          | 1 x 0.5-2.5 mm <sup>2</sup> with/without multicore cable end<br>1 x 4 mm <sup>2</sup> without multicore cable end<br>2 x 0.5-1.5 mm <sup>2</sup> with/without multicore cable end<br>2 x 2.5 mm <sup>2</sup> flexible without multicore cable end |
| Tightening torque of terminal screws                                       | max. 1 Nm                                                                                                                                                                                                                                         |
| Permitted relative air humidity in accordance with IEC 60721-3-3 class 3K3 | 15 to 85%                                                                                                                                                                                                                                         |
| Ambient temperature in accordance with IEC 60068-1                         | -25 to +55 °C                                                                                                                                                                                                                                     |
| Storage and transport temperature                                          | -25 to +70 °C                                                                                                                                                                                                                                     |
| Pollution degree                                                           | 2                                                                                                                                                                                                                                                 |
| when built in                                                              | 3                                                                                                                                                                                                                                                 |

## Dimensions (mm)



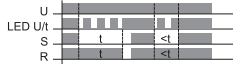
## Description of Functions

• **ON delay (E)**

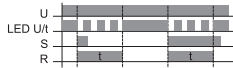
When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the expiry of the interval t, the interval already expired is erased and is restarted when the supply voltage is next applied.

• **OFF delay (R)**

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval t begins (green LED flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). If the control contact is closed again before the interval t has expired, the interval already expired is erased and is restarted.

• **Single shot leading edge with control input (Ws)**

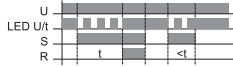
The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the output relay R switches into on-position (green LED U/t illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

• **Single shot trailing edge with control input (Wa)**

The supply voltage U must be constantly applied to the device (green LED U/t illuminated). Closing the control contact S has no influence on the condition of the output R. When the control contact is opened, the output relay switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated), the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

• **ON delay with control input (Es)**

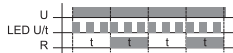
The supply voltage U must be constantly applied to the device (green LED U/t illuminated). When the control contact S is closed, the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the control contact is opened again. If the control contact is opened before the interval t has expired, the interval already expired is erased and is restarted with the next cycle.

• **Single shot leading edge voltage controlled (Wu)**

When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins (green LED U/t flashes). After the interval t has expired (green LED U/t illuminated) the output relay switches into off-position (yellow LED not illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the interval t has expired, the output relay switches into off-position. The interval already is erased and is restarted when the supply voltage is next applied.

• **Flasher pause first (Bp)**

When the supply voltage U is applied, the set interval t begins (green LED U/t flashes). After the interval t has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t begins again. After the interval t has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at a ratio of 1:1 until the supply voltage is interrupted.

• **Asymmetric flasher pause first (Ip)**

When the supply voltage U is applied, the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.

• **Asymmetric flasher pulse first (Ii)**

When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval t1 begins (green LED U/t flashes slowly). After the interval t1 has expired, the output relay switches into off-position (yellow LED not illuminated) and the set interval t2 begins (green LED U/t flashes fast). After the interval t2 has expired, the output relay switches into on-position (yellow LED illuminated). The output relay is triggered at the ratio of t1:t2 until the supply voltage is interrupted.



Switching voltage

 $U_N$ 

Contactors

Type  
Designation

Article No.

Units per  
package**Undervoltage Relay REUVM**

- Optical indication  
Relay active ... green LED  
Fault in phases L1, L2, L3 ... red LED is flashing  
Loss of Neutral conductor N ... green LED is flashing
- Single phase application is possible

SG83511



|                   |             |     |        |        |   |
|-------------------|-------------|-----|--------|--------|---|
| $U_N \times 0.85$ | 230/400 VAC | 1CO | REUVM  | 148598 | 1 |
| $U_N \times 0.85$ | 230/400 VAC | 2CO | REUVM2 | 167284 | 1 |

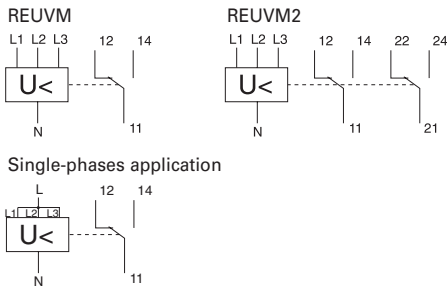
**Description Undervoltage Relay REUVM**

- When the connection to the three phases and neutral conductor is made the relay is energized in case there is no fault and the green LED lights. If the monitored nominal voltage  $U_N$  drops under the switching voltage  $U_S$ , in one, two or all three phases the relay reverts to its de-energized position. The green LED disappears.
- Optical indication  
Relay active ... green LED  
Fault in phases L1, L2, L3 ... red LED is flashing  
Loss of Neutral conductor N ... green LED is flashing
- Single-phases operation: bridge L1-L2-L3

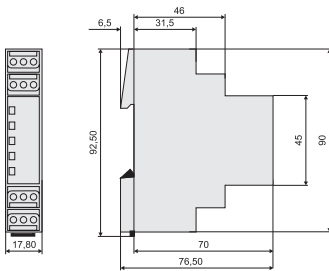
**Technical Data**

|                                      |       | REUVM                                                            |
|--------------------------------------|-------|------------------------------------------------------------------|
| <b>Electrical</b>                    |       |                                                                  |
| Rated operational voltage            | $U_N$ | 230/400 V AC                                                     |
| Rated frequency                      |       | 50-60 Hz                                                         |
| Switching voltage                    | $U_S$ | $U_N \times 0.85$ fix                                            |
| Power consumption                    |       | < 1 VA                                                           |
| Switching time delay                 |       | 500 ms                                                           |
| Switching contact                    |       | 1 CO, 2 CO                                                       |
| Rated operational voltage / current  |       | 250 VAC / 5A $\cos\varphi = 1$<br>30 VDC / 5A<br>300 VDC / 0.25A |
| Min. Rated operational voltage       |       | 100 mV AC/DC                                                     |
| Min. Rated operational current       |       | 10 mA AC/DC                                                      |
| Rated peak withstand voltage         |       | 4 kV                                                             |
| Duty                                 |       | 100%                                                             |
| Overvoltage category                 |       | III                                                              |
| Dielectric strength                  |       |                                                                  |
| Coil – contact circuit               |       | 4 kV <sub>r.m.s.</sub>                                           |
| Open circuit contact                 |       | 1 kV <sub>r.m.s.</sub>                                           |
| <b>Mechanical</b>                    |       |                                                                  |
| Frame size                           |       | 45 mm                                                            |
| Device height                        |       | 90 mm                                                            |
| Device width                         |       | 17.8 mm                                                          |
| Weight                               |       | 65 g, 73 g                                                       |
| Mounting                             |       | quick fastening on DIN rail IEC/EN 60715                         |
| Degree of protection, built-in       |       | IP40                                                             |
| Upper and lower terminals            |       | lift terminals                                                   |
| Terminal capacity                    |       |                                                                  |
| solid                                |       | 1x4 mm <sup>2</sup> , 2x1.5 mm <sup>2</sup>                      |
| fine-wire                            |       | 1x2.5 mm <sup>2</sup>                                            |
| Tightening torque of terminal screws |       | 0.5 Nm                                                           |
| Resistance to climatic conditions    |       | F / DIN 40040                                                    |
| Temperature range                    |       | -25 to +60 °C                                                    |
| Flame class                          |       | V0, glow wire 960 °C                                             |
| Pollution degree                     |       | 2                                                                |
| Comparative tracking index           |       | CTI 600                                                          |

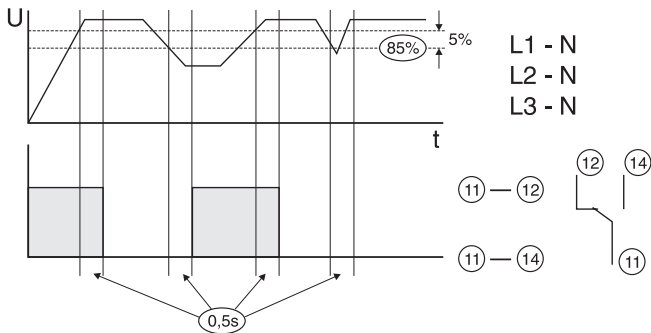
## Connection diagram



## Dimensions (mm)

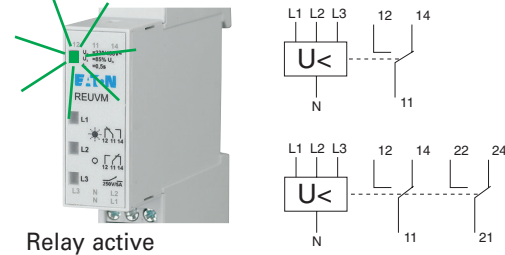


## Functional diagram

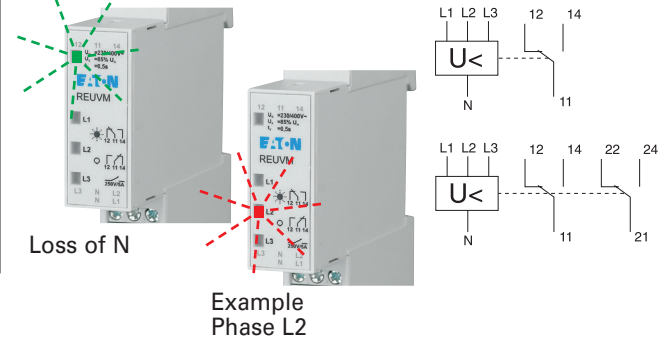


## Optical indication and contact position

### Operation



### Fault



Rated operational voltage

Type  
Designation

Article No.

Units per  
package**Voltage Indication UVA**

- Optical indication  
Voltage of phases L1, L2, L3 is indicated with green LED's even at loss of Neutral conductor N
- Single-phases application, or even possible to use DC

SG00112



230/400 V AC, 50/60 Hz

UVA

167285

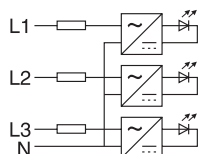
1

**Description Voltage Indication UVA**

- When the connection to the three phases and neutral conductor is made, the green Power LED lights. If only two phases are connected, eg. L1 and L3, only these green LED's lights, even at loss of Neutral conductor N.
- For use as voltage return indication in manual operated Mains-Emergency-system operation
- Large operational voltage range 85-480 V AC, 85-300 V DC

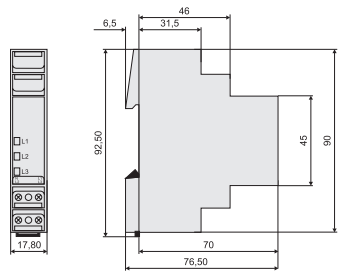
**Technical Data**

|                                      |       | UVA                                         |
|--------------------------------------|-------|---------------------------------------------|
| <b>Electrical</b>                    |       |                                             |
| Rated operational voltage            | $U_N$ | 230/400 V AC                                |
| Rated frequency                      |       | 50-60 Hz                                    |
| Rated operational voltage range      |       |                                             |
| L-L                                  |       | 85-480 V AC                                 |
| L-N                                  |       | 85-300 V AC/DC                              |
| Power consumption at 400 V AC        |       | 3x 23 mW                                    |
| Max. permissible back-up fuse        |       | 16A gG (gL)                                 |
| Duty                                 |       | 100%                                        |
| Rated peak withstand voltage         |       | 6 kV                                        |
| Overvoltage category                 |       | IV                                          |
| <b>Mechanical</b>                    |       |                                             |
| Frame size                           |       | 45 mm                                       |
| Device height                        |       | 90 mm                                       |
| Device width                         |       | 17.8 mm                                     |
| Weight                               |       | 42 g                                        |
| Mounting                             |       | quick fastening on DIN rail IEC/EN 60715    |
| Degree of protection, built-in       |       | IP40                                        |
| Upper and lower terminals            |       | lift terminals                              |
| Terminal capacity                    |       |                                             |
| solid                                |       | 1x4 mm <sup>2</sup> , 2x1.5 mm <sup>2</sup> |
| fine-wire                            |       | 1x2.5 mm <sup>2</sup>                       |
| Tightening torque of terminal screws |       | 0.5 Nm                                      |
| Temperature range                    |       | -30 to +60°C                                |
| Flame class                          |       | V0, glow wire 960 °C                        |
| Pollution degree                     |       | 2                                           |
| Comparative tracking index           |       | CTI 600                                     |

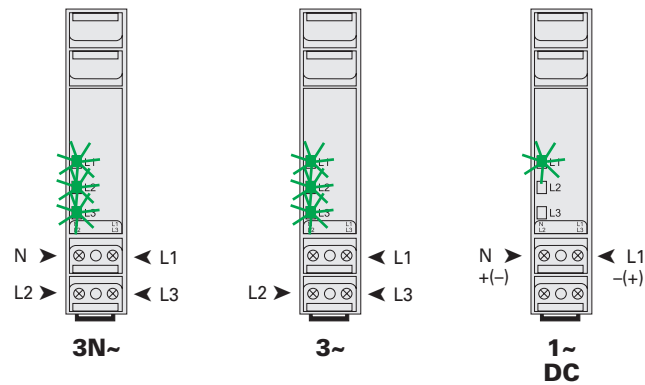
**Connection diagram**



Dimensions (mm)



Application and visuelle indicators



SG78711



| Function                                   | Rated operational current range (A) | Type Designation | Article No. | Units per package |
|--------------------------------------------|-------------------------------------|------------------|-------------|-------------------|
| <b>Load Shedding (Current) Relay Z-LAR</b> |                                     |                  |             |                   |
| NC                                         | 3-8                                 | Z-LAR/8-O        | 248256      | 1 / 60            |
| NC                                         | 10-16                               | Z-LAR/16-O       | 248257      | 1 / 60            |
| NC                                         | 15-32                               | Z-LAR/32-O       | 248258      | 1 / 60            |
| NO                                         | 3-8                                 | Z-LAR/8-S        | 248259      | 1 / 60            |
| NO                                         | 10-16                               | Z-LAR/16-S       | 248260      | 1 / 60            |
| NO                                         | 15-32                               | Z-LAR/32-S       | 248261      | 1 / 60            |
| CO                                         | 3-8                                 | Z-LAR/8-W        | 248262      | 1 / 60            |

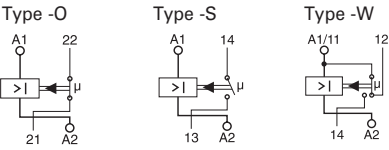
### Description Load Shedding (Current) Relay Z-LAR

- For simple priority connection of important consumers
- For fast current increase
- Expensive peak loads are avoided efficiently (staggered heating)
- Integrated auxiliary switch, 1 NC or 1 NO or 1 CO contact
- NC and NO contact are potential free

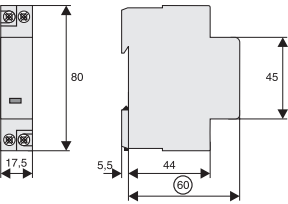
### Technical Data

|                                                                             |                  | Z-LAR/8                                                    | Z-LAR/16                | Z-LAR/32                |
|-----------------------------------------------------------------------------|------------------|------------------------------------------------------------|-------------------------|-------------------------|
| Electrical                                                                  |                  |                                                            |                         |                         |
| Nominal thermal current                                                     | I <sub>th</sub>  | 8 A                                                        | 16 A                    | 32 A                    |
| Rated voltage                                                               | U                | 250 V AC                                                   | 250 V AC                | 250 V AC                |
| Responding current                                                          | I <sub>AN</sub>  | ≥ 3 A                                                      | ≥ 10 A                  | ≥ 15 A                  |
| Release current                                                             | I <sub>A</sub>   | ≤ 1.8 A                                                    | ≤ 4.2 A                 | ≤ 7.4 A                 |
| Max. electrical switching frequency                                         |                  | 3600/h                                                     | 3600/h                  | 3600/h                  |
| Rated insulation voltage                                                    | U <sub>i</sub>   | 440 V                                                      | 440 V                   | 440 V                   |
| Power loss at I <sub>th</sub>                                               |                  |                                                            |                         |                         |
| Effective power                                                             |                  | 3.4 W                                                      | 1.95 W                  | 3.17 W                  |
| Apparent power                                                              |                  | 7.7 VA                                                     | 4.66 VA                 | 7,36 VA                 |
| Rated peak withstand voltage                                                | U <sub>imp</sub> | 4 kV                                                       | 4 kV                    | 4 kV                    |
| Back-up fuse line protection                                                |                  | max. 10 A                                                  | max. 16 A               | max. 32 A               |
| Switching contact                                                           |                  |                                                            |                         |                         |
| Function NC, NO, CO                                                         |                  |                                                            |                         |                         |
| Back-up fuse                                                                |                  | max. 1 A gL                                                | max. 1 A gL             | max. 1 A gL             |
| Contact gap *)                                                              |                  | < 3 mm (μ)                                                 | < 3 mm (μ)              | < 3 mm (μ)              |
| Breaking capacity                                                           |                  | 1 A / 250 V~                                               | 1 A / 250 V~            | 1 A / 250 V~            |
| Minimum switching capacity                                                  |                  | 300 mW                                                     | 300 mW                  | 300 mW                  |
| Minimum operational voltage                                                 |                  | 12 V                                                       | 12 V                    | 12 V                    |
| Endurance electrical components                                             |                  | 100,000 switching operations                               |                         |                         |
| *) Do not use as the only means of isolating a device from the line voltage |                  |                                                            |                         |                         |
| Mechanical                                                                  |                  |                                                            |                         |                         |
| Frame size                                                                  |                  | 45 mm                                                      | 45 mm                   | 45 mm                   |
| Device height                                                               |                  | 80 mm                                                      | 80 mm                   | 80 mm                   |
| Device width                                                                |                  | 17.5 mm (1MU)                                              | 17.5 mm (1MU)           | 17.5 mm (1MU)           |
| Mounting                                                                    |                  | quick fastening on DIN rail IEC/EN 60715                   |                         |                         |
| Degree of protection, built-in                                              |                  | IP40                                                       | IP40                    | IP40                    |
| Terminal protection                                                         |                  | finger and hand touch safe according to DGUV VS3, EN 50274 |                         |                         |
| Upper and lower terminals                                                   |                  | lift terminals                                             | lift terminals          | lift terminals          |
| Terminal capacity                                                           |                  |                                                            |                         |                         |
| Main circuit                                                                |                  | 2 x 10 mm <sup>2</sup>                                     | 2 x 10 mm <sup>2</sup>  | 2 x 10 mm <sup>2</sup>  |
| Auxiliary circuit                                                           |                  | 2 x 2.5 mm <sup>2</sup>                                    | 2 x 2.5 mm <sup>2</sup> | 2 x 2.5 mm <sup>2</sup> |
| Tightening torque of terminal screws                                        |                  |                                                            |                         |                         |
| Main circuit                                                                |                  | max. 2.4 Nm                                                | max. 2.4 Nm             | max. 2.4 Nm             |
| Auxiliary circuit                                                           |                  | max. 1 Nm                                                  | max. 1 Nm               | max. 1 Nm               |

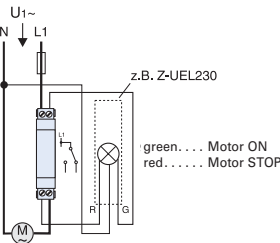
Connection diagram



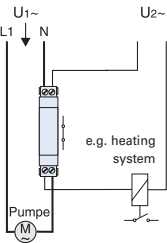
Dimensions (mm)



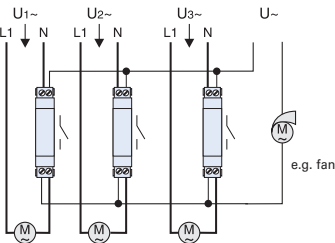
Connection Example - Operating Status



Connection Example - Priority for Pump



Connection Example - „OR” Circuit, Extraction System



sg06219.1



| Drive                      | Program | Channels   | Type<br>Designation | Article No. | Units per<br>package |
|----------------------------|---------|------------|---------------------|-------------|----------------------|
| <b>Digital Timers TSDW</b> |         |            |                     |             |                      |
| Digital                    | Week    | 1 channel  | TSDW1COMIN          | 167383      | 1                    |
| Digital                    | Week    | 1 channel  | TSDW1CO-1           | 196848      | 1                    |
| Digital                    | Week    | 2 channels | TSDW2CO-1           | 196849      | 1                    |

sg06012



| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Accessories

**Description Digital Timers with a Weekly Program TSDW1CO, TSDW2CO**

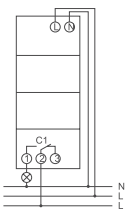
- Spring terminals
- Text-based user guidance on the display
- 56 memory cells
- Interface for memory card
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- TSDW1CO: 1 channel
- TSDW2CO: 2 channels

**Technical Data**

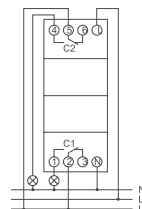
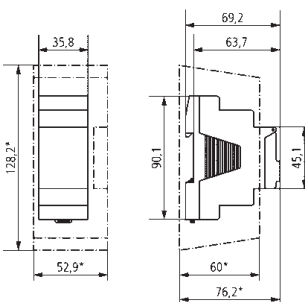
|                                      | TSDW1CO-1                      | TSDW2CO-1                      |
|--------------------------------------|--------------------------------|--------------------------------|
| <b>Electrical</b>                    |                                |                                |
| Rated operational voltage            | 230 V AC                       | 230 V AC                       |
| Frequency                            | 50 – 60 Hz                     | 50 – 60 Hz                     |
| Stand-by Power (typical)             | 0.4 W                          | 0.4 W                          |
| Power backup                         | 10 years                       | 10 years                       |
| Accuracy (typical)                   | ± 0.25 s/day at 25 °C (quartz) | ± 0.25 s/day at 25 °C (quartz) |
| Switching capacity                   |                                |                                |
| at 250 V AC, $\cos\varphi = 1$       | 16A                            | 16A                            |
| at 250 V AC, $\cos\varphi = 0.6$     | 10A                            | 10A                            |
| Incandescent/halogen lamp load       | 2600 W                         | 2600 W                         |
| Energy saving lamps 230 V            | 1100 W                         | 1100 W                         |
| LED lamp < 2 W                       | 50 W                           | 50 W                           |
| LED lamp > 2 W                       | 600 W                          | 600 W                          |
| Fluorescent lamp load (conventional) |                                |                                |
| not corrected                        | 2600 VA                        | 2600 VA                        |
| series corrected                     | 2600 VA                        | 2600 VA                        |
| parallel corrected                   | 1300 VA 130 µF                 | 1300 VA 130 µF                 |
| Min. switching capacity              | ca.10 mA                       | ca.10 mA                       |
| Shortest switching time              | 1 min                          | 1 min                          |
| <b>Mechanical</b>                    |                                |                                |
| Frame size                           | 45 mm                          | 45 mm                          |
| Device width                         | 36 mm                          | 36 mm                          |
| Mounting                             | DIN rail                       | DIN rail                       |
| Width                                | 2 modules                      | 2 modules                      |
| Type of connection                   | Duo fix spring terminals       | Duo fix spring terminals       |
| Ambient temperature                  | -30 °C to +60 °C               | -30 °C to +60 °C               |
| Degree of protection                 | IP20                           | IP20                           |
| Protection class                     | II according to EN 60730-1     | II according to EN 60730-1     |
| Certification mark                   | V                              | V                              |

**Connection example**

TSDW1CO-1



TSDW2CO-1

**Dimensions (mm)**

### Description Digital Timers with a Weekly Program TSDW1COMIN

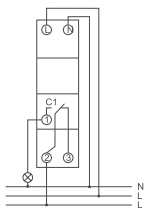
- 1 channel
- Screw-type terminals
- Text-based operator guidance on the display
- 84 memory cells
- 3 years Power backup (exchangeable lithium battery)
- ON-OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates

### Technical Data

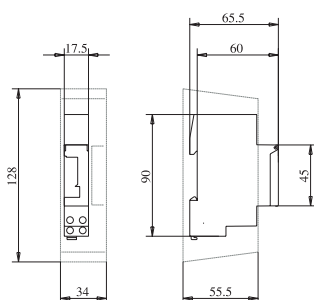
|                                  | TSDW1COMIN                  |
|----------------------------------|-----------------------------|
| <b>Electrical</b>                |                             |
| Rated operational voltage        | 230 V AC                    |
| Frequency                        | 50–60 Hz                    |
| Power backup                     | 3 years                     |
| Breaking capacity                |                             |
| at 250 V AC, $\cos\varphi = 1$   | 16 A                        |
| at 250 V AC, $\cos\varphi = 0.6$ | 6 A                         |
| Incandescent/halogen lamp load   | 1000 W                      |
| Shortest switching time          | 1 min                       |
| Accuracy                         | $\leq \pm 1$ s/day (quartz) |
| Stand-by Power                   | 0.4 W                       |
| <b>Mechanical</b>                |                             |
| Frame size                       | 45 mm                       |
| Device width                     | 17.5 mm                     |
| Mounting                         | DIN rail                    |
| Degree of protection             | IP20                        |
| Protection class                 | II according to EN 60730-1  |
| Ambient temperature              | -10 to +55 °C               |
| Certification mark               | V                           |

### Connection example

TSDW1COMIN



### Dimensions (mm)



sg06119\_1



| Drive                                                    | Program | Channels  | Type<br>Designation | Article No. | Units per<br>package |
|----------------------------------------------------------|---------|-----------|---------------------|-------------|----------------------|
| <b>Astronomical Timer with a Weekly Program TSDW1COA</b> |         |           |                     |             |                      |
| Quartz                                                   | Week    | 1 channel | TSDW1COA-1w         | 196850      | 1                    |

Description Astronomical Timer with a Weekly Program TSDW1COA

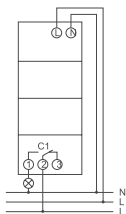
- Astronomical switching function (automatic calculation of sunrise and sunset times for the entire year)
- Spring terminals
- Text-based user guidance on the display
- Interface for memory card
- 10 years power backup (lithium battery)
- Zero-cross switching for a relay-saving way of switching and for high lamp loads
- Calculated astronomical switching times
- Programmable ON/OFF switching times
- Pre-selected switching
- Permanent ON/OFF switching
- Integrated counter for operating hours
- Vacation program
- Display background lighting (can be switched off)
- PIN coding
- Automatic spring forward/fall back at daylight-saving start and end dates
- 1 channel
- 54 memory cells

## Technical Data

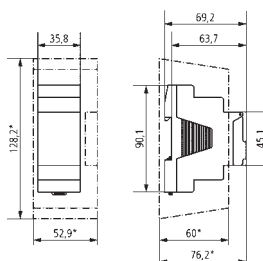
| TSDW1COA-1                           |                                            |
|--------------------------------------|--------------------------------------------|
| <b>Electrical</b>                    |                                            |
| Rated operational voltage            | 230 V AC                                   |
| Frequency                            | 50 – 60 Hz                                 |
| Stand-by Power (typical)             | 0.4 W                                      |
| Power backup                         | 10 years                                   |
| Accuracy (typical)                   | at 25 °C typical $\pm 0,25$ s/day (quartz) |
| Switching capacity                   |                                            |
| at 250 V AC, $\cos\varphi = 1$       | 16A                                        |
| at 250 V AC, $\cos\varphi = 0.6$     | 10A                                        |
| Incandescent/halogen lamp load       | 2600 W                                     |
| Energy saving lamps 230 V            | 1100 W                                     |
| LED lamp < 2 W                       | 50 W                                       |
| LED lamp > 2 W                       | 600 W                                      |
| Fluorescent lamp load (conventional) |                                            |
| not corrected                        | 2600 VA                                    |
| series corrected                     | 2600 VA                                    |
| parallel corrected                   | 1300 VA 130 $\mu$ F                        |
| Min. switching capacity              | ca.10 mA                                   |
| Shortest switching time              | 1 min                                      |
| <b>Mechanical</b>                    |                                            |
| Frame size                           | 45 mm                                      |
| Device width                         | 36 mm                                      |
| Mounting                             | DIN rail                                   |
| Width                                | 2 modules                                  |
| Type of connection                   | DuoFix spring terminals                    |
| Ambient temperature                  | -30 to +55 °C                              |
| Degree of protection                 | IP20                                       |
| Protection class                     | II according to EN 60730-1                 |
| Certification mark                   | V                                          |

## Connection example

TSDW1COA-1



## Dimensions (mm)





| Drive | Program | Channels | Type<br>Designation | Article No. | Units per<br>package |
|-------|---------|----------|---------------------|-------------|----------------------|
|-------|---------|----------|---------------------|-------------|----------------------|

Analogue Timers TS

SG83911



|          |      |           |         |        |   |
|----------|------|-----------|---------|--------|---|
| Quartz   | Day  | 1 channel | TSQD1N0 | 167388 | 1 |
| Synchron | Day  | 1 channel | TSSD1N0 | 167389 | 1 |
| Quartz   | Day  | 1 channel | TSQD1C0 | 167390 | 1 |
| Synchron | Day  | 1 channel | TSSD1C0 | 167391 | 1 |
| Quartz   | Week | 1 channel | TSQW1C0 | 167392 | 1 |

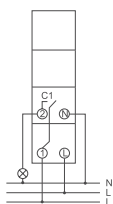
## Description Analogue Timers TSQD1NO, TSSD1NO

- 1 MU
- 1 channel
- Screw-type terminals
- Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
- Switching status indication
- TSQD1NO: with power backup (Internal rechargeable battery)
  - Quartz-controlled
- TSSD1NO: Daily program
  - Without power backup
  - 96 switching segments
  - Mains-synchronized
  - Shortest switching time: 15 minutes

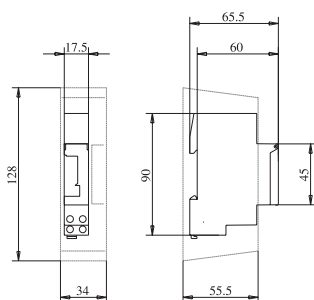
## Technical Data

|                                  | TSQD1NO                     | TSSD1NO                    |
|----------------------------------|-----------------------------|----------------------------|
| <b>Electrical</b>                |                             |                            |
| Rated operational voltage        | 230–240 V AC                | 230 V AC                   |
| Frequency                        | 50–60 Hz                    | 50 Hz                      |
| Program                          | Daily program               | Daily program              |
| Power backup                     | 3 days                      | —                          |
| Breaking capacity                |                             |                            |
| at 250 V AC, $\cos\varphi = 1$   | 16 A                        | 16 A                       |
| at 250 V AC, $\cos\varphi = 0.6$ | 4 A                         | 4 A                        |
| Shortest switching time          | 15 min                      | 15 min                     |
| Programmable                     | every 15 min                | every 15 min               |
| Accuracy                         | $\leq \pm 1$ s/day (quartz) | Mains-synchronized         |
| Stand-by Power                   | 0.5 W                       | 0.9 W                      |
| <b>Mechanical</b>                |                             |                            |
| Frame size                       | 45 mm                       | 45 mm                      |
| Device width                     | 17.5 mm                     | 17.5 mm                    |
| Mounting                         | DIN rail                    | DIN rail                   |
| Degree of protection             | IP20                        | IP20                       |
| Protection class                 | II according to EN 60730-1  | II according to EN 60730-1 |
| Ambient temperature              | -10 to +55 °C               | -25 to +55 °C              |
| Certification mark               | V                           | V                          |

## Connection example



## Dimensions (mm)

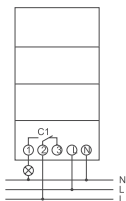
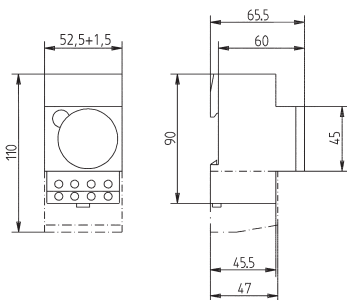


**Description Analogue Timers TSQD1CO, TSSD1CO, TSQW1CO**

- 3 MU
- 1 channel
- Spring terminals
- Pre-selected switching
- Manual switch with 3 positions: Permanent ON/AUTO/Permanent OFF
- Switching status indication
- TSQD1CO:
  - With power backup (NiMH cell)
  - Quartz-controlled
  - Clock-hands for time indication and 12h/24h recognition
  - Easy correction of spring forward/fall back at daylight-saving start and end
- TSQW1CO:
  - Weekly program
  - 84 switching segments
  - Shortest switching time: 2 hours
- TSSD1CO:
  - Daily program
  - Without power backup
  - 96 switching segments
  - Shortest switching time: 15 minutes
  - Clock-hands for time indication and 12h/24h recognition
  - Easy correction of spring forward/fall back at daylight-saving start and end

**Technical Data**

|                                  | TSQD1CO                                   | TSSD1CO                    | TSQW1CO                                  |
|----------------------------------|-------------------------------------------|----------------------------|------------------------------------------|
| <b>Electrical</b>                |                                           |                            |                                          |
| Rated operational voltage        | 110–230 V AC                              | 110–230 V AC               | 110–230 V AC                             |
| Frequency                        | 50–60 Hz                                  | 50 Hz                      | 50–60 Hz                                 |
| Program                          | Daily program                             | Daily program              | Weekly program                           |
| Power backup                     | 200 hours, approx. 100 hours–<br>at 110 V |                            | 200 hours, approx. 100 hours<br>at 110 V |
| Breaking capacity                |                                           |                            |                                          |
| at 250 V AC, $\cos\varphi = 1$   | 16 A                                      | 16 A                       | 16 A                                     |
| at 250 V AC, $\cos\varphi = 0.6$ | 4 A                                       | 4 A                        | 4 A                                      |
| Shortest switching time          | 15 min                                    | 15 min                     | 2 h                                      |
| Programmable                     | every 15 min                              | every 15 min               | alle 2 h                                 |
| Accuracy                         | $\leq \pm 1$ s/day (quartz)               | Mains-synchronized         | $\leq \pm 1$ s/day (quartz)              |
| Stand-by Power                   | 0.5 W                                     | 0.9 W                      | 0.5 W                                    |
| <b>Mechanical</b>                |                                           |                            |                                          |
| Frame size                       | 45 mm                                     | 45 mm                      | 45 mm                                    |
| Device width                     | 52.5+1.5 mm                               | 52.5+1.5 mm                | 52.5+1.5 mm                              |
| Mounting                         | DIN rail                                  | DIN rail                   | DIN rail                                 |
| Degree of protection             | IP20                                      | IP20                       | IP20                                     |
| Protection class                 | II according to EN 60730-1                | II according to EN 60730-1 | II according to EN 60730-1               |
| Ambient temperature              | -20 to +55 °C                             | -20 to +55 °C              | -20 to +55 °C                            |
| Certification mark               | V                                         | V                          | V                                        |

**Connection example****Dimensions (mm)**

| Switching contact | Brightness range | Brightness adjustable | Mounting | DIN rail Size | Type Designation | Article No. | Units per package |
|-------------------|------------------|-----------------------|----------|---------------|------------------|-------------|-------------------|
|-------------------|------------------|-----------------------|----------|---------------|------------------|-------------|-------------------|

### Light Intensity Switch SRSD

sg06019\_l



|     |            |        |          |     |          |        |   |
|-----|------------|--------|----------|-----|----------|--------|---|
| 1NO | 2-2000 Lux | Analog | DIN rail | 1TE | SRSD1NOW | 196845 | 1 |
|-----|------------|--------|----------|-----|----------|--------|---|

### Light Intensity Switch SRSW

sg05819\_r



|     |                      |                 |      |  |          |        |   |
|-----|----------------------|-----------------|------|--|----------|--------|---|
| 1NO | 2-100 / 100-2000 Lux | Analog, Digital | Wall |  | SRSW1NOW | 196846 | 1 |
|-----|----------------------|-----------------|------|--|----------|--------|---|

### Light Intensity Switch with timer SRC

sg05819\_l



|     |             |         |          |     |          |        |   |
|-----|-------------|---------|----------|-----|----------|--------|---|
| 1NO | 1-99000 Lux | Digital | DIN rail | 2TE | SRCD1COD | 196847 | 1 |
|-----|-------------|---------|----------|-----|----------|--------|---|

**Description Light Intensity Switch analog for DIN rail SRSD1NOW**

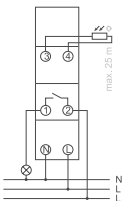
- Analog twilight switch
- External surface-mounted light sensor, cadmium sulfide (CdS) free
- Indication of the channel and switching status
- Freely adjustable switching brightness
- Wide lux range: 2 - 2000 lux
- Fixed on/off switching delay, preventing faulty operation caused by lightning, car headlights, etc.
- Improved switching capabilities: LED 350W (>2W)
- Reduced Power standby: ~0,3 W

**Technical Data**

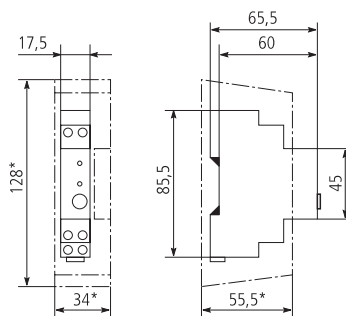
| SRSD1NOW                              |                     |
|---------------------------------------|---------------------|
| <b>Electrical</b>                     |                     |
| Rated operational voltage             | 230 V AC, +10%/-15% |
| Frequency                             | 50–60 Hz            |
| Stand-by Power (typical)              | 0.3 W               |
| Setting range for brightness          | 2-2000 lx           |
| Switch-on delay                       | 20 s                |
| Switch-off delay                      | 80 s                |
| Contact type                          | NO                  |
| Switch output                         | Potential-free      |
| Switching capacity                    |                     |
| at 250 V AC, $\cos\varphi = 1$        | 16 A                |
| Fluorescent lamp                      | 10 AX               |
| Incandescent/halogen lamp load        | 2600 W              |
| Energy saving lamps                   |                     |
| LED lamp < 2 W                        | 30 W                |
| LED lamp > 2 W                        | 350 W               |
| Fluorescent lamp load (conventional)  |                     |
| not corrected                         | 2300 VA             |
| series corrected                      | 2300 VA             |
| parallel corrected                    | 730 VA, 80 $\mu$ F  |
| Fluorescent lamp (electronic ballast) | 650 VA              |
| Min. switching capacity               | <10 mA              |
| <b>Mechanical</b>                     |                     |
| Frame size                            | 45 mm               |
| Device width                          | 17.5 mm             |
| Mounting                              | DIN rail            |
| Width                                 | 1 module            |
| Connection                            | Screw terminals     |
| Ambient temperature                   | -30 °C to +55 °C    |
| Sensor temperature range              | -40 °C to +70 °C    |
| Degree of protection                  | IP20, Sensor IP 55  |
| Protection class                      | II                  |
| Certification mark                    | V                   |
| Max. line length to the sensor        | 25 m                |

**Connection diagram**

SRSD1NOW

**Dimensions (mm)**

SRSD1NOW



**Description Surface-Mounted Light Intensity Switch SRSW1NOW**

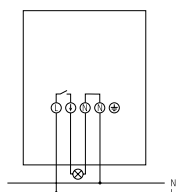
- Twilight switch with an integrated light sensor
- Cable entry is possible at the rear or from the bottom
- Large terminal area
- Setting the brightness value is possible from outside, without the need to open the device
- Wide angle of light incidence (approx. 180°)
- Transparent cover: High exposure to light
- Selectable Lux range button: 2 - 100 lux / 100 - 2000 lux
- Brightness Teach-in button: set current brightness value directly
- Timer function button: switch on light for 1 hour timer
- Manual operation button: switch on/off light until next sensor switch off/on event
- Switch-on and switch-off delay can be adjusted

**Technical Data**

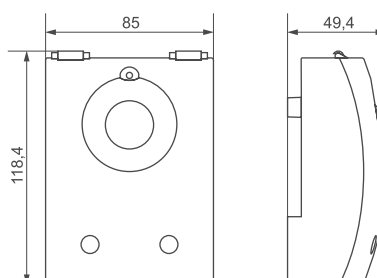
| SRSW1NOW                                      |                              |
|-----------------------------------------------|------------------------------|
| <b>Electrical</b>                             |                              |
| Rated operational voltage                     | 230 V AC, +10%/-15%          |
| Frequency                                     | 50–60 Hz                     |
| Stand-by Power (typical)                      | 0.7 W                        |
| Setting range for brightness                  | I: 2–100 lx; II: 100–2000 lx |
| Preset brightness value                       | 15 lx                        |
| Switch-on/off delay                           | 2–100 s                      |
| Contact type                                  | NO                           |
| Switch output                                 | Not potential-free (230 V)   |
| Switching capacity                            |                              |
| at 250 V AC, $\cos\varphi = 1$                | 16 A                         |
| at 230 V AC, $\cos\varphi = 0.3$              | 10 AX                        |
| Min. switching capacity                       | 10 mA/230V AC                |
| Incandescent/halogen lamp load                | 2300 W                       |
| Energy saving lamps                           |                              |
| LED lamp < 2 W                                | 50 W                         |
| LED lamp 2–8 W                                | 600 W                        |
| LED lamp > 2 W                                | 600 W                        |
| Fluorescent lamp load (conventional)          |                              |
| not corrected                                 | 2300 VA                      |
| series corrected                              | 2300 VA                      |
| parallel corrected                            | 1300 VA, 130 µF              |
| Fluorescent lamp (electronic ballast)         | 1100 W                       |
| Compact fluorescent lamp (electronic ballast) | 300 W                        |
| <b>Mechanical</b>                             |                              |
| Hight                                         | 118.4 mm                     |
| Width                                         | 85 mm                        |
| Depth                                         | 49.4 mm                      |
| Mounting                                      | Wall mounted                 |
| Connection                                    | Screw terminals              |
| Ambient temperature                           | -35 °C to +55 °C             |
| Degree of protection                          | IP 55                        |
| Protection class                              | II                           |
| Certification mark                            | V                            |

**Connection diagram**

SRSW1NOW

**Dimensions (mm)**

SRSW1NOW



**Description Light Intensity Switch with Timer for DIN Rail SRCD1COD**

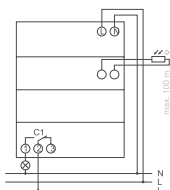
- Twilight switch with an integrated weekly timer
- External light sensor included in delivery
- 1 channel
- External input
- 3 special programs (small annual program)
- Pulse program
- 84 memory locations
- Switching brightness digitally adjustable
- Adjustable On and Off switching delay
- Switching brightness and switching delay can be set separately for switching On and Off
- Onscreen display of channel and switching status as well as current lux value
- Zero-cross switching for relay-saving switching and high lamp loads
- Up to 4 sensors can be attached
- Up to 10 devices can be connected to a digital sensor
- Extended brightness range
- Permanent switching ON/OFF
- Test function
- Switching preselection
- Display back light (can be turned off)
- PIN coding
- Operating hour counter
- DuoFix spring terminals

**Technical Data**

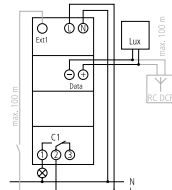
| SRCD1COD                             |                                                  |
|--------------------------------------|--------------------------------------------------|
| <b>Electrical</b>                    |                                                  |
| Rated operational voltage            | 110 – 230 V AC, +10%/-15%                        |
| Frequency                            | 50 – 60 Hz                                       |
| Stand-by Power (typical)             | 0.8 W                                            |
| Power reserve                        | 10 years at 20 °C                                |
| Setting range for brightness         | 1 – 99000 lx                                     |
| Preset brightness value              | 15 lx                                            |
| Switch-on/off delay                  | 0 – 59 min                                       |
| Number of channels                   | 1                                                |
| Number of memory locations           | 84                                               |
| External inputs                      | 1                                                |
| Accuracy (typical)                   | ± 0,25 s/day at 25 °C (quartz)                   |
| Keyboards                            | 4 touch buttons                                  |
| Shortest switching times             | 1 min                                            |
| Contact type                         | Changeover contact                               |
| Switching output                     | Switching of any external conductor is permitted |
| Switching capacity                   |                                                  |
| at 230 V AC, $\cos\varphi = 1$       | 16 A                                             |
| at 230 V AC, $\cos\varphi = 0.6$     | 10 A                                             |
| Incandescent/halogen lamp load       | 2600 W                                           |
| Fluorescent lamp load (conventional) |                                                  |
| not corrected                        | 2600 VA                                          |
| series corrected                     | 1300 VA (130 µF)                                 |
| parallel corrected                   | 1100 W                                           |
| Energy saving lamps                  |                                                  |
| LED lamp < 2 W                       | 50 W                                             |
| LED lamp > 2 W                       | 600 W                                            |
| <b>Mechanical</b>                    |                                                  |
| Frame size                           | 45 mm                                            |
| Device width                         | 36 mm                                            |
| Mounting                             | DIN rail                                         |
| Width                                | 2 modules                                        |
| Type of connection                   | DuoFix spring terminals                          |
| Ambient temperature                  | -25°C ... 55°C, sensor -40 °C ... +70 °C         |
| Type of protection                   | IP 20, sensor IP 55                              |
| Protection class                     | II, Sensor III                                   |
| Max. cable length to sensor          | 100 m                                            |

**Connection diagram**

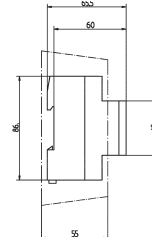
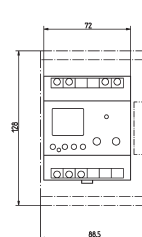
SRCD1CO



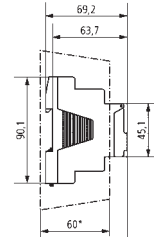
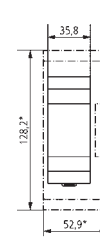
SRCD1COD

**Dimensions (mm)**

SRCD1CO



SRCD1COD



SG82911



| MU                                   | Secondary voltage (V) | Secondary current (A) | Type Designation | Article No. | Units per package |
|--------------------------------------|-----------------------|-----------------------|------------------|-------------|-------------------|
| <b>Bell-Transformers 230 V, TR-G</b> |                       |                       |                  |             |                   |
| 2                                    | 8                     | 1                     | TR-G/8           | 272480      | 1 / 28            |
| 2                                    | 4-8-12                | 1-1-0.67              | TR-G3/8          | 272481      | 1 / 28            |
| 2                                    | 8                     | 1                     | TR-G/8-S         | 272482      | 1 / 28            |
| 2                                    | 4-8-12                | 2-2-1.5               | TR-G3/18         | 272483      | 1 / 28            |
| 3                                    | 12-24                 | 2-1                   | TR-G2/24         | 272484      | 1 / 20            |

### Description Bell-Transformers 230 V, TR-G

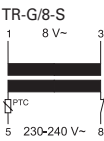
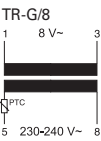
- Type -S with primary switch
- Accessories: Surface Mounting Set (mounting plate, terminal covers)

### Technical Data

|                                                                         | TR-G/8                                   | TR-G3/8                   | TR-G/8-S                  | TR-G3/18                  | TR-G2/24                  |
|-------------------------------------------------------------------------|------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>Electrical</b>                                                       |                                          |                           |                           |                           |                           |
| Nominal power                                                           | 8 VA                                     | 8 VA                      | 8 VA                      | 18 VA                     | 24 VA                     |
| Rated supply voltage range at terminals                                 | 230-240 V AC                             | 230-240 V AC              | 230-240 V AC              | 230-240 V AC              | 230-240 V AC              |
| Rated frequency                                                         | 50 Hz                                    | 50 Hz                     | 50 Hz                     | 50 Hz                     | 50 Hz                     |
| No-load current                                                         | 25 mA                                    | 26 mA                     | 25 mA                     | 36 mA                     | 24 mA                     |
| Rated supply current                                                    | 69 mA                                    | 58 mA                     | 69 mA                     | 72/124/138 mA             | 155/160 mA                |
| Primary resistance                                                      | 616 Ω                                    | 667 Ω                     | 616 Ω                     | 229 Ω                     | 616 Ω                     |
| Rated output voltage at terminals                                       | 8 V AC                                   | 4/8/12 V AC               | 8 V AC                    | 4/8/12 V AC               | 12/24 V AC                |
| No-load output voltage                                                  | 13 V                                     | 4.9/12/16.8 V             | 13 V                      | 5.9/12/17.8 V             | 16/31 V                   |
| Rated output voltage at rated output current                            | 8.4 V                                    | 3.8/7.9/12.2 V            | 8.4 V                     | 4.3/8.4/12.7 V            | 12.2/23.2 V               |
| Secondary resistance                                                    | 2 Ω                                      | 0.9/1.9/2.8 Ω             | 2 Ω                       | 0.4/1/1.3 Ω               | 1/3 Ω                     |
| Power loss in no-load operation                                         | 1.4 W                                    | 1.4 W                     | 1.4 W                     | 1.8 W                     | 1.9 W                     |
| Total power loss at nominal load                                        | 7.1 W                                    | 6.2 W                     | 7.1 W                     | 11.6 W                    | 11.9 W                    |
| Short circuit proof                                                     | PTC                                      | PTC                       | PTC                       | PTC                       | PTC                       |
| Test voltage (primary-secondary)                                        | 5 kV                                     | 5 kV                      | 5 kV                      | 5 kV                      | 5 kV                      |
| Pollution degree                                                        | P2                                       | P2                        | P2                        | P2                        | P2                        |
| <b>Mechanical</b>                                                       |                                          |                           |                           |                           |                           |
| Frame size                                                              | 45 mm                                    | 45 mm                     | 45 mm                     | 45 mm                     | 45 mm                     |
| Device height                                                           | 90 mm                                    | 90 mm                     | 90 mm                     | 90 mm                     | 90 mm                     |
| Device width                                                            | 36 mm                                    | 36 mm                     | 36 mm                     | 36 mm                     | 54 mm                     |
| Weight                                                                  | 236 g                                    | 253 g                     | 236 g                     | 354 g                     | 612 g                     |
| Mounting                                                                | quick fastening on DIN rail IEC/EN 60715 |                           |                           |                           |                           |
| Degree of protection, built-in                                          | IP20                                     | IP20                      | IP20                      | IP20                      | IP20                      |
| Upper and lower terminals                                               | lift terminals                           | lift terminals            | lift terminals            | lift terminals            | lift terminals            |
| Terminal capacity                                                       | 1 - 3x2.5 mm <sup>2</sup>                | 1 - 3x2.5 mm <sup>2</sup> | 1 - 3x2.5 mm <sup>2</sup> | 1 - 3x2.5 mm <sup>2</sup> | 1 - 3x2.5 mm <sup>2</sup> |
| Tightening torque of terminal screws                                    | 0.5 Nm                                   | 0.5 Nm                    | 0.5 Nm                    | 0.5 Nm                    | 0.5 Nm                    |
| Permitted relative air humidity                                         | <95%                                     | <95%                      | <95%                      | <95%                      | <95%                      |
| Rated ambient temperature                                               | 40 °C                                    | 40 °C                     | 40 °C                     | 40 °C                     | 35 °C                     |
| Temperature rise at intermittent duty (20 x 1 min. 100% and 5 min. 20%) | 24 K                                     | 24 K                      | 24 K                      | 26 K                      | 31 K                      |
| Insulation class                                                        | E                                        | E                         | E                         | E                         | E                         |
| Glow wire-test enclosure                                                | 850 °C                                   | 850 °C                    | 850 °C                    | 850 °C                    | 850 °C                    |



Connection diagram (e.g.)

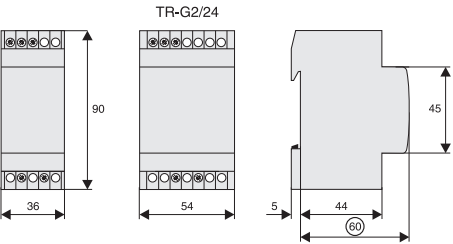


Bell transformer



Short circuit-proof trans-  
former

Dimensions (mm)



| MU                                          | Secondary voltage<br>(V) | Secondary current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|---------------------------------------------|--------------------------|--------------------------|---------------------|-------------|----------------------|
| <b>Safety-Transformer 230V, TR-G2/63-SF</b> |                          |                          |                     |             |                      |
| 5                                           | 12-24                    | 5.2-2.6                  | TR-G2/63-SF         | 272485      | 1 / 12               |

SG42512



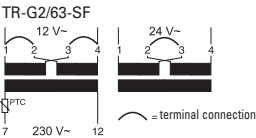
### Description Safety-Transformer 230V, TR-G2/63-SF

- 100% duty
- Safety transformer with separate windings according to EN 61558
- Accessories: Surface Mounting Set (mounting plate, terminal covers)

### Technical Data

|                                                 | TR-G2/63-SF                                 |
|-------------------------------------------------|---------------------------------------------|
| <b>Electrical</b>                               |                                             |
| Nominal power                                   | 63 VA                                       |
| Rated supply voltage range<br>at terminals      | 230-240 V AC<br>7-12                        |
| Rated frequency                                 | 50 Hz                                       |
| No-load current                                 | 60 mA                                       |
| Rated supply current                            | 340 mA                                      |
| Primary resistance                              | 41 Ω                                        |
| Rated output voltage<br>at terminals            | 12/24 V AC<br>1-4/1-4 (terminal connection) |
| No-load output voltage                          | 13.6/27.3 V                                 |
| Rated output voltage<br>at rated output current | 12/24.1 V<br>5.2-2.6 A                      |
| Secondary resistance                            | 0.15/0.6 Ω                                  |
| Power loss in no-load operation                 | 4.1 W                                       |
| Total power loss at nominal load                | 19.6 W                                      |
| Duty                                            | 100%                                        |
| Short circuit proof                             | inherently (PTC)                            |
| Test voltage (primary-secondary)                | 5 kV                                        |
| Pollution degree                                | P2                                          |
| <b>Mechanical</b>                               |                                             |
| Frame size                                      | 45 mm                                       |
| Device height                                   | 90 mm                                       |
| Device width                                    | 90 mm                                       |
| Weight                                          | 1256 g                                      |
| Mounting                                        | quick fastening on DIN rail IEC/EN 60715    |
| Degree of protection, built-in                  | IP20                                        |
| Upper and lower terminals                       | lift terminals                              |
| Terminal capacity                               | 1 - 3x2.5 mm <sup>2</sup>                   |
| Tightening torque of terminal screws            | 0.5 Nm                                      |
| Permitted relative air humidity                 | <95%                                        |
| Rated ambient temperature                       | 25 °C                                       |
| Temperature rise at uninterrupted duty          | 51 K                                        |
| Insulation class                                | F                                           |
| Glow wire-test enclosure                        | 850 °C                                      |

Connection diagram (e.g.)

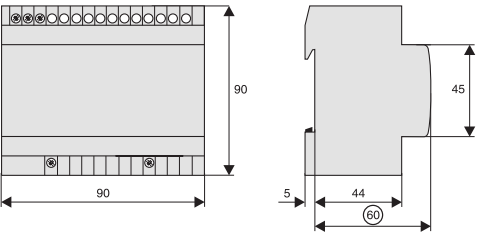


Safety transformer according to EN 61558  
(Fail-safe = no danger in case of failure)



Short circuit-proof trans-  
former

Dimensions (mm)



wa\_eg04311



ASBELL230

| Function                    | Rated voltage<br>(V~) | Type<br>Designation | Article No. | Units per<br>package |
|-----------------------------|-----------------------|---------------------|-------------|----------------------|
| <b>Signaling Devices AS</b> |                       |                     |             |                      |
| Bell                        | 230 V AC              | ASBELL230           | 167393      | 1                    |
| Bell                        | 12 V AC               | ASBELL12            | 167394      | 1                    |
| Buzzer                      | 230 V AC              | ASBUZZ230           | 167395      | 1                    |
| Siren                       | 24 V AC/DC            | ASSIR24             | 167396      | 1                    |

### Description Signaling Devices AS

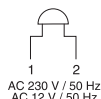
- Signal bells and buzzers are typically used in residential buildings and in functional buildings such as shops, offices, banks etc. They are either used to signalize alert conditions, or generally as audible sound signals.
- These devices are built-in devices installed in distribution cabinets. They are designed for short-time operation in compliance with the IEC 62080 standard.
- Space-saving design of one module unit only.
- Safe device protection thanks to PTC to avoid overloads and short-circuits.

### Signal bell ASBELL, buzzer ASBUZZ230

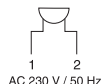
|                                                       | ASBELL230, ASBUZZ230                         | ASBELL12                                     |
|-------------------------------------------------------|----------------------------------------------|----------------------------------------------|
| <b>Technical Data</b>                                 |                                              |                                              |
| Standards                                             | IEC 62080                                    | IEC 62080                                    |
| Rated operational voltage                             | $U_B$ 230 V AC                               | 12 V AC                                      |
| Rated operational power                               | $P_s$ 5.5 VA                                 | 4 VA                                         |
| Working range 50/60 Hz                                | $0.94 \dots 1.06 \times U_c$                 | $0.94 \dots 1.06 \times U_c$                 |
| Rated frequency                                       | 50 Hz                                        | 50 Hz                                        |
| Working range of frequency                            | 45 ... 65 Hz                                 | 45 ... 65 Hz                                 |
| Rated power loss in idle operation                    | $P_v$ 0.83 W                                 | 0.83 W                                       |
| Pollution degree according to EN 61010-1              | 2                                            | 2                                            |
| Operating voltage according to EN 61010-1             | 230 V AC                                     | 12 V AC                                      |
| Insulating material group according to EN 61010-1     | II                                           | II                                           |
| Safe separation                                       |                                              |                                              |
| Air gap                                               | $\geq 3$ mm                                  | $\geq 1.5$ mm                                |
| Creep distance within the device                      | $\geq 2.5$ mm                                | $\geq 1.5$ mm                                |
| Test voltage 50 Hz, 1 min.                            | 1.25 kV                                      | 1 kV                                         |
| Flammability class                                    | V0                                           | V0                                           |
| Terminal capacity                                     |                                              |                                              |
| solid                                                 | $1 \times 6$ or $2 \times 4$ mm <sup>2</sup> | $1 \times 6$ or $2 \times 4$ mm <sup>2</sup> |
| flexible with wire end sleeve, min.                   | 0.75 mm <sup>2</sup>                         | 0.75 mm <sup>2</sup>                         |
| Sound volume                                          | $\geq 75$ dB                                 | $\geq 75$ dB                                 |
| Permitted ambient temperature                         | -10 to +55 °C                                | -10 to +55 °C                                |
| Degree of protection according to DIN EN 60529        | IP20, with angeschlossenen wiresn            | IP20, with angeschlossenen wiresn            |
| Protection class according to DIN EN 61140 / VDE 0140 | II                                           | II                                           |

### Connection diagram

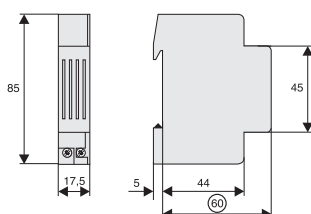
ASBELL



ASBUZZ230



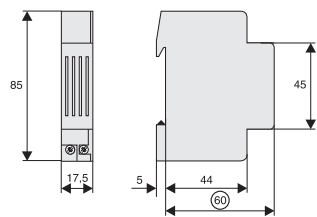
### Dimensions (mm)



Siren ASSIR24

|                         | ASSIR24       |
|-------------------------|---------------|
| <b>Technical Data</b>   |               |
| Data according to       | EN 60669-1    |
| Feed voltage            | 24 V AC/DC    |
| Voltage tolerance range | ± 15%         |
| Power loss              | 2.4 VA        |
| Voltage test AC         | 2.5 kV        |
| Sound volume            | 105 dB        |
| Operative temperature   | -10 to +55 °C |
| Storage temperature     | -25 to +70 °C |
| Degree of protection    | IP20          |

Dimensions (mm)



## Command and Signalling Devices RMQ Titan® xCommand

Description

Type  
Designation

Article No.

Units per  
package**Command and Signalling Devices RMQ Titan® xCommand**

- Complete units for front installation

**Push-button, flat, 1NO+1NC**

wa\_sg00912

**Push-button, flat, LED 230 V, 1NO+1NC**

wa\_sg00912



|                      |                     |           |   |
|----------------------|---------------------|-----------|---|
| spring-return, white | M22-DL-W-K11-230-W  | SET000013 | 1 |
| spring-return, red   | M22-DL-R-K11-230-R  | SET000014 | 1 |
| spring-return, green | M22-DL-G-K11-230-G  | SET000015 | 1 |
| spring-return, gelb  | M22-DL-Y-K11-230-W  | SET000016 | 1 |
| spring-return, blue  | M22-DL-B-K11-230-B  | SET000017 | 1 |
| stay-put, white      | M22-DRL-W-K11-230-W | SET000018 | 1 |
| stay-put, red        | M22-DRL-R-K11-230-R | SET000019 | 1 |
| stay-put, green      | M22-DRL-G-K11-230-G | SET000020 | 1 |
| stay-put, gelb       | M22-DRL-Y-K11-230-W | SET000021 | 1 |
| stay-put, blue       | M22-DRL-B-K11-230-B | SET000022 | 1 |

**Indicator lamp, flat, LED 230 V**

wa\_sg00612



|       |               |           |   |
|-------|---------------|-----------|---|
| white | M22-L-W-230-W | SET000023 | 1 |
| red   | M22-L-R-230-R | SET000024 | 1 |
| green | M22-L-G-230-G | SET000025 | 1 |
| gelb  | M22-L-Y-230-W | SET000026 | 1 |
| blue  | M22-L-B-230-B | SET000027 | 1 |

**Selector, 1NO+1NC**

wa\_sg00712



|                            |             |           |   |
|----------------------------|-------------|-----------|---|
| 2 positions, spring-return | M22-WK-K11  | SET000028 | 1 |
| 2 positions, stay-put      | M22-WRK-K11 | 216519    | 1 |

**Key-operated switch, 1NO+1NC**

wa\_sg00812



|                            |             |           |   |
|----------------------------|-------------|-----------|---|
| 2 positions, spring-return | M22-WS-K11  | SET000029 | 1 |
| 2 positions, stay-put      | M22-WRS-K11 | 216517    | 1 |

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Double push-button, 1NO+1NC with LED

wa\_sg01012



|                                     |                                                                                   |                            |        |   |
|-------------------------------------|-----------------------------------------------------------------------------------|----------------------------|--------|---|
| Double push-button 1NO+1NC with LED |  | M22-DDL-GR-X1/X0/K11/230-W | 216509 | 1 |
|-------------------------------------|-----------------------------------------------------------------------------------|----------------------------|--------|---|

Accessories RMQ Titan®

SG06410



|                     |         |        |    |
|---------------------|---------|--------|----|
| DIN rail adapter    | M22-IVS | 216400 | 1  |
| Contact element 1NO | M22-K10 | 216376 | 20 |
| Contact element 1NC | M22-K01 | 216378 | 20 |

EMERGENCY SWITCH-OFF button, complete unit IP66

wa\_sg02911



|                                                   |                |        |   |
|---------------------------------------------------|----------------|--------|---|
| Emergency switch-off button, 2NC, surface-mounted | M22-PV/KC02/IY | 216524 | 1 |
|---------------------------------------------------|----------------|--------|---|

## Technical Data Command and Signalling Devices RMQ Titan® xCommand

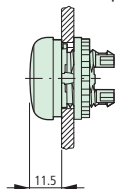
|                                                                                     | Contact elements                                                                                                     | LED elements <sup>1)</sup> | Luminous push-button<br>Push-button |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------|
| <b>General</b>                                                                      |                                                                                                                      |                            |                                     |
| Standards and regulations                                                           | IEC/EN 60947, VDE 0660                                                                                               |                            |                                     |
| Endurance, mechanical components                                                    | > 5 x 10 <sup>6</sup> switching op.                                                                                  | —                          | > 5 x 10 <sup>6</sup> switching op. |
| Operating frequency                                                                 | ≤ 3600 switching op./h                                                                                               | —                          | ≤ 3600 switching op./h              |
| Operating force                                                                     | ≤ 5 N                                                                                                                | —                          | ≤ 5 N                               |
| Operating torque (Screw-type terminals)                                             | ≤ 0.8 Nm                                                                                                             | —                          | —                                   |
| Degree of protection IEC/EN 60529                                                   | IP20                                                                                                                 | IP20                       | IP67, IP69K                         |
| Resistance to climatic conditions <sup>2)</sup>                                     | Humidity and heat, constant, according to IEC 60068-2-78<br>Humidity and heat, periodic, according to IEC 60068-2-30 |                            |                                     |
| Ambient temperature <sup>1)</sup> , open                                            | -25 to +70 °C                                                                                                        | -25 to +70 °C              | -25 to +70 °C                       |
| Operation position                                                                  | as required                                                                                                          | as required                | as required                         |
| Shock resistance according to IEC 60068-2-27, Shock duration 11 ms, half-sinusoidal | > 30 g                                                                                                               | > 30 g                     | > 30 g                              |
| Terminal capacity                                                                   |                                                                                                                      |                            |                                     |
| solid                                                                               | 0.75 - 2.5 mm <sup>2</sup>                                                                                           | 0.75 - 2.5 mm <sup>2</sup> | —                                   |
| multi-wire                                                                          | 0.5 - 2.5 mm <sup>2</sup>                                                                                            | 0.75 - 2.5 mm <sup>2</sup> | —                                   |
| <b>Current paths</b>                                                                |                                                                                                                      |                            |                                     |
| Rated peak withstand voltage                                                        | U <sub>imp</sub> 6000 V AC                                                                                           | 6000 V AC                  | —                                   |
| Rated insulation voltage                                                            | U <sub>i</sub> 500 V                                                                                                 | 500 V                      | —                                   |
| Overvoltage category/Pollution degree                                               | III/3                                                                                                                | III/3                      | —                                   |
| Circuit safety                                                                      | H <sub>F</sub>                                                                                                       |                            |                                     |
| at 24 V DC / 5 mA                                                                   | < 10 <sup>-7</sup> failure rate,<br>< 1 failure to 10 <sup>7</sup> switching<br>operations                           | —                          | —                                   |
| at 5 V DC / 1 mA                                                                    | < 5 x 10 <sup>-6</sup> failure rate,<br>< 1 failure to 5 x 10 <sup>6</sup> switch-<br>ing operations                 | —                          | —                                   |
| Max. short-circuit protection                                                       |                                                                                                                      |                            |                                     |
| Without fuse                                                                        | PKZM0-10 / PLSM-B6                                                                                                   | —                          | —                                   |
| Fuse gG/gL                                                                          | 10 A                                                                                                                 | —                          | —                                   |
| <b>Switching capacity</b>                                                           |                                                                                                                      |                            |                                     |
| Rated operational current                                                           | I <sub>e</sub>                                                                                                       |                            |                                     |
| AC-15                                                                               |                                                                                                                      |                            |                                     |
| 115 V                                                                               | 6 A                                                                                                                  | —                          | —                                   |
| 120 V                                                                               | 6 A                                                                                                                  | —                          | —                                   |
| 400 V                                                                               | 4 A                                                                                                                  | —                          | —                                   |
| 500 V                                                                               | 2 A                                                                                                                  | —                          | —                                   |
| DC-13                                                                               |                                                                                                                      |                            |                                     |
| 24 V                                                                                | 3 A                                                                                                                  | —                          | —                                   |
| 42 V                                                                                | 1.7 A                                                                                                                | —                          | —                                   |
| 60 V                                                                                | 1.2 A                                                                                                                | —                          | —                                   |
| 110 V                                                                               | 0.8 A                                                                                                                | —                          | —                                   |
| 220 V                                                                               | 0.3 A                                                                                                                | —                          | —                                   |
| Endurance, electrical components                                                    |                                                                                                                      |                            |                                     |
| AC-15                                                                               |                                                                                                                      |                            |                                     |
| 230 V / 0.5 A                                                                       | 1.6 x 10 <sup>6</sup> switching operations                                                                           | —                          | —                                   |
| 230 V / 1 A                                                                         | 1 x 10 <sup>6</sup> switching operations                                                                             | —                          | —                                   |
| 230 V / 3 A                                                                         | 0.7 x 10 <sup>6</sup> switching operations                                                                           | —                          | —                                   |
| DC-13                                                                               |                                                                                                                      |                            |                                     |
| 12 V / 2.8 A                                                                        | 1.2 x 10 <sup>6</sup> switching operations                                                                           | —                          | —                                   |

<sup>1)</sup> > 200 V AC / 60 Hz: -25 to +55 °C

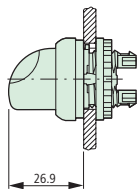
<sup>2)</sup> Indoor and protected outdoor position

## Dimensions (mm)

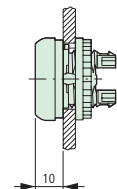
Indicator lamp M22-L...



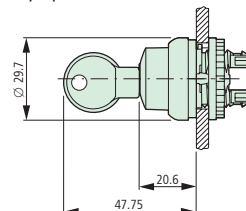
Selector M22-W.K...



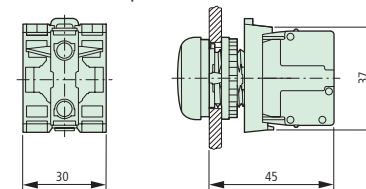
Push-buttons M22-D...



Key-operated buttons M22-W.S...



Installation depth





Description

Type

Designation

Article No.

Units per

package

**Command and Signalling Devices LS-TITAN® xCommand**

- NO, 1 NC

**Position switch LS-11, IP66**

wa\_sg03111



|                                     |           |        |    |
|-------------------------------------|-----------|--------|----|
| Cap plunger head                    | LS-11     | 266109 | 10 |
| Roller plunger                      | LS-11/P   | 266112 | 2  |
| Spring-rod head, snap-action switch | LS-11S/S  | 266104 | 2  |
| Roller lever                        | LS-11/L   | 266110 | 2  |
| Rotary lever                        | LS-11/RL  | 266111 | 2  |
| Adjustable roller lever             | LS-11/RLA | 266113 | 2  |
| Actuating lever, snap-action switch | LS-11S/RR | 266106 | 4  |

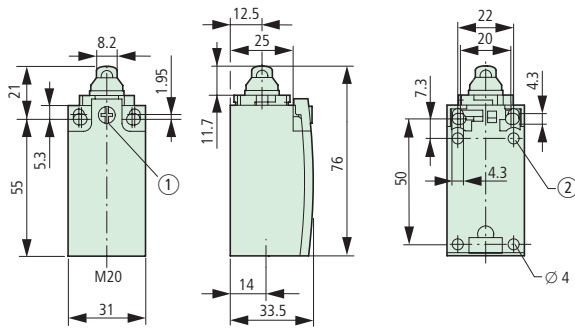
**Technical Data Command and Signalling Devices LS-TITAN® xCommand**

|                                                                  |           | Position switch LS-11                                                                                                |
|------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------|
| <b>General</b>                                                   |           |                                                                                                                      |
| Standards and regulations                                        |           | IEC/EN 60947                                                                                                         |
| Resistance to climatic conditions                                |           | Humidity and heat, constant, according to IEC 60068-2-78<br>Humidity and heat, periodic, according to IEC 60068-2-30 |
| Ambient temperature                                              |           | -25 to +70 °C                                                                                                        |
| Operation position                                               |           | as required                                                                                                          |
| Terminal capacity Cage-Clamp <sup>1)</sup>                       |           |                                                                                                                      |
| solid                                                            |           | 1 x (0.5-2.5) mm <sup>2</sup>                                                                                        |
| fine wires with wire end sleeve according to DIN 46228           |           | 1 x (0.5-1.5) mm <sup>2</sup>                                                                                        |
| <b>Current paths/Switching capacity</b>                          |           |                                                                                                                      |
| Rated peak withstand voltage                                     | $U_{imp}$ | 4000 V AC                                                                                                            |
| Rated insulation voltage                                         | $U_i$     | 500 V                                                                                                                |
| Overvoltage category/Pollution degree                            |           | III/3                                                                                                                |
| Circuit safety                                                   | $H_F$     |                                                                                                                      |
| at 24 V DC / 5 mA                                                |           | < 10 <sup>-7</sup> failure rate, < 1 failure to 10 <sup>7</sup> switching operations                                 |
| at 5 V DC / 1 mA                                                 |           | < 5 x 10 <sup>-6</sup> failure rate, < 1 failure to 5 x 10 <sup>6</sup> switching operations                         |
| Rated operational current                                        | $I_e$     |                                                                                                                      |
| AC-15                                                            |           |                                                                                                                      |
| 24 V                                                             |           | 6 A                                                                                                                  |
| 230/240 V                                                        |           | 6 A                                                                                                                  |
| 400/415 V                                                        |           | 4 A                                                                                                                  |
| DC-13                                                            |           |                                                                                                                      |
| 24 V                                                             |           | 10 A                                                                                                                 |
| 110 V                                                            |           | 1 A                                                                                                                  |
| 220 V                                                            |           | 0.5 A                                                                                                                |
| Line frequency                                                   |           | max. 400 Hz                                                                                                          |
| Short-circuit resistance when closed (IEC/EN 60947-5-1)          |           |                                                                                                                      |
| Without fuse                                                     |           | PKZM0-10 / PLSM-B6                                                                                                   |
| max. Fuse gG/gL                                                  |           | 10 A                                                                                                                 |
| Short-circuit current strength IEC/EN 60947-5-1, max. Fuse gG/gL |           | 6 A                                                                                                                  |
| <b>Mechanical specifications</b>                                 |           |                                                                                                                      |
| Endurance                                                        |           |                                                                                                                      |
| Standard-action switch                                           |           | 8 x 10 <sup>6</sup> switching operations                                                                             |
| Snap-action switch                                               |           | 8 x 10 <sup>6</sup> switching operations                                                                             |
| Contact temperature of the actuating roller                      |           | ≤ 100 °C                                                                                                             |
| Shock resistance (half-sinusoidal shock 20 ms)                   |           |                                                                                                                      |
| Standard-action switch                                           |           | 25 g                                                                                                                 |
| Snap-action switch                                               |           | 2 g                                                                                                                  |
| Basic device                                                     |           | —                                                                                                                    |
| Operating frequency                                              |           | ≤ 6000 switching operations/h                                                                                        |

<sup>1)</sup> Cage-Clamp is a registered trademark of Wago Kontakttechnik, D-32423 Minden

**Dimensions (without actuation element) in mm**

Position switch LS-11...



| Rated current<br>(A) | Rated power<br>(kW) | Auxiliary contact | Type<br>Designation | Article No. | Units per<br>package |
|----------------------|---------------------|-------------------|---------------------|-------------|----------------------|
|----------------------|---------------------|-------------------|---------------------|-------------|----------------------|

Contactors DILM

Control Voltage 230 V 50 Hz, 240 V 60 Hz

|    |      |     |                     |        |   |
|----|------|-----|---------------------|--------|---|
| 7  | 3    | 1NC | DILM7-10(230V50HZ)  | 276550 | 1 |
| 7  | 3    | 1NC | DILM7-01(230V50HZ)  | 276585 | 1 |
| 6  | 4    | 1NC | DILM9-10(230V50HZ)  | 276690 | 1 |
| 6  | 4    | 1NC | DILM9-01(230V50HZ)  | 276725 | 1 |
| 12 | 5.5  | 1NC | DILM12-10(230V50HZ) | 276830 | 1 |
| 12 | 5.5  | 1NC | DILM12-01(230V50HZ) | 276865 | 1 |
| 17 | 7.5  | 1NC | DILM17-10(230V50HZ) | 277004 | 1 |
| 17 | 7.5  | 1NC | DILM17-01(230V50HZ) | 277036 | 1 |
| 25 | 11   | 1NC | DILM25-10(230V50HZ) | 277132 | 1 |
| 25 | 11   | 1NC | DILM25-01(230V50HZ) | 277164 | 1 |
| 32 | 15   | 1NC | DILM32-10(230V50HZ) | 277260 | 1 |
| 32 | 15   | 1NC | DILM32-01(230V50HZ) | 277292 | 1 |
| 40 | 18.5 | —   | DILM40(230V50HZ)    | 277766 | 1 |
| 50 | 22   | —   | DILM50(230V50HZ)    | 277830 | 1 |
| 65 | 30   | —   | DILM65(230V50HZ)    | 277894 | 1 |

wa\_sg00111



Control Voltage 24 VDC

|    |      |     |                  |        |   |
|----|------|-----|------------------|--------|---|
| 7  | 3    | 1NC | DILM7-10(24VDC)  | 276565 | 1 |
| 7  | 3    | 1NC | DILM7-01(24VDC)  | 276600 | 1 |
| 6  | 4    | 1NC | DILM9-10(24VDC)  | 276705 | 1 |
| 6  | 4    | 1NC | DILM9-01(24VDC)  | 276740 | 1 |
| 12 | 5.5  | 1NC | DILM12-10(24VDC) | 276845 | 1 |
| 12 | 5.5  | 1NC | DILM12-01(24VDC) | 276880 | 1 |
| 17 | 7.5  | 1NC | DILM17-10(RDC24) | 277018 | 1 |
| 17 | 7.5  | 1NC | DILM17-01(RDC24) | 277050 | 1 |
| 25 | 11   | 1NC | DILM25-10(RDC24) | 277146 | 1 |
| 25 | 11   | 1NC | DILM25-01(RDC24) | 277178 | 1 |
| 32 | 15   | 1NC | DILM32-10(RDC24) | 277274 | 1 |
| 32 | 15   | 1NC | DILM32-01(RDC24) | 277306 | 1 |
| 40 | 18.5 | —   | DILM40(RDC24)    | 277780 | 1 |
| 50 | 22   | —   | DILM50(RDC24)    | 277844 | 1 |
| 65 | 30   | —   | DILM65(RDC24)    | 277908 | 1 |

wa\_sg00111



| Overload release setting range<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|---------------------------------------|---------------------|-------------|----------------------|
|---------------------------------------|---------------------|-------------|----------------------|

Motor-protective Relay ZB

Suitable for DILM7 to DILM32

wa\_sg17604



wa\_sg17704

Overload release setting range  
(A)Type  
Designation

Article No.

Units per  
package**Suitable for DILM40 to DILM65**

|         |         |        |   |
|---------|---------|--------|---|
| 6 - 10  | ZB65-10 | 278455 | 1 |
| 10 - 16 | ZB65-16 | 278456 | 1 |
| 16 - 24 | ZB65-24 | 278457 | 1 |
| 24 - 40 | ZB65-40 | 278458 | 1 |
| 40 - 57 | ZB65-57 | 278459 | 1 |
| 50 - 65 | ZB65-65 | 278460 | 1 |

wa\_sg17404



NO

NC

Type  
Designation

Article No.

Units per  
package**Auxiliary Switch moduleless DILA-XHI****Suitable for DILM7 to DILM32**

wa\_sg03011

**Auxiliary Switch moduleless DILM150-XHI****Suitable for DILM40 to DILM65**

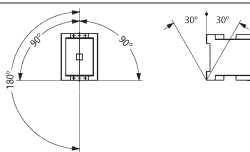
|   |   |               |        |   |
|---|---|---------------|--------|---|
| 2 | — | DILM150-XHI20 | 277945 | 5 |
| 1 | 1 | DILM150-XHI11 | 277946 | 5 |
| 4 | — | DILM150-XHI40 | 277948 | 5 |
| 3 | 1 | DILM150-XHI31 | 277949 | 5 |
| 2 | 2 | DILM150-XHI22 | 277950 | 5 |

## Technical Data Contactors xStart

**DILM, DILA, ZB**

## General

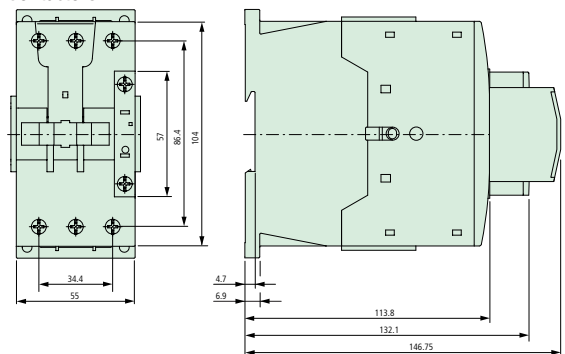
|                                            |                                                                                                                      |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Standards and regulations                  | IEC/EN 60947, VDE 0660, UL, CSA                                                                                      |
| Endurance, mechanical components           |                                                                                                                      |
| AC operated                                | 10 x 10 <sup>6</sup> switching operations                                                                            |
| DC operated                                | 10 x 10 <sup>6</sup> switching operations                                                                            |
| Switching frequency, mechanical components |                                                                                                                      |
| AC operated                                | 9000 switching operations/h                                                                                          |
| DC operated                                | 9000 switching operations/h                                                                                          |
| Resistance to climatic conditions          | Humidity and heat, constant, according to IEC 60068-2-78<br>Humidity and heat, periodic, according to IEC 60068-2-30 |
| Ambient temperature                        |                                                                                                                      |
| open                                       | -25 to +60 °C                                                                                                        |
| hermetically enclosed                      | -25 to +40 °C                                                                                                        |
| storage                                    | -40 to +80 °C                                                                                                        |
| Mounting position AC and DC operated       |                                    |



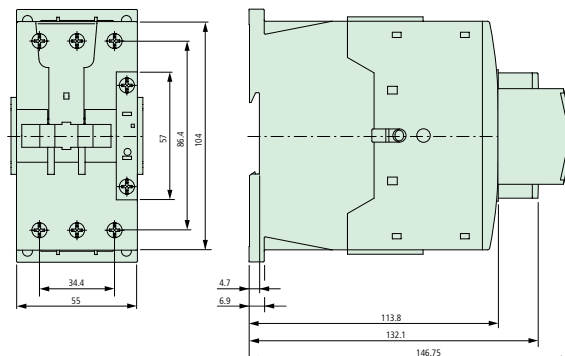
|                                                                                    |           |                                                            |
|------------------------------------------------------------------------------------|-----------|------------------------------------------------------------|
| Shock resistance (half-sinusoidal shock 10 ms) (IEC/EN 60068-2-27)                 |           |                                                            |
| Main switching elements NO                                                         |           | 10 g                                                       |
| Auxiliary switching elements NO                                                    |           | 7 g                                                        |
| Auxiliary switching elements NC                                                    |           | 5 g                                                        |
| Degree of protection                                                               |           | IP20                                                       |
| Protection against accidental contact in case of vertical actuation from the front |           | finger and hand touch safe according to DGUV VS3, EN 50274 |
| <b>Main current paths</b>                                                          |           |                                                            |
| Rated peak withstand voltage                                                       | $U_{imp}$ | 8000 V AC                                                  |
| Rated insulation voltage                                                           | $U_i$     | 690 V                                                      |
| Overvoltage category/Pollution degree                                              |           | III/3                                                      |
| Rated operational voltage                                                          | $U_e$     | 690 V                                                      |
| Safe separation according to VDE 0106 Part 101 and Part 101/A1                     |           |                                                            |
| between coil and contacts                                                          |           | 400 V AC                                                   |
| between the contacts                                                               |           | 400 V AC                                                   |
| Making capacity $i_{cos\phi}$ according to IEC/EN 60947 to 690 V                   |           | 112 A                                                      |

### Dimensions (mm)

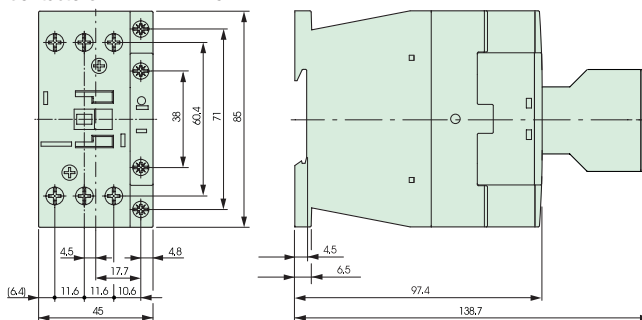
Contactors DILM7-DILM12



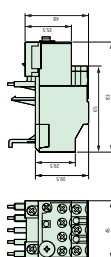
## Contactors DILM40-DILM65



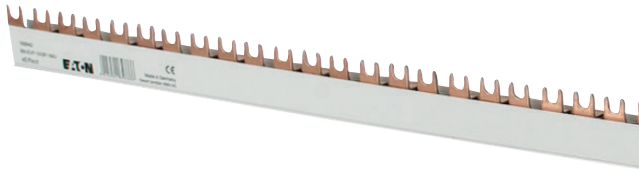
### Contactors DILM17-DILM32



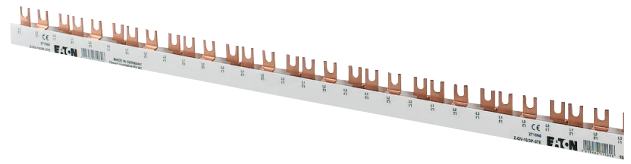
## Motor-protective Relay ZB12, ZB32



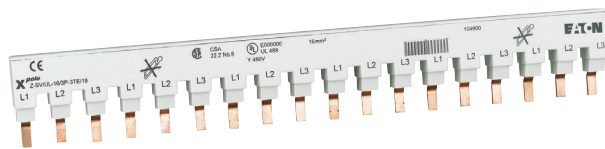
SG13113



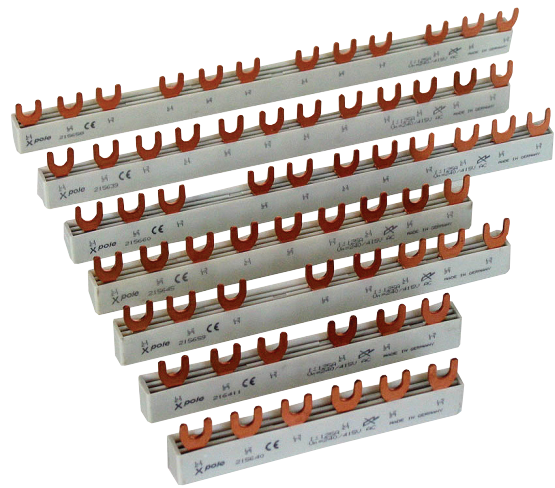
sg03515



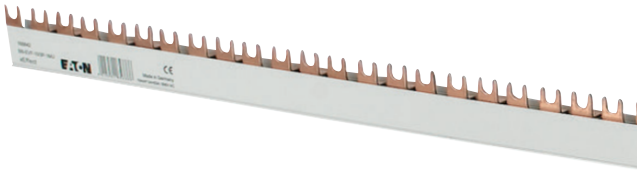
wa\_sg03511



Wa\_sg02902



SG13113



## Description

Busbar System xEffect is the modular design system for busbars. xEffect busbars are available as yard goods with 1, 2 or 3 poles. Now, there is a special feature: each bar can easily be extended by one-pole bar as you like. The additional pole can be added completely without tools by easy clamping technique. The lugs or forks in the xEffect bars - available in 10 and 16 mm<sup>2</sup> and all common distances - can be broken out at a predetermined breaking point. There is actually no more flexibility available.

### Busbar System xEffect saves time and material

The yard good can be cut with a saw of course. However, there is no need neither for deburring nor for cutting the conductor. Just cut to the required dimension and close with the fitting end cap -ready! The end caps have also breakable edges, which enable further connecting of the busbar System xEffect. By overlapping assembly, doubling the cross section can be achieved.

### Busbar System xEffect in use

Busbar System xEffect is especially well suited for solving flexible busbar applications rack-mounted models in series. Fork-pin combinations for 1+N-applications can be realized by individual combinations - for this also the one-pole version with blue isolation is available besides the one with grey isolation. Even different cross sections can be combined in this case.

Accessories, such as feeder terminals and self adhesive phase marking labels will complete the comfortable total package. Existing contact prevention caps can be used.

### Busbar System xEffect at a glance:

- Yard goods can be cut
- No cutting back of copper required
- No deburring required
- Almost no waste during cutting
- End caps available with 1- to 4-poles, end caps can be broken out for further extensions
- 4-pole end cap molded in pairs (left and right)
- Overlapping rail extension possible

- Rails can be extended on demand by 1-pole rails (plug-in technology)
- All step distances
- 10 and 16 mm<sup>2</sup>
- Fork and stud
- Lugs can be broken out at any predetermined breaking point
- Self adhesive phase indication labels available
- Contact preventing caps (ZV-BS-G) can be used
- Simple, flexible handling
- All assembly requirements can be covered by the busbar System xEffect
- Low storage space requirements due to modular system
- Less time consuming (no deburring, no cutting back)
- Individual and self configurable
- Fork-pin combination for 1+N application possible, feeding through rail (terminal clamp) not possible.
- Protected technology

| Description | Step Distance (mm) | Cu-factor | Type Designation | Article No. | Units per package |
|-------------|--------------------|-----------|------------------|-------------|-------------------|
|-------------|--------------------|-----------|------------------|-------------|-------------------|

### For MCBs, RCCBs, RCBOs, SPDs

- delivered without end caps

SG13113



SG13413



#### 10 mm<sup>2</sup>, Rated current 63 A

|                |            |      |                       |        |    |
|----------------|------------|------|-----------------------|--------|----|
| 1-phase        | 17.8       | 0.22 | BB-EVF-10/1P-1MU      | 168826 | 10 |
|                | 27         | 0.24 | BB-EVF-10/1P-1,5MU    | 168830 | 10 |
|                | 36         | 0.24 | BB-EVF-10/1P-2MU      | 168834 | 10 |
| 2-phases       | 17.8       | 0.31 | BB-EVF-10/2P-1MU      | 168838 | 10 |
|                | 27         | 0.36 | BB-EVF-10/2P-1,5MU    | 168840 | 10 |
| 3-phases       | 17.8       | 0.46 | BB-EVF-10/3P-1MU      | 168842 | 10 |
|                | 27         | 0.58 | BB-EVF-10/3P-1,5MU    | 168844 | 10 |
|                | 36         | 0.56 | BB-EVF-10/3P-2MU      | 168850 | 10 |
| 3-phases + AUX | 3x17.8+1x9 | 0.58 | BB-EVF-10/3P-1MU/AUX  | 168846 | 10 |
|                | 3x17.8+2x9 | 0.57 | BB-EVF-10/3P-1MU/2AUX | 168848 | 10 |
| Neutral        | 17.8       | 0.22 | BB-EVF-10/N-1MU       | 168828 | 10 |
|                | 27         | 0.24 | BB-EVF-10/N-1,5MU     | 168832 | 10 |
|                | 36         | 0.24 | BB-EVF-10/N-2MU       | 168836 | 10 |

SG13213



SG13613



#### 16 mm<sup>2</sup>, Rated current 80 A

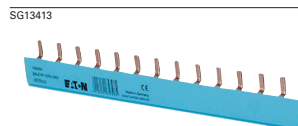
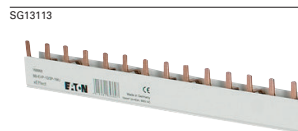
|                |            |      |                       |        |    |
|----------------|------------|------|-----------------------|--------|----|
| 1-phase        | 17.8       | 0.33 | BB-EVF-16/1P-1MU      | 168827 | 10 |
|                | 27         | 0.36 | BB-EVF-16/1P-1,5MU    | 168831 | 10 |
|                | 36         | 0.32 | BB-EVF-16/1P-2MU      | 168835 | 10 |
| 2-phases       | 17.8       | 0.46 | BB-EVF-16/2P-1MU      | 168839 | 10 |
|                | 27         | 0.54 | BB-EVF-16/2P-1,5MU    | 168841 | 10 |
| 3-phases       | 17.8       | 0.69 | BB-EVF-16/3P-1MU      | 168843 | 10 |
|                | 27         | 0.87 | BB-EVF-16/3P-1,5MU    | 168845 | 10 |
|                | 36         | 0.84 | BB-EVF-16/3P-2MU      | 168851 | 10 |
| 3-phases + AUX | 3x17.8+1x9 | 0.87 | BB-EVF-16/3P-1MU/AUX  | 168847 | 10 |
|                | 3x17.8+2x9 | 0.86 | BB-EVF-16/3P-1MU/2AUX | 168849 | 10 |
| Neutral        | 17.8       | 0.33 | BB-EVF-16/N-1MU       | 168829 | 10 |
|                | 27         | 0.36 | BB-EVF-16/N-1,5MU     | 168833 | 10 |
|                | 36         | 0.32 | BB-EVF-16/N-2MU       | 168837 | 10 |



| Description | Step Distance (mm) | Cu-factor | Type Designation | Article No. | Units per package |
|-------------|--------------------|-----------|------------------|-------------|-------------------|
|-------------|--------------------|-----------|------------------|-------------|-------------------|

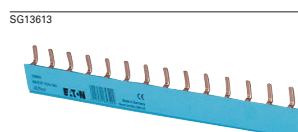
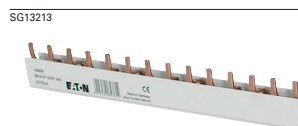
### For MCBs, RCCBs, RCBs, SPDs

- delivered without end caps



#### 10 mm<sup>2</sup>, Rated current 63 A

|                |            |      |                       |        |    |
|----------------|------------|------|-----------------------|--------|----|
| 1-phase        | 17.8       | 0.22 | BB-EVP-10/1P-1MU      | 168852 | 10 |
|                | 27         | 0.24 | BB-EVP-10/1P-1,5MU    | 168856 | 10 |
|                | 36         | 0.24 | BB-EVP-10/1P-2MU      | 168860 | 10 |
| 2-phases       | 17.8       | 0.31 | BB-EVP-10/2P-1MU      | 168864 | 10 |
|                | 27         | 0.36 | BB-EVP-10/2P-1,5MU    | 168866 | 10 |
| 3-phases       | 17.8       | 0.46 | BB-EVP-10/3P-1MU      | 168868 | 10 |
|                | 27         | 0.58 | BB-EVP-10/3P-1,5MU    | 168870 | 10 |
|                | 36         | 0.56 | BB-EVP-10/3P-2MU      | 168876 | 10 |
| 3-phases + AUX | 3x17.8+1x9 | 0.58 | BB-EVP-10/3P-1MU/AUX  | 168872 | 10 |
|                | 3x17.8+2x9 | 0.57 | BB-EVP-10/3P-1MU/2AUX | 168874 | 10 |
| Neutral        | 17.8       | 0.22 | BB-EVP-10/N-1MU       | 168854 | 10 |
|                | 27         | 0.24 | BB-EVP-10/N-1,5MU     | 168858 | 10 |
|                | 36         | 0.24 | BB-EVP-10/N-2MU       | 168862 | 10 |



#### 16 mm<sup>2</sup>, Rated current 80 A

|                |            |      |                       |        |    |
|----------------|------------|------|-----------------------|--------|----|
| 1-phase        | 17.8       | 0.33 | BB-EVP-16/1P-1MU      | 168853 | 10 |
|                | 27         | 0.36 | BB-EVP-16/1P-1,5MU    | 168857 | 10 |
|                | 36         | 0.32 | BB-EVP-16/1P-2MU      | 168861 | 10 |
| 2-phases       | 17.8       | 0.46 | BB-EVP-16/2P-1MU      | 168865 | 10 |
|                | 27         | 0.54 | BB-EVP-16/2P-1,5MU    | 168867 | 10 |
| 3-phases       | 17.8       | 0.69 | BB-EVP-16/3P-1MU      | 168869 | 10 |
|                | 27         | 0.87 | BB-EVP-16/3P-1,5MU    | 168871 | 10 |
|                | 36         | 0.84 | BB-EVP-16/3P-2MU      | 168877 | 10 |
| 3-phases + AUX | 3x17.8+1x9 | 0.87 | BB-EVP-16/3P-1MU/AUX  | 168873 | 10 |
|                | 3x17.8+2x9 | 0.86 | BB-EVP-16/3P-1MU/2AUX | 168875 | 10 |
| Neutral        | 17.8       | 0.33 | BB-EVP-16/N-1MU       | 168855 | 10 |
|                | 27         | 0.36 | BB-EVP-16/N-1,5MU     | 168859 | 10 |
|                | 36         | 0.32 | BB-EVP-16/N-2 MU      | 168863 | 10 |

### Accessories

#### End Caps BB-EV-EC



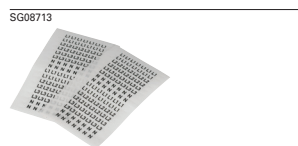
|            |   |   |               |        |    |
|------------|---|---|---------------|--------|----|
| 1-phase    | - | - | BB-EV-EC/1P   | 168878 | 40 |
| 2+3-phases | - | - | BB-EV-EC/2-3P | 168823 | 40 |
| 4-phases   | - | - | BB-EV-EC/4P   | 168824 | 20 |
| Neutral    | - | - | BB-EV-EC/N    | 168879 | 20 |

#### Terminal BB-EV-MU/35



|   |   |      |             |        |   |
|---|---|------|-------------|--------|---|
| - | - | 0.04 | BB-EV-MU/35 | 168825 | 3 |
|---|---|------|-------------|--------|---|

#### Sticker Phase Sequence



|   |   |   |         |        |   |
|---|---|---|---------|--------|---|
| - | - | - | BB-S-PS | 169831 | 5 |
|---|---|---|---------|--------|---|

#### Busbar Tag Shrouds ZV-BS-G



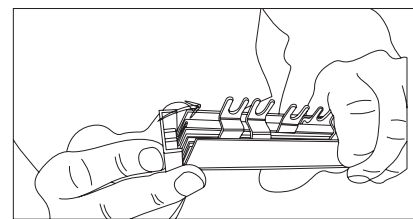
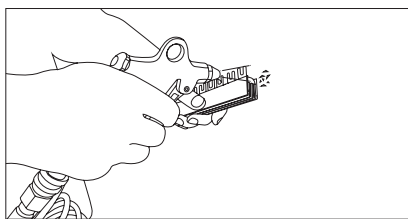
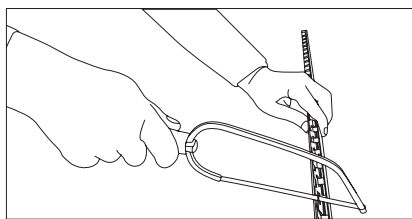
|   |   |   |         |        |        |
|---|---|---|---------|--------|--------|
| - | - | - | ZV-BS-G | 104903 | 10/600 |
|---|---|---|---------|--------|--------|

## Technical Data

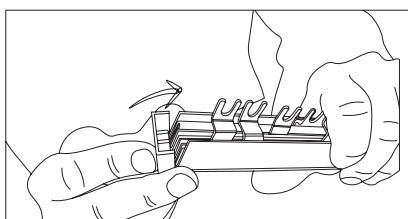
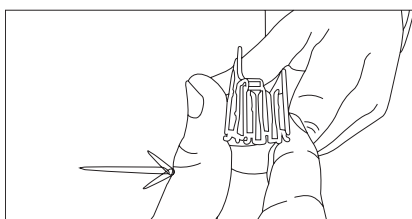
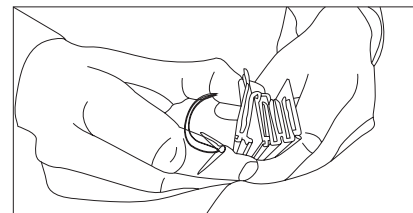
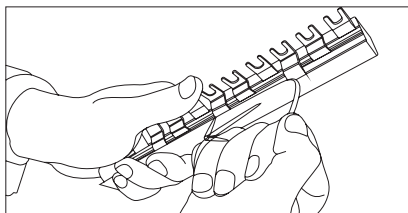
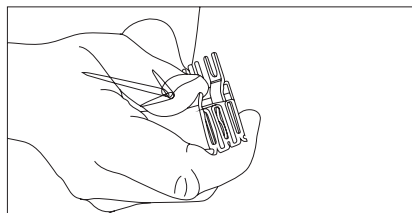
| BB-EV.                      |                                                     |
|-----------------------------|-----------------------------------------------------|
| <b>General</b>              |                                                     |
| Heat deflection temperature | ≥ 80°C UL94 V0                                      |
| Standards                   | EN 60947-1:2007 / IEC 60947-1:2007 / IEC 60999:2000 |
| Climate stability           | according to DIN EN 60068                           |
| Insulation coordination     | Overvoltage category III / Pollution degree 2       |
| <b>Electrical</b>           |                                                     |
| Impulse voltage strenght    | ≥ 4.5 kV                                            |
| Min. air distance           | >5.5 mm                                             |
| Min. creeping distance      | >5 mm                                               |
| Max. operating voltage      | 690 V AC/DC<br>1,000 V DC 1-pole only               |
| Max. busbar current         | I <sub>s</sub> /Phase                               |
| 10 mm <sup>2</sup>          | 63 A                                                |
| 16 mm <sup>2</sup>          | 80 A                                                |
| Protection class            | IP20                                                |
| Short circuit rating        | I <sub>cc</sub> 25 kA - NH3 355A, gC500V JM         |
| Dielectric strenght         | PC - ABS >32 kV / mm                                |

## Assembly instruction:

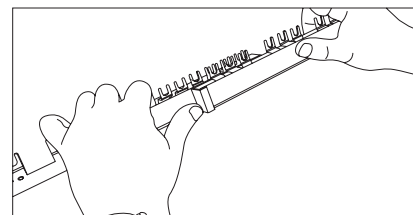
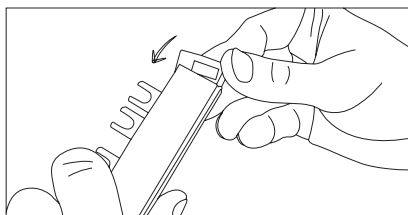
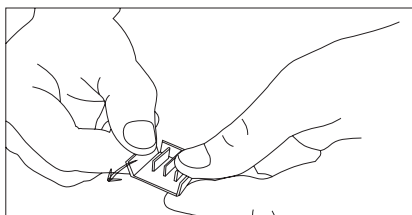
### Cutting



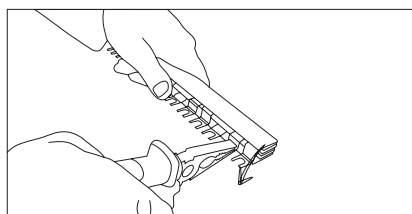
### Mounting of an extension busbar



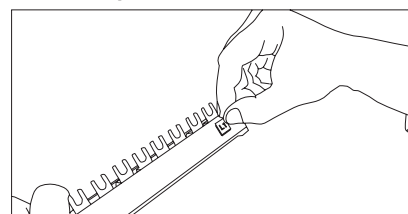
### Overlapping mounting or further connection, resp.



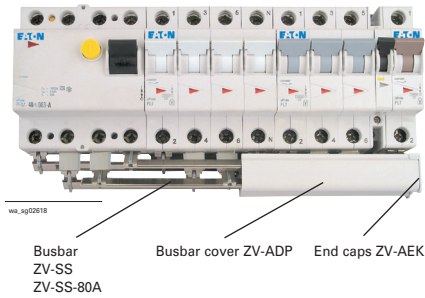
### Breacking out of connection lugs



### Sticking on phase marking



## Plug-in busbar System 50 A, 80 A ZV

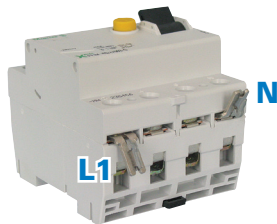


for PLS., PKN., PFIM, PFHM (with Auxiliary Switch)

| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

## Connection Angle L1, N

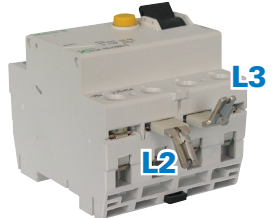
WA\_SG08102

Same connection angle ZV-L1/N (-80A),  
for L1 and N, turned by 180°

|             |       |                 |        |            |
|-------------|-------|-----------------|--------|------------|
| <b>50 A</b> |       |                 |        |            |
| 10 units    | 0.005 | ZV-L1/N-10      | 263941 | 10 / 600   |
| 36 units    | 0.005 | ZV-L1/N-36      | 263942 | 36 / 2160  |
| 100 units   | 0.005 | ZV-L1/N-100     | 263943 | 100 / 3000 |
| <b>80 A</b> |       |                 |        |            |
| 10 units    | 0.005 | ZV-L1/N-80A-10  | 263950 | 10 / 600   |
| 36 units    | 0.005 | ZV-L1/N-80A-36  | 263951 | 36 / 2160  |
| 100 units   | 0.005 | ZV-L1/N-80A-100 | 263952 | 100 / 3000 |

## Connection Angle L2, L3

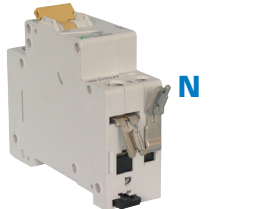
WA\_SG07902

Same connection angle ZV-L2/L3(-80A),  
for L2 and L3, turned by 180°

|             |       |                  |        |            |
|-------------|-------|------------------|--------|------------|
| <b>50 A</b> |       |                  |        |            |
| 10 units    | 0.007 | ZV-L2/L3-10      | 263944 | 10 / 600   |
| 36 units    | 0.007 | ZV-L2/L3-36      | 263945 | 36 / 2160  |
| 100 units   | 0.007 | ZV-L2/L3-100     | 263946 | 100 / 3000 |
| <b>80 A</b> |       |                  |        |            |
| 10 units    | 0.007 | ZV-L2/L3-80A-10  | 263953 | 10 / 600   |
| 36 units    | 0.007 | ZV-L2/L3-80A-36  | 263954 | 36 / 2160  |
| 100 units   | 0.007 | ZV-L2/L3-80A-100 | 263955 | 100 / 3000 |

## Connection Angle N (0.5 MU) for PLSM

WA\_SG08002

Same connection angle ZV-N-05TE for  
N 50 and 80 A busbar

|             |       |               |        |            |
|-------------|-------|---------------|--------|------------|
| <b>50 A</b> |       |               |        |            |
| 10 units    | 0.005 | ZV-N-05TE-10  | 263947 | 10 / 600   |
| 36 units    | 0.005 | ZV-N-05TE-36  | 263948 | 36 / 2160  |
| <b>80 A</b> |       |               |        |            |
| 100 units   | 0.005 | ZV-N-05TE-100 | 263949 | 100 / 3000 |

# 1.102 Busbar Systems

## Plug-in busbar System 50 A, 80 A ZV

xPole

330607, SG7997



50 A, ZV-SS



80 A, ZV-SS-80A

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

### Busbar 1m

#### 50 A

|       |       |        |        |
|-------|-------|--------|--------|
| 0.143 | ZV-SS | 263956 | 1 / 10 |
|-------|-------|--------|--------|

#### 80 A

### Accessories

|                                       |        |        |          |
|---------------------------------------|--------|--------|----------|
| Busbar cover 1m, for 50+80 A          | ZV-ADP | 263958 | 1 / 10   |
| End caps for busbar cover             | ZV-AEK | 263959 | 10 / 600 |
| Power feed block 35/50mm <sup>2</sup> | Z-D80  | 248269 | 12 / 120 |

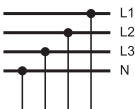
### Description Plug-in busbar System 50 A, 80 A ZV

- Any combinations of switchgear with or without auxiliary switch possible
- Low number of components, 2 angle types per busbar cross-section for three-phases AC
- Same busbar cover and end caps for ZV-SS and ZV-SS-80A
- Short-circuit withstand strength and dielectric properties tested according to IEC/EN 60439-1

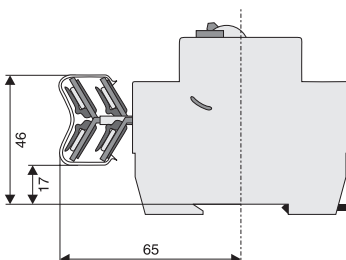
### Technical Data

| ZV                                                          |                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------|
| <b>Electrical</b>                                           |                                                                |
| Rated operational voltage                                   | 240/415 VA C                                                   |
| Rated frequency                                             | 50/60 Hz, DC                                                   |
| Rated voltage                                               | 690 V (at Pollution degree 2)<br>440 V (at Pollution degree 3) |
| Overvoltage category                                        | III                                                            |
| Rated peak withstand voltage                                | $U_{imp}$ 4 kV                                                 |
| Rated current                                               |                                                                |
| ZV-./., ZV-SS                                               | 50 A                                                           |
| ZV-./.-80A, ZV-SS-80A                                       | 80 A                                                           |
| ZV..-N-05TE                                                 | 32 A                                                           |
| Conditional rated short circuit current                     |                                                                |
| AC with 125 A gG                                            |                                                                |
| ZV-./., ZV-SS                                               | 50 kA                                                          |
| ZV-./.-80A, ZV-SS-80A                                       | 50 kA                                                          |
| ZV..-N-05TE                                                 | 10 kA                                                          |
| AC with 160 A gG                                            |                                                                |
| ZV-./., ZV-SS                                               | —                                                              |
| ZV-./.-80A, ZV-SS-80A                                       | 50 kA                                                          |
| ZV..-N-05TE                                                 | 10 kA                                                          |
| DC with 160 A gG                                            |                                                                |
| ZV-./., ZV-SS                                               | 10 kA                                                          |
| ZV-./.-80A, ZV-SS-80A                                       | 10 kA                                                          |
| ZV..-N-05TE                                                 | —                                                              |
| <b>Mechanical</b>                                           |                                                                |
| Busbar cross section                                        |                                                                |
| ZV-SS                                                       | 16 mm <sup>2</sup> Cu                                          |
| ZV-SS-80A                                                   | 25 mm <sup>2</sup> Cu                                          |
| Busbar length                                               | 1 m                                                            |
| Degree of protection mounted with busbar cover and end caps | IP20                                                           |
| Pollution degree                                            | 2 (3)                                                          |
| Air gap                                                     | ≥ 3.2 mm                                                       |
| Minimum creepage distance                                   | ≥ 7 mm                                                         |

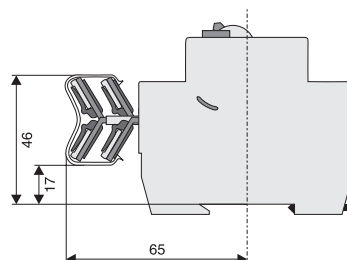
### Connection diagram



### Dimensions (mm) 50 A



### Dimensions (mm) 80 A



| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

## Busbar Block (Fork) Z-GV

- for PXL, PKX, PXF, PLS., PKN., PFIM, PFHM, Z-SLS/D01

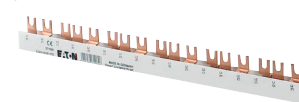
## Busbar Block (Fork) Z-GV

- delivered with end caps

### 16 mm<sup>2</sup> - Rated current 80 A

|             |       |                     |        |    |
|-------------|-------|---------------------|--------|----|
| 1-phase 16x | 0.095 | Z-GV-16/1P-1TE/16   | 271074 | 50 |
| 2-phases 8x | 0.187 | Z-GV-16/1P+N-2TE/16 | 271075 | 20 |
| 4-phases 4x | 0.444 | Z-GV-16/3P+N-4TE/16 | 271078 | 15 |

sg03515



## Busbar Block (Fork) Z-GV, 1 Meter

- delivered without end caps

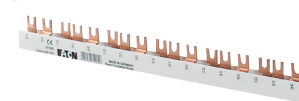
### 10 mm<sup>2</sup> - Rated current 63 A

|                    |       |                |        |          |
|--------------------|-------|----------------|--------|----------|
| 1-phase            | 0.408 | Z-GV-10/1P-1TE | 270339 | 50       |
| 3-phases           | 0.739 | Z-GV-10/3P-3TE | 271060 | 20       |
| 3-phases           | 0.739 | Z-GV-10/3P-4TE | 271080 | 20       |
| End cap 1-phase    |       | Z-V-AK/1P      | 104905 | 10 / 600 |
| End cap 2+3-phases |       | BB-EC/2+3P     | 120805 | 10 / 600 |

### 16 mm<sup>2</sup> - Rated current 80 A

|                             |       |                   |        |          |
|-----------------------------|-------|-------------------|--------|----------|
| 1-phase                     | 0.470 | Z-GV-16/1P-1TE    | 271061 | 50       |
| 1-phase + Auxiliary Switch  | 0.470 | Z-GV-16/1P+HS     | 271062 | 50       |
| 2-phases                    | 0.657 | Z-GV-16/1P+N-2TE  | 271063 | 20       |
| 3-phases                    | 1.042 | Z-GV-16/3P-3TE    | 271064 | 20       |
| 3-phases + Auxiliary Switch | 0.998 | Z-GV-16/3P+HS     | 271065 | 20       |
| 4-phases                    | 1.465 | Z-GV-16/3P+N-4TE  | 271066 | 15       |
| 4-phases                    | 1.522 | Z-GV-16/3P+3N-6TE | 263142 | 15       |
| 4-phases                    | 1.050 | Z-GV-16/PKX/4PHAS | 116882 | 10       |
| End cap 1-phase             |       | Z-V-AK/1P         | 104905 | 10 / 600 |
| End cap 2+3-phases          |       | BB-EC/2+3P        | 120805 | 10 / 600 |
| End cap 4-phases            |       | Z-V-AK/4P         | 264931 | 10 / 600 |

sg03515



| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

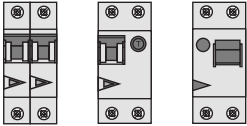
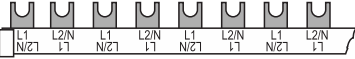
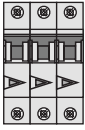
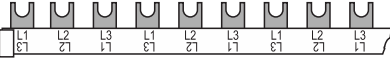
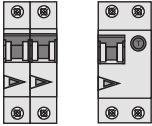
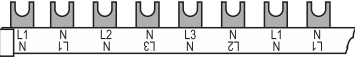
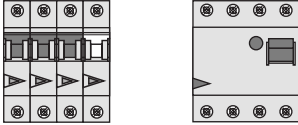
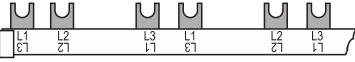
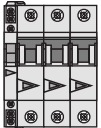
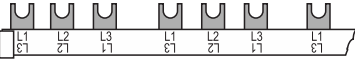
## Accessories

### Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705



**Description of the Busbar Block (Fork) Z-GV**

| Devices to busbar                                                                                                                          | Pcs. of the devices    | End caps                             | Type                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1-phase</b><br>                                        | x57<br>x57<br>x16      | Z-V-<br>AK/1P                        | <br>Z-GV-10/1P-1TE<br>Z-GV-16/1P-1TE<br>Z-GV-16/1P-1TE/16                     |
| <b>2-phases</b><br>                                       | x28<br>x8              | Z-AK-<br>16/2+3P                     | <br>Z-GV-16/1P+N-2TE<br>Z-GV-16/1P+N-2TE/16                                   |
| <b>3-phases</b><br>                                       | x19<br>x19<br>x2<br>x5 | Z-AK-<br>10/2+3P<br>Z-AK-<br>16/2+3P | <br>Z-GV-10/3P-3TE<br>Z-GV-16/3P-3TE<br>Z-GV-16/3P-3TE/8<br>Z-GV-16/3P-3TE/16 |
| <b>4-phases</b><br>                                      | x27                    | Z-AK-<br>16/4P                       | <br>Z-GV-16/3P+3N-6TE                                                         |
|                                                         | x14<br>x4              | Z-AK-<br>16/4P                       | <br>Z-GV-16/3P+N-4TE<br>Z-GV-16/3P+N-4TE/16                                 |
| <b>For 2-pole Combined RCD/MCB Device, 3-phases</b><br> | x18<br>x6              | Z-AK-<br>10/2+3P                     | <br>Z-GV-10/3P-4TE<br>Z-GV-10/3P-4TE/17                                     |
| <b>For 2-pole Combined RCD/MCB Device, 4-phases</b><br> | x18                    | Z-V-AK/<br>4P                        | <br>Z-GV-16/PKPx/4PHAS                                                      |
| <b>1-phase + Auxiliary Switch</b><br>                   | x38                    | Z-V-<br>AK/1P                        | <br>Z-GV-16/1P+HS                                                           |
| <b>3-phases + Auxiliary Switch</b><br>                  | x16                    | Z-AK-<br>16/2+3P                     | <br>Z-GV-16/3P+HS                                                           |

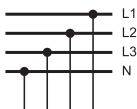
Description Busbar Block 10mm², 16mm² (Fork) Z-GV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/17, /16, /8) delivered with end caps

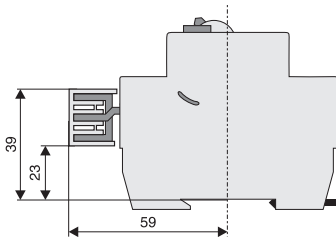
Technical Data

| Z-GV                           |                     |
|--------------------------------|---------------------|
| <strong>Electrical</strong>    |                     |
| Rated voltage                  | 240/415 V, 50/60 Hz |
| Rated current                  |                     |
| 10 mm²                         | 63 A                |
| 16 mm²                         | 80 A                |
| Short-circuit current strength | 25 kA               |
| <strong>Mechanical</strong>    |                     |
| Busbar cross section           | 10 and 16 mm² Cu    |
| Step distance                  | 17.8 mm             |
| Z-GV-16-P+HS                   | 17.8/27 mm          |

Connection diagram

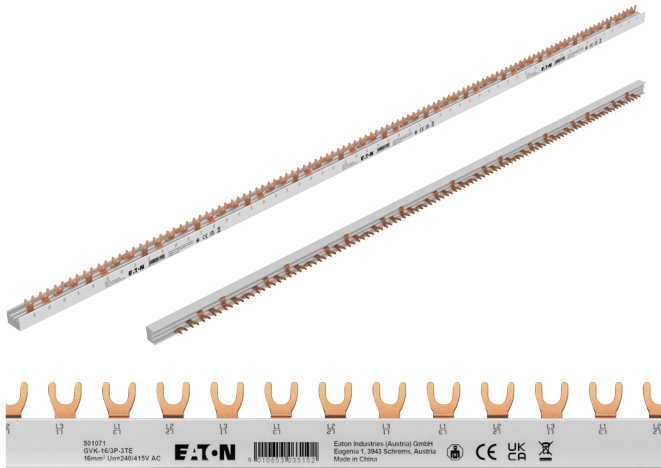


Dimensions (mm)





WA\_REN\_SG\_01922\_L, WA\_REN\_SG\_01322\_R, WA\_REN\_SG\_01522\_C



## Description

- Available in 10 and 16 mm<sup>2</sup> cross section
- Fork type
- 3- to 4-phases end caps available as accessories
- End caps must be ordered separately
- Comes in 1 meter length
- Busbar can be cut to desired length

| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

## Busbar Block (Fork) GVK

- delivered without end caps
- comes in 1 meter length
- can be cut to length

### 10 mm<sup>2</sup> - Rated current 63 A

|          |       |               |           |    |
|----------|-------|---------------|-----------|----|
| 3-phases | 0.350 | GVK-10/3P-3TE | EP-501073 | 20 |
|----------|-------|---------------|-----------|----|

### 16 mm<sup>2</sup> - Rated current 80 A

|          |       |                  |           |    |
|----------|-------|------------------|-----------|----|
| 3-phases | 0.523 | GVK-16/3P-3TE    | EP-501071 | 20 |
| 4-phases | 0.660 | GVK-16/3P+N-4TE  | EP-501074 | 15 |
| 4-phases | 0.610 | GVK-16/3P+3N-6TE | EP-501072 | 15 |

WA\_REN\_SG\_01922\_L



## Accessories

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

|                                         |                   |           |           |
|-----------------------------------------|-------------------|-----------|-----------|
| End cap 3-Phases for 10 mm <sup>2</sup> | EK-3/10-EVGK-GVK  | EP-501076 | 10 / 5000 |
| End cap 3-Phases for 16 mm <sup>2</sup> | EK-3/16-EVGK-GVK  | EP-501077 | 10 / 5000 |
| End cap 4-Phases for 16 mm <sup>2</sup> | EK-3N/16-EVGK-GVK | EP-501078 | 10 / 5000 |

WA\_REN\_SG\_00822\_L



| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

## Accessories

### Busbar Tag Shrouds for busbar, yellow ZV-BS-G

|                            |         |        |          |
|----------------------------|---------|--------|----------|
| Finger and hand touch safe | ZV-BS-G | 104903 | 10 / 600 |
|----------------------------|---------|--------|----------|

SG05705



Description Busbar Block 10mm², 16mm² (Fork) GVK

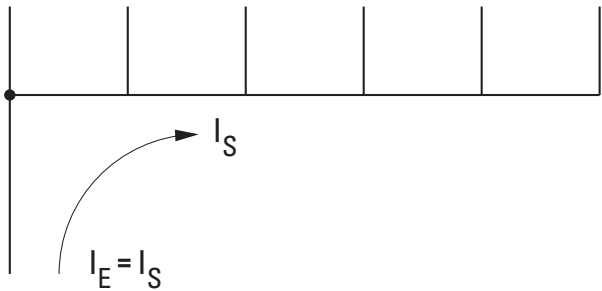
- GVK busbars can be cut to length
- Endcaps are not included and should be ordered separately

Technical Data

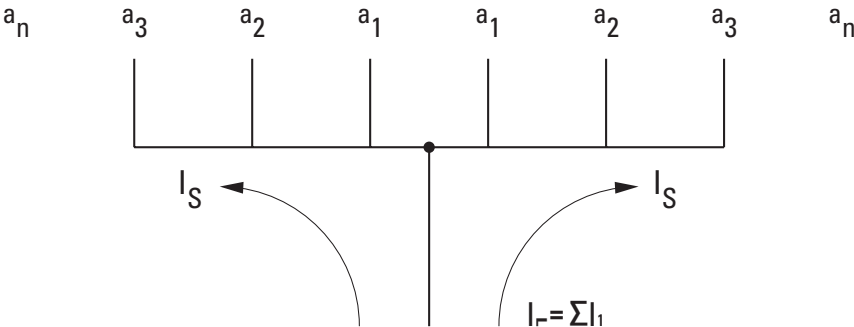
| GVK                            |                                                                                                         |
|--------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>General</b>                 |                                                                                                         |
| Standards                      | DIN EN 61439-1:2021-10 / DIN EN 61439-6:2013-06<br>IEC 664 / IEC 60895-2-12 / VDE 0110 / DIN EN 60754-1 |
| Climate stability              | according to IEC 68-2                                                                                   |
| Overvoltage category           | III                                                                                                     |
| Pollution Degree               | 2                                                                                                       |
| Busbar Material                | E-Cu-ETP                                                                                                |
| Isolation Material             | PC-ABS                                                                                                  |
| Endcap Material                | PC-ABS                                                                                                  |
| Touch protection Material      | PP                                                                                                      |
| <b>Electrical</b>              |                                                                                                         |
| Rated operating voltage        | 240/415 V AC                                                                                            |
| Rated current                  |                                                                                                         |
| 10 mm²                         | 63 A                                                                                                    |
| 16 mm²                         | 80 A                                                                                                    |
| Short-circuit current strength | 25 kA /100 A gl                                                                                         |
| Disruptive Strength            | 36 kV/mm                                                                                                |
| Surge Voltage                  | $U_{imp}$ 4 kV                                                                                          |
| <b>Mechanical</b>              |                                                                                                         |
| Busbar cross section           | 10 and 16 mm²                                                                                           |
| Step distance                  | 17.8 mm                                                                                                 |

Feeding

Side Feeding

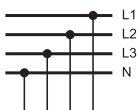


Central Feeding



Using central supply feeding you must be sure that the sum of the output current depending on  $a_1 \dots a_n$  of each busbar part is not greater than the above max. busbar current  $I_s$  / phase

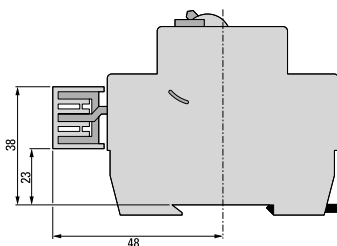
### Connection diagram



### Description Graphics

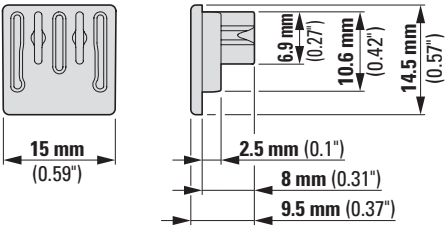
| Devices to busbar  | Pcs. of the devices | End caps          | Type             |
|--------------------|---------------------|-------------------|------------------|
| 3-phases           |                     |                   |                  |
|                    | x19                 | EK-3/10-EVGK-GVK  | GVK-10/3P-3TE    |
|                    | x19                 | EK-3/16-EVGK-GVK  | GVK-16/3P-3TE    |
| 2-phases (3P + 3N) |                     |                   |                  |
|                    | x27                 | EK-3N/16-EVGK-GVK | GVK-16/3P+3N-6TE |
| 4-phases           |                     |                   |                  |
|                    | x14                 | EK-3N/16-EVGK-GVK | GVK-16/3P+N-4TE  |

### Dimensions (mm)

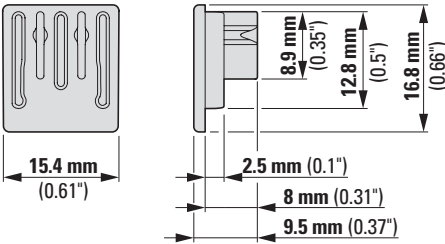


End Cap dimensions (mm)

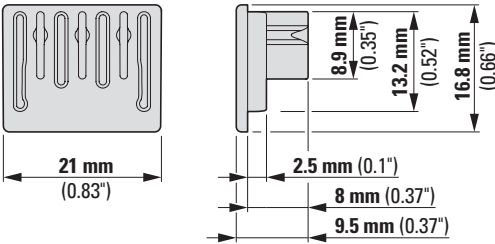
EK-3/10-EVGK-GVK



EK-3/16-EVGK-GVK

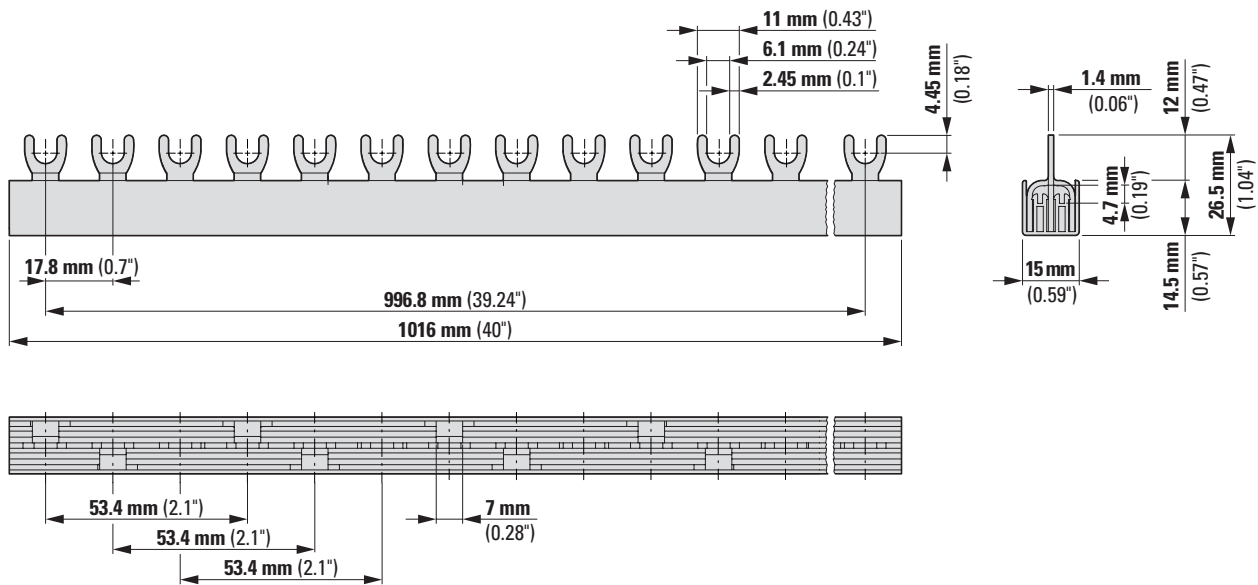


EK-3N/16-EVGK-GVK

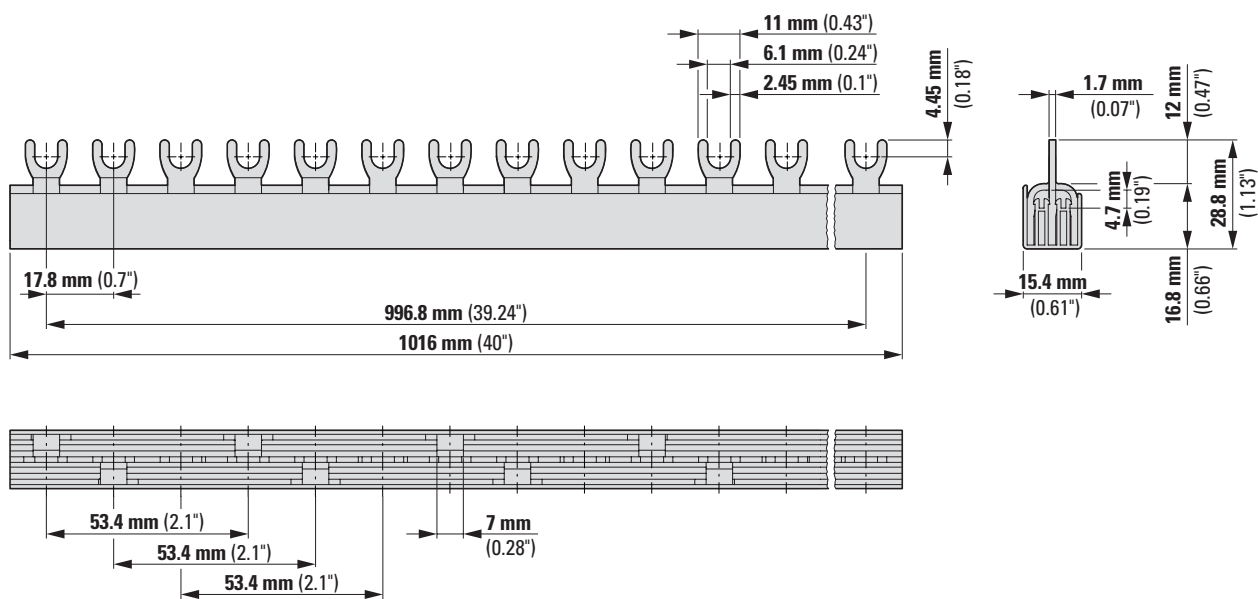


### Busbar dimensions (mm)

GVK-10/3P-3TE

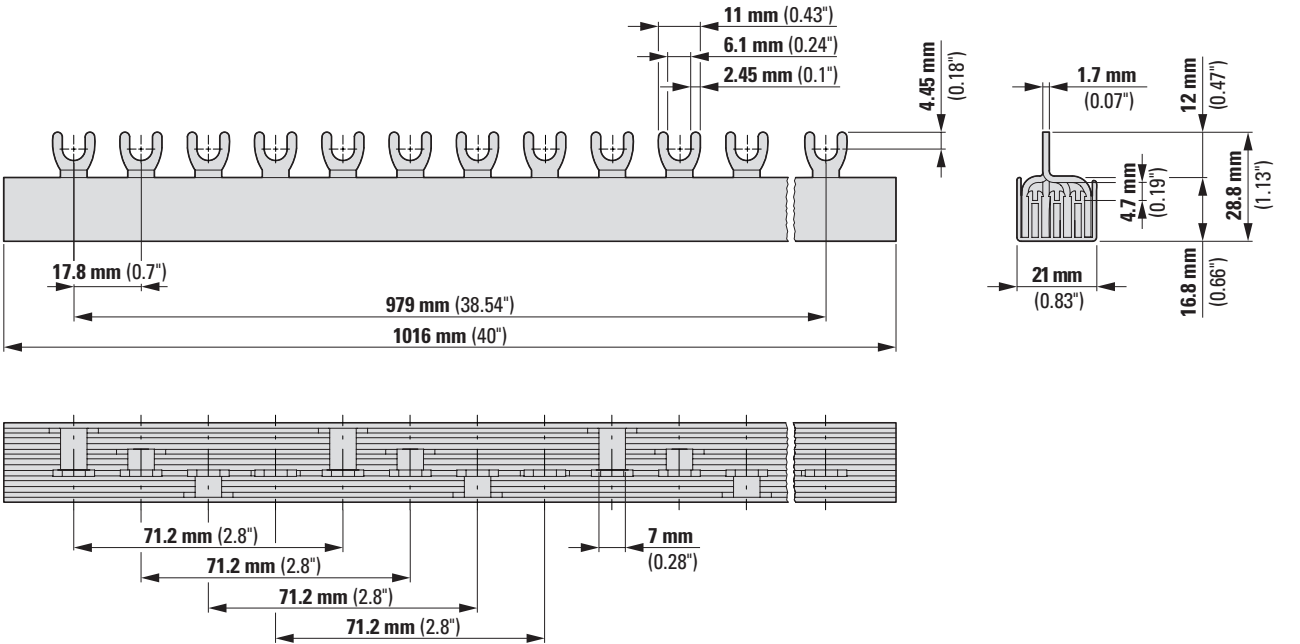


GVK-16/3P-3TE

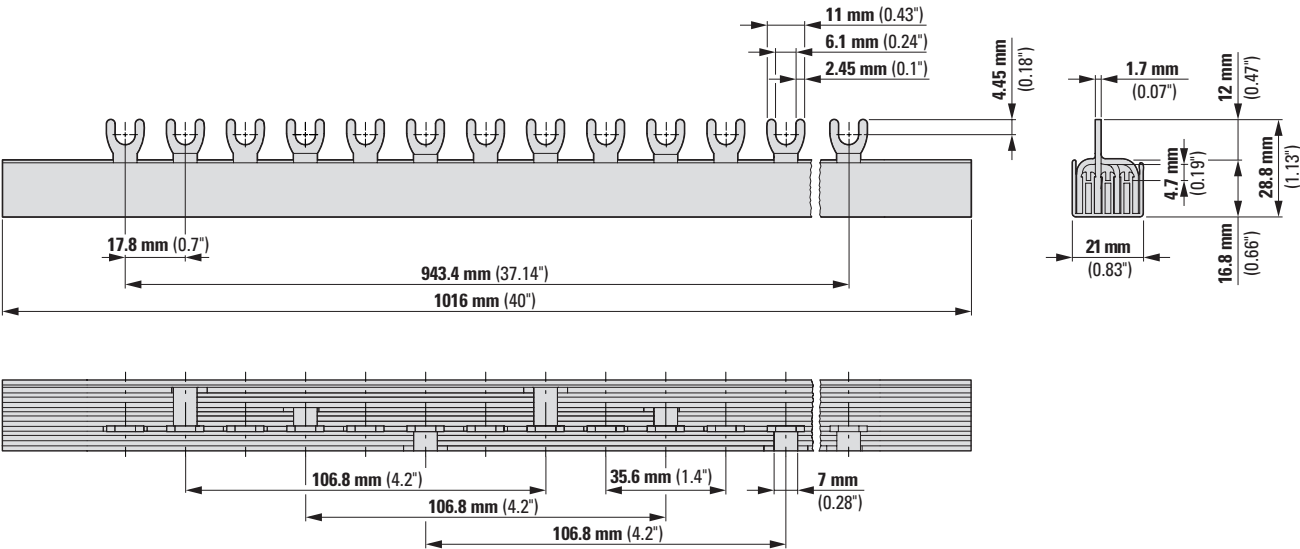


Busbar dimensions (mm)

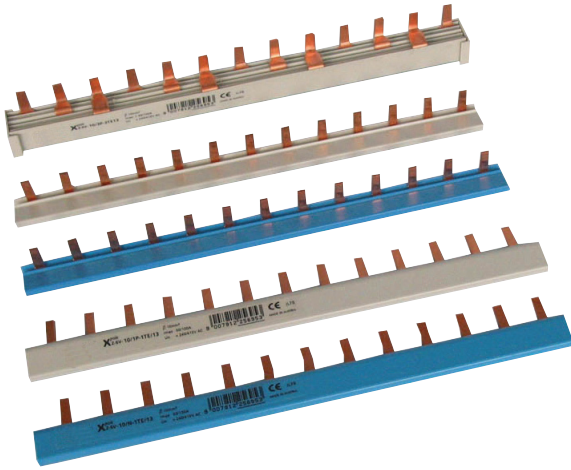
GVK-16/3P+N-4TE



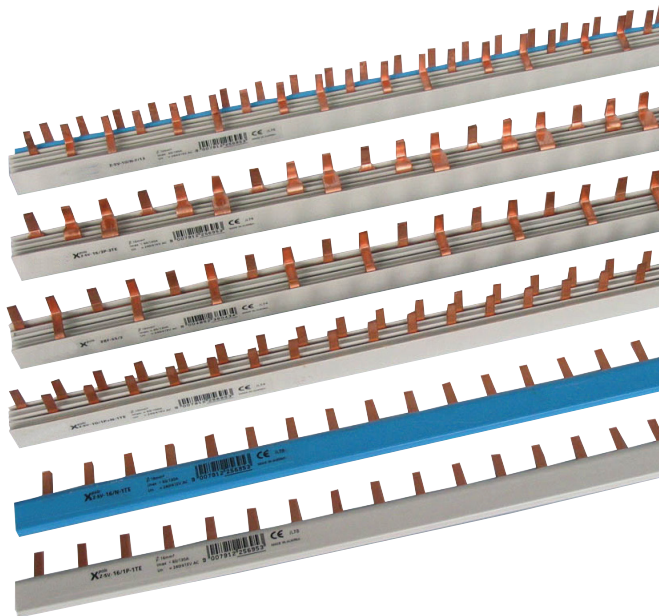
GVK-16/3P+3N-6TE



WA\_SG11302



WA\_SG11302





| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

Busbar Block (Fork and Pin) Z-GSV

- for PLS.1N (1.5MU)

Busbar Block (Fork and Pin) Z-GSV

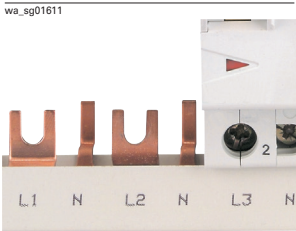
- delivered with end caps

10 mm<sup>2</sup> - Rated current 63 A

|          |       |                       |        |    |
|----------|-------|-----------------------|--------|----|
| 4-phases | 0.208 | Z-GSV-10/FI+EH+2XLS1N | 113138 | 10 |
| 4-phases | 0.277 | Z-GSV-10/FI+EH+4XLS1N | 113139 | 10 |

16 mm<sup>2</sup> - Rated current 80 A

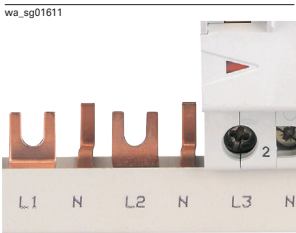
|             |       |                  |        |    |
|-------------|-------|------------------|--------|----|
| 4-phases 3x | 0.408 | Z-GSV-16/3P+3N/9 | 271079 | 15 |
|-------------|-------|------------------|--------|----|



Busbar Block (Fork and Pin) Z-GSV, 1 Meter

- delivered without end caps

16 mm<sup>2</sup> - Rated current 80 A



Description of the Busbar Block (Fork and Pin) Z-GSV

| Devices to busbar   | Pcs. of the devices | End caps | Type         |  |                                    |
|---------------------|---------------------|----------|--------------|--|------------------------------------|
| <div>4-phases</div> |                     |          | Z-V-AK/4P    |  | Z-GSV-10/FI+EH+2XLS1N              |
| <div>4-phases</div> |                     |          | Z-V-AK/4P    |  | Z-GSV-10/FI+EH+4XLS1N              |
| <div>2-phases</div> | x37<br>x9           |          | Z-AK-16/2+3P |  | Z-GSV-16/1P+N<br>Z-GSV-16/1P+N/9   |
| <div>4-phases</div> | x37<br>x9           |          | Z-AK-16/4P   |  | Z-GSV-16/3P+3N<br>Z-GSV-16/3P+3N/9 |
| <div>4-phases</div> |                     | 30x      | Z-V-AK/4P    |  | Z-GSV-16/FI+EH+KR+30XLS1N          |

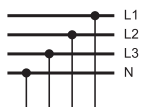
## Description Busbar Block 10mm<sup>2</sup>, 16mm<sup>2</sup> (Fork and Pin) Z-GSV

- Length 1m
- Delivered without end caps. Please order separately.
- Short version (/9) delivered with end caps

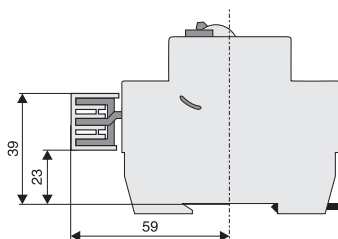
## Technical Data

|                                | Z-GSV                        |
|--------------------------------|------------------------------|
| <b>Electrical</b>              |                              |
| Rated voltage                  | 240/415 V, 50/60 Hz          |
| Rated current                  |                              |
| 10 mm <sup>2</sup>             | 63 A                         |
| 16 mm <sup>2</sup>             | 80 A                         |
| Short-circuit current strength | 25 kA                        |
| <b>Mechanical</b>              |                              |
| Busbar cross section           | 10 and 16 mm <sup>2</sup> Cu |
| Step distance                  | 26.7 mm                      |

## Connection diagram



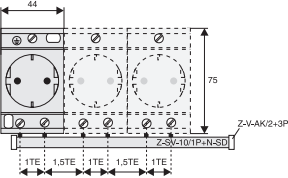
## Dimensions (mm)



| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

Busbar Block (Pin) Z-SV...-SD, 1 Meter

- For Protected Earth Socket Z-SD230
- delivered with end caps



10 mm<sup>2</sup> - Rated current 50 A

|          |       |                 |        |          |
|----------|-------|-----------------|--------|----------|
| Z-phases | 0.588 | Z-SV-10/1P+N-SD | 269526 | 10       |
| End caps |       | Z-V-AK/2+3P     | 264930 | 10 / 600 |

Description Busbar Block 10mm<sup>2</sup> (Pin) Z-SV ...-SD

- Delivered without end caps
- Step (distance between two pins of identical phase, i. e. L or N) 2.5 MU
- Length 1 m

Technical Data

| Z-SV-10/1P+N-SD                |                       |
|--------------------------------|-----------------------|
| <b>Electrical</b>              |                       |
| Rated voltage                  | 230/400 V, 50/60 Hz   |
| Rated current                  | 50 A                  |
| Short-circuit current strength | 25 kA                 |
| <b>Mechanical</b>              |                       |
| Busbar cross section           | 10 mm <sup>2</sup> Cu |
| Step distance                  | 44 mm                 |

Connection diagram



Accessories

WA\_SG10602



End caps

WA\_SG10702



Extension terminal  
Z-EK/25/QL

WA\_SG10702



Extension terminal  
Z-EK/25

| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

## Busbar Block (Pin) Z-SV

- for PLN. (1MU), Z-SI

## Busbar Block (Pin) Z-SV, 13TE

- delivered with end caps

### 10 mm<sup>2</sup> - Rated current 50 A

|                        |       |                      |        |    |
|------------------------|-------|----------------------|--------|----|
| 1-phase straight grey  | 0.055 | Z-SV-10/1P-1TE/13    | 264916 | 10 |
| 1-phase straight blue  | 0.055 | Z-SV-10/N-1TE/13     | 264917 | 10 |
| 1-phase angulated grey | 0.055 | Z-SV-10/1P-F/13      | 264918 | 10 |
| 1-phase angulated blue | 0.055 | Z-SV-10/N-F/13       | 264919 | 10 |
| 2-phases               | 0.126 | Z-SV-10/2P-2TE/13    | 264922 | 10 |
| 3-phases               | 0.203 | Z-SV-10/3P-3TE/13    | 264924 | 10 |
| 4-phases               | 0.258 | Z-SV-10/3P+N-4TE/12  | 264926 | 10 |
| 4-phases (for PLN.)    | 0.258 | Z-SV-10/3P+3N-3TE/13 | 264927 | 10 |

## Busbar Block (Pin) Z-SV, 1 Meter

- delivered without end caps

### 16 mm<sup>2</sup> - Rated current 63 A

|                        |       |                   |        |    |
|------------------------|-------|-------------------|--------|----|
| 1-phase straight grey  | 0.385 | Z-SV-16/1P-1TE    | 264912 | 25 |
| 1-phase straight blue  | 0.385 | Z-SV-16/N-1TE     | 264913 | 25 |
| 1-phase angulated grey | 0.385 | Z-SV-16/1P-1TE/F  | 269523 | 25 |
| 1-phase angulated blue | 0.385 | Z-SV-16/1N-1TE/F  | 269524 | 25 |
| 2-phases               | 0.941 | Z-SV-16/2P-2TE    | 264923 | 10 |
| 3-phases (for PLN.)    | 1.326 | Z-SV-16/2P+2N-2TE | 264914 | 7  |
| 3-phases               | 1.422 | Z-SV-16/3P-3TE    | 264925 | 10 |
| 4-phases               | 2.177 | Z-SV-16/3P+N-4TE  | 264928 | 7  |
| 4-phases (for PLN.)    | 1.807 | Z-SV-16/3P+3N-3TE | 264915 | 7  |

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

## Accessories

### End caps, Z-V-AK/, Z-BB-EC/4P

|            |                          |        |          |
|------------|--------------------------|--------|----------|
| 1-phase    | Z-V-AK/1P                | 104905 | 10 / 600 |
| 2+3-phases | Z-V-AK/2+3P              | 264930 | 10 / 600 |
| 4-phases   | Z-BB-EC/4P <sup>1)</sup> | 183116 | 10 / 600 |

<sup>1)</sup> only for Z-SV-16/3P+N-4TE, Article No. 264928

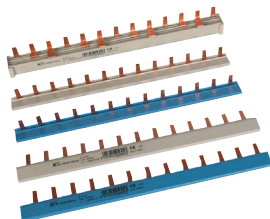
### Extension terminals 6 - 25 mm<sup>2</sup>, Z-EK/25

|                  |            |        |          |
|------------------|------------|--------|----------|
| long, straight   | Z-EK/25    | 264935 | 10 / 600 |
| short, straight  | Z-EK/25/K  | 269525 | 10 / 600 |
| long, crosswise  | Z-EK/25/QL | 264937 | 10 / 600 |
| short, crosswise | Z-EK/25/Q  | 264936 | 10 / 600 |

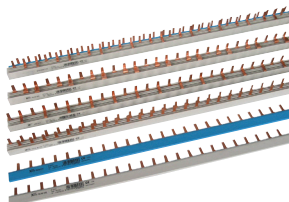
### Busbar Tag Shrouds for busbar, yellow ZV-BS-G

|                            |         |        |        |
|----------------------------|---------|--------|--------|
| Finger and hand touch safe | ZV-BS-G | 104903 | 10/600 |
|----------------------------|---------|--------|--------|

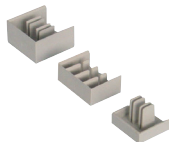
WA\_SG11302



WA\_SG11302



wa\_sg05413



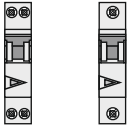
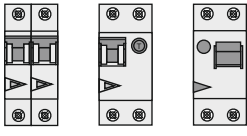
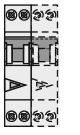
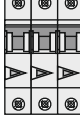
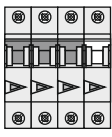
wa\_sg02512



SG05705

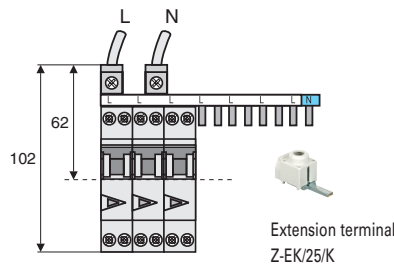
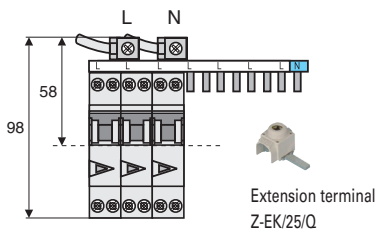


## Description of the Busbar Block (Pin) Z-SV

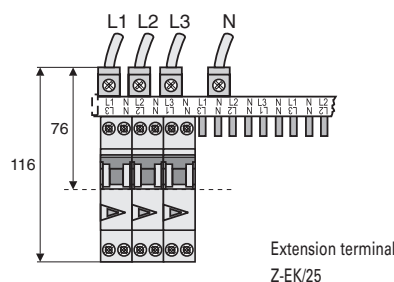
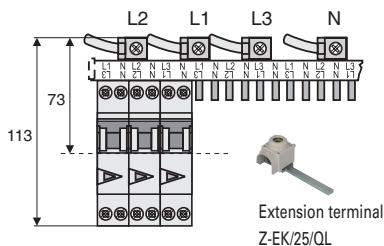
| Devices to busbar                                                                                              | Pcs. of the devices | End caps                                                                            | Type                                      |
|----------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------|
| <b>1-phase + 2-phases</b><br> | x13                 |    | Z-SV-10/1P-F/13                           |
|                                                                                                                | x56                 |                                                                                     | Z-SV-16/1P-1TE/F                          |
|                                                                                                                | x13                 |    | Z-SV-10/N-F/13                            |
|                                                                                                                | x56                 |                                                                                     | Z-SV-16/N-1TE/F                           |
|                                                                                                                | x13                 |    | Z-SV-10/1P-1TE/13                         |
|                                                                                                                | x56                 |                                                                                     | Z-SV-16/1P-1TE                            |
|                                                                                                                | x13                 |    | Z-SV-10/N-1TE/13                          |
|                                                                                                                | x56                 |                                                                                     | Z-SV-16/N-1TE                             |
| <b>2-phases</b><br>           | x6                  |    | Z-V-AK/2+3P                               |
|                                                                                                                | x28                 |                                                                                     | Z-SV-10/2P-2TE/13<br>Z-SV-16/2P-2TE       |
| <b>3-phases</b><br>           | x56                 |    | Z-V-AK/2+3P                               |
|                                                                                                                |                     |                                                                                     | Z-SV-16/2P+2N-2TE                         |
|                              | x4                  |    | Z-V-AK/2+3P                               |
|                                                                                                                | x19                 |                                                                                     | Z-SV-10/3P-3TE/13<br>Z-SV-16/3P-3TE       |
| <b>4-phases</b><br>         | x3                  |  | Z-V-AK/4P                                 |
|                                                                                                                | x14                 |                                                                                     | Z-SV-10/3P+N-4TE/12<br>Z-SV-16/3P+N-4TE   |
|                             | x13                 |  | Z-V-AK/2+3P                               |
|                                                                                                                | x56                 |                                                                                     | Z-SV-10/3P+3N-3TE/13<br>Z-SV-16/3P+3N-3TE |

## Example

Z-SV-10/1P-F/13, Z-SV-16/1P-1TE/F  
Z-SV-10/N-F/13, Z-SV-16/N-1TE/F



Z-SV.. 2-phase to 4-phase



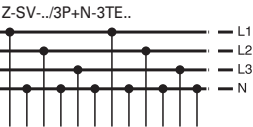
Description Busbar Block 10mm<sup>2</sup> (Pin) Z-SV-10/, 16mm<sup>2</sup> (Pin) Z-SV-16/

- Busbar Block 10 mm<sup>2</sup> delivered with end caps, length 13TE
- Busbar Block 16 mm<sup>2</sup> without end caps, length 1m

Technical Data

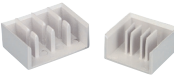
|                                | Z-SV                         |
|--------------------------------|------------------------------|
| <b>Electrical</b>              |                              |
| Rated voltage                  | 240/415 V, 50/60 Hz          |
| Rated current                  |                              |
| 10 mm <sup>2</sup>             | 50 A                         |
| 16 mm <sup>2</sup>             | 63 A                         |
| Short-circuit current strength | 25 kA                        |
| <b>Mechanical</b>              |                              |
| Busbar cross section           | 10 and 16 mm <sup>2</sup> Cu |
| Step distance                  | 17.80 mm                     |

Connection diagram



Accessories

SG4800



End caps

WA\_SG10702



Extension terminal  
Z-EK/25/Q

SG07703



Extension terminal  
Z-EK/25/K

WA\_SG10702



Extension terminal  
Z-EK/25/QL

WA\_SG10702



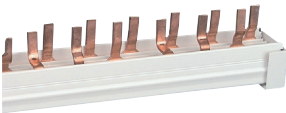
Extension terminal  
Z-EK/25

| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

Busbar Block 12MU (Fork and Pin) Z-GSV-10

- for PLN. (1MU) + FI
- delivered with end caps

SG4700



10 mm<sup>2</sup> - Rated current 50 A

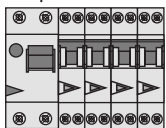
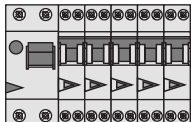
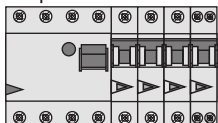
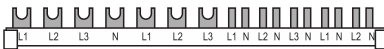
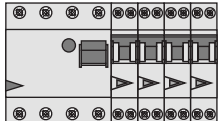
below

|                                    |       |                     |        |          |
|------------------------------------|-------|---------------------|--------|----------|
| 2-phases, RCD-2p + 4xPLN           | 0.07  | Z-GSV-10/1P+N-NL/6  | 274297 | 10 / 200 |
| 2-phases, RCD-2p + 10xPLN          | 0.131 | Z-GSV-10/1P+N/12-U  | 274299 | 10 / 100 |
| 4-phases, RCD-4p + 4xPLN           | 0.13  | Z-GSV-10/3P+N-NL/8  | 116858 | 10       |
| 4-phases, RCD-4p + 8xPLN           | 0.463 | Z-GSV-10/3P+N/12-U  | 274400 | 10 / 100 |
| 4-phases, RCD-4p + 3xPLS.. + 5xPLN | 0.463 | Z-GSV-10/3P+N/12H-U | 274401 | 10 / 100 |

above

|                           |       |                    |        |          |
|---------------------------|-------|--------------------|--------|----------|
| 2-phases, RCD-2p + 10xPLN | 0.131 | Z-GSV-10/1P+N/12-O | 274402 | 10 / 100 |
| 4-phases, RCD-4p + 8xPLN  | 0.463 | Z-GSV-10/3P+N/12-O | 274403 | 10 / 100 |

Description of the Busbar Block 12MU (Fork and Pin) Z-GSV-10

| Devices to busbar                                                                               | Pcs. of the devices | End caps                                                                                            | Type                |
|-------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|---------------------|
| 2-phases<br> | xPLN                | Z-V-AK/2+3P<br>  | Z-GSV-10/1P+N-NL/6  |
|              | x10                 | Z-V-AK/2+3P<br> | Z-GSV-10/1P+N/12-O  |
|                                                                                                 |                     | Z-V-AK/2+3P<br> | Z-GSV-10/1P+N/12-U  |
| 4-phases<br> | 5                   | Z-V-AK/4P<br>   | Z-GSV-10/3P+N/12H-U |
|                                                                                                 | x8                  | Z-V-AK/4P<br>   | Z-GSV-10/3P+N/12-O  |
|              |                     | Z-V-AK/4P<br>   | Z-GSV-10/3P+N/12-U  |
|                                                                                                 | 4xPLN               | Z-V-AK/4P<br>    | Z-GSV-10/3P+N-NL/8  |

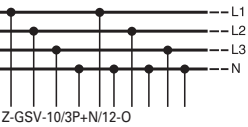
Description Busbar Block 12MU 10mm² (Fork and Pin) Z-GSV-10

- 12MU busbar elements incl. end caps

Technical Data

|                                | Z-GSV-10            |
|--------------------------------|---------------------|
| <strong>Electrical</strong>    |                     |
| Rated voltage                  | 240/415 V, 50/60 Hz |
| Rated current                  | 50 A                |
| Short-circuit current strength | 25 kA               |
| <strong>Mechanical</strong>    |                     |
| Busbar cross section           | 10 mm² Cu           |
| Step distance                  | 17.95 mm            |

Connection diagram



Accessories

WA\_SG10702



Extension terminal  
Z-EK/25/QL

WA\_SG10702



Extension terminal  
Z-EK/25

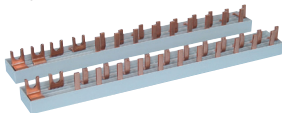


| Description | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------|---------------------|-------------|----------------------|

Busbar Block 13MU (Fork and Pin) Z-GSV-10

- for 1x RCD + PLG. (1MU)
- Do not cut!! 

wa\_sg14303



10 mm<sup>2</sup> - Rated current 63 A

above

|                           |       |                    |        |    |
|---------------------------|-------|--------------------|--------|----|
| 2-phases, RCD-2p + 11xPLG | 0.251 | Z-GSV-10/1P+N-F/13 | 264920 | 10 |
|---------------------------|-------|--------------------|--------|----|

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Accessories

Extension terminals 6 - 25 mm<sup>2</sup>, Z-EK/25

wa\_sg02512



|                 |            |        |          |
|-----------------|------------|--------|----------|
| long, straight  | Z-EK/25    | 264935 | 10 / 600 |
| long, crosswise | Z-EK/25/QL | 264937 | 10 / 600 |

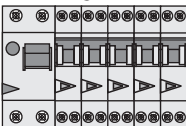
Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705



|                            |         |        |        |
|----------------------------|---------|--------|--------|
| Finger and hand touch safe | ZV-BS-G | 104903 | 10/600 |
|----------------------------|---------|--------|--------|

Description of the Busbar Block 13MU (Fork and Pin) Z-GSV-10

| Devices to busbar                                                                               | Pcs. of the devices                                                                        | Type                                                                                                    |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| 2-phases<br> | x11<br> |  Z-GSV-10/1P+N-F/13 |

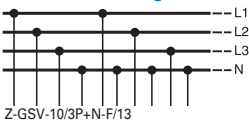
Description Busbar Block 13MU 10mm<sup>2</sup> (Fork and Pin) Z-GSV-10

- 13MU busbar elements without end caps

Technical Data

| Z-GSV-10                       |                       |
|--------------------------------|-----------------------|
| <b>Electrical</b>              |                       |
| Rated voltage                  | 240/415 V, 50/60 Hz   |
| Rated current                  | 63 A                  |
| Short-circuit current strength | 25 kA                 |
| <b>Mechanical</b>              |                       |
| Busbar cross section           | 10 mm <sup>2</sup> Cu |
| Step distance                  | 17.95 mm              |

Connection diagram



Accessories

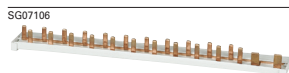
|                                                                                                 |                                                                                                                           |                                                                                                                        |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <br>End caps | <br>Extension terminal<br>Z-EK/25/QL | <br>Extension terminal<br>Z-EK/25 |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|

| Description | Cu-factor | Type Designation | Article No. | Units per package |
|-------------|-----------|------------------|-------------|-------------------|
|-------------|-----------|------------------|-------------|-------------------|

## Busbar Block (Pin) Z-SV-../1P+N-F

- for 1x PFGC + PLGC. (1MU)
- 2-phases

- Do not cut!! 



### 10 mm<sup>2</sup> - Rated current 50 A

|                 |       |                   |        |          |
|-----------------|-------|-------------------|--------|----------|
| PFGC + 4x PLGC  | 0.105 | Z-SV-10/1P+N-F/6  | 107944 | 10 / 100 |
| PFGC + 7x PLGC  | 0.155 | Z-SV-10/1P+N-F/9  | 107943 | 10 / 100 |
| PFGC + 11x PLGC | 0.22  | Z-SV-10/1P+N-F/13 | 107942 | 10 / 100 |

### 16 mm<sup>2</sup> - Rated current 63 A

|                 |       |                   |        |          |
|-----------------|-------|-------------------|--------|----------|
| PFGC + 4x PLGC  | 0.155 | Z-SV-16/1P+N-F/6  | 191245 | 10 / 100 |
| PFGC + 7x PLGC  | 0.231 | Z-SV-16/1P+N-F/9  | 191244 | 10 / 100 |
| PFGC + 8x PLGC  | 0.259 | Z-SV-16/1P+N-F/10 | 191246 | 10 / 100 |
| PFGC + 11x PLGC | 0.328 | Z-SV-16/1P+N-F/13 | 191243 | 10 / 100 |

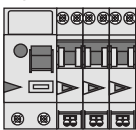
## Accessories

### Busbar Tag Shrouds for busbar, yellow ZV-BS-G



|                            |         |        |        |
|----------------------------|---------|--------|--------|
| Finger and hand touch safe | ZV-BS-G | 104903 | 10/600 |
|----------------------------|---------|--------|--------|

## Description of the Busbar Block (Pin) Z-SV-../1P+N-F

| Devices to busbar                                                                   | Pcs. of the devices | Type                                                                                                   |
|-------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------|
| 2-phases                                                                            |                     |                                                                                                        |
|  | x4                  |  Z-SV-../1P+N-F/6   |
|  | x7                  |  Z-SV-../1P+N-F/9   |
|  | x8                  |  Z-SV-16/1P+N-F/10 |
|  | x11                 |  Z-SV-../1P+N-F/13 |

## Description Busbar Block 10/16mm<sup>2</sup> (Pin) Z-SV-../1P+N-F

- Busbar elements without end caps

## Technical Data

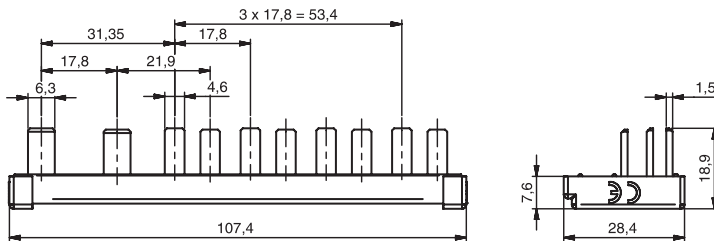
| Z-SV-../1P+N-F                                           |                              |
|----------------------------------------------------------|------------------------------|
| <b>Electrical</b>                                        |                              |
| Rated voltage                                            | 240/415 V, 50/60 Hz          |
| Rated current                                            |                              |
| 10 mm <sup>2</sup>                                       | 50 A                         |
| 16 mm <sup>2</sup>                                       | 63 A                         |
| Overvoltage category                                     | III                          |
| Rated peak withstand voltage                             | $U_{imp}$ 4 kV               |
| Conditional rated short circuit current AC with 125 A gG | 10 kA                        |
| <b>Mechanical</b>                                        |                              |
| Busbar cross section                                     | 10 and 16 mm <sup>2</sup> Cu |
| Step distance                                            | 17.8 mm                      |
| Flame class according to UL94                            | V0, glowing wire test 960 °C |
| Pollution degree                                         | 2                            |
| Comparative tracking index                               | CTI 300                      |
| Air gap                                                  | ≥ 5.5 mm                     |
| Minimum creepage distance                                | ≥ 5 mm                       |

## Connection diagram

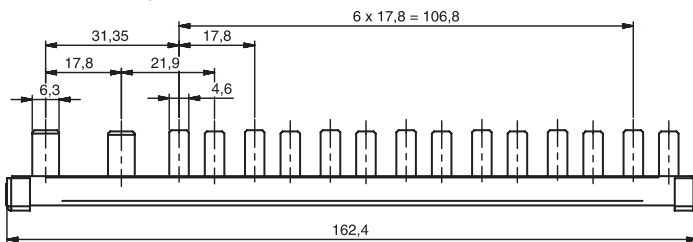


## Dimensions (mm)

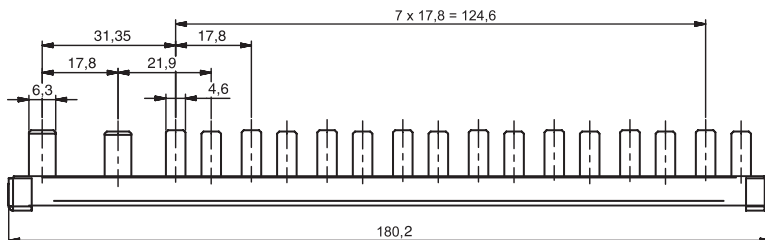
Z-SV-10/1P+N-F/6, Z-SV-16/1P+N-F/6



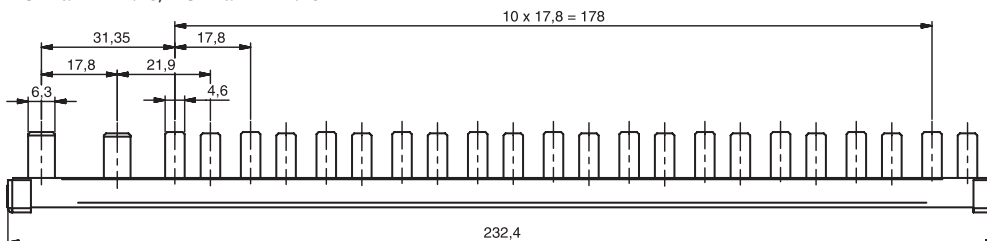
Z-SV-10/1P+N-F/9, Z-SV-16/1P+N-F/9



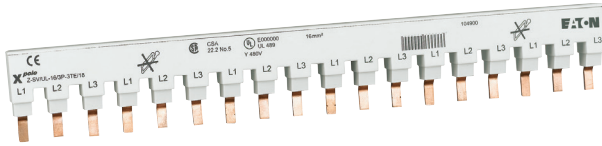
Z-SV-16/1P+N-F/10



Z-SV-10/1P+N-F/13, Z-SV-16/1P+N-F/13



wa\_eg03511



### Description

- For MCB FAZ-NA/RT
- 16 mm<sup>2</sup>
- Pin busbar
- Accessories available:
  - Terminals
  - Busbar tag shrouds
- Several length

| Description | Step Distance<br>(mm) | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|-------------|-----------------------|-----------|---------------------|-------------|----------------------|
|-------------|-----------------------|-----------|---------------------|-------------|----------------------|

For FAZ-NA/RT, not sliceable!!

- Delivered with end caps



16 mm², Rated current 80 A

|               |      |       |                      |        |    |
|---------------|------|-------|----------------------|--------|----|
| 1-phase, 6MU  | 17.6 | 0.035 | Z-SV/UL-16/1P-1TE/6  | 104892 | 10 |
| 1-phase, 12MU | 17.6 | 0.07  | Z-SV/UL-16/1P-1TE/12 | 104893 | 10 |
| 1-phase, 18MU | 17.6 | 0.105 | Z-SV/UL-16/1P-1TE/18 | 104894 | 10 |
| 2-phase, 6MU  | 17.6 | 0.07  | Z-SV/UL-16/2P-2TE/6  | 104895 | 10 |
| 2-phase, 12MU | 17.6 | 0.14  | Z-SV/UL-16/2P-2TE/12 | 104896 | 10 |
| 2-phase, 18MU | 17.6 | 0.21  | Z-SV/UL-16/2P-2TE/18 | 104897 | 10 |
| 3-phase, 6MU  | 17.6 | 0.14  | Z-SV/UL-16/3P-3TE/6  | 104898 | 10 |
| 3-phase, 12MU | 17.6 | 0.221 | Z-SV/UL-16/3P-3TE/12 | 104899 | 10 |
| 3-phase, 18MU | 17.6 | 0.332 | Z-SV/UL-16/3P-3TE/18 | 104900 | 10 |

Accessories

Terminals



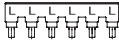
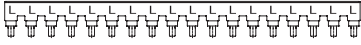
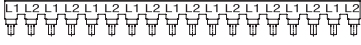
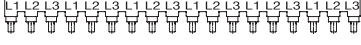
|             |   |       |            |        |   |
|-------------|---|-------|------------|--------|---|
| 2,5 - 35mm² | - | 0.035 | Z-EK/35/UL | 104901 | 3 |
| 1,5 - 50mm² | - | 0.038 | Z-EB/50/UL | 104902 | 3 |

Busbar Tag Shrouds

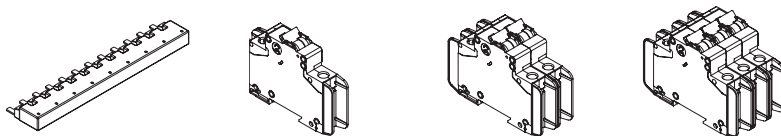


|            |   |   |          |        |    |
|------------|---|---|----------|--------|----|
| for 3 pins | - | - | ZV-BS-UL | 104904 | 10 |
|------------|---|---|----------|--------|----|

Description of UL489-Busbar

| Devices to busbar                                                                               | Pcs. of the devices |                                                                                      | Type                 |
|-------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------|----------------------|
| <br>1-phase  | x6                  |   | Z-SV/UL-16/1P-1TE/6  |
|                                                                                                 | x12                 |   | Z-SV/UL-16/1P-1TE/12 |
|                                                                                                 | x18                 |  | Z-SV/UL-16/1P-1TE/18 |
| <br>2-phases | x3                  |   | Z-SV/UL-16/2P-2TE/6  |
|                                                                                                 | x6                  |   | Z-SV/UL-16/2P-2TE/12 |
|                                                                                                 | x9                  |  | Z-SV/UL-16/2P-2TE/18 |
| <br>3-phases | x2                  |   | Z-SV/UL-16/3P-3TE/6  |
|                                                                                                 | x4                  |   | Z-SV/UL-16/3P-3TE/12 |
|                                                                                                 | x6                  |  | Z-SV/UL-16/3P-3TE/18 |

## Description of the Busbar UL489 Z-SV/UL-16 for FAZ-NA/RT



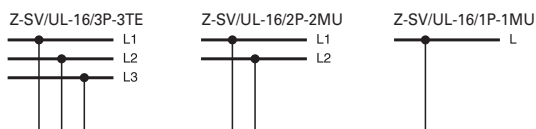
Article No.

|        |                      |    |   |   |
|--------|----------------------|----|---|---|
| 104892 | Z-SV/UL-16/1P-1TE/6  | 6  | - | - |
| 104893 | Z-SV/UL-16/1P-1TE/12 | 12 | - | - |
| 104894 | Z-SV/UL-16/1P-1TE/18 | 18 | - | - |
| 104895 | Z-SV/UL-16/2P-2TE/6  | -  | 3 | - |
| 104896 | Z-SV/UL-16/2P-2TE/12 | -  | 6 | - |
| 104897 | Z-SV/UL-16/2P-2TE/18 | -  | 9 | - |
| 104898 | Z-SV/UL-16/3P-3TE/6  | -  | - | 2 |
| 104899 | Z-SV/UL-16/3P-3TE/12 | -  | - | 4 |
| 104900 | Z-SV/UL-16/3P-3TE/18 | -  | - | 6 |
| 104901 | Z-EK/35/UL           | -  | - | - |
| 104902 | Z-EB/50/UL           | -  | - | - |
| 104904 | ZV-BS-UL             | -  | - | - |

## Technical Data

| Z-SV/UL16                   |                                                                               |
|-----------------------------|-------------------------------------------------------------------------------|
| <b>General</b>              |                                                                               |
| Heat deflection temperature | 125°C - UL94 V0                                                               |
| Standards                   |                                                                               |
| Busbar                      | UL489, DIN EN 60947-1, VDE 0660 Teil 100 = IEC 60947-1:2004, IEC 60947-2:2003 |
| Terminal                    | IEC 60999:2000, UL489, UL486A, CSA C22.2                                      |
| Climate stability           | according to DIN EN 60068                                                     |
| Insulation coordination     | Overvoltage category III / Pollution degree 2                                 |
| <b>Electrical</b>           |                                                                               |
| Impulse voltage strenght    | ≥ 9.5 kV (1 kV / mmLS)                                                        |
| Min. air distance           | > 9.5 mm/25.4 mm (proprietary/external)                                       |
| Min. creeping distance      | > 12.7 mm/50.8 mm (proprietary/external)                                      |
| Max. operating voltage      |                                                                               |
| 1-, 3-phase                 | 690 V IEC<br>480Y/277V & 240 V AC                                             |
| Terminals                   | 1.000 V AC/DC                                                                 |
| Max. busbar current         | I <sub>g</sub> /Phase 80 A                                                    |
| Protection class            | IP20                                                                          |
| Short circuit rating        | 15 kA mit NH3 355 A gL 500 V JM / 7.5 kA 3 cycles @ 600 V                     |
| Dielectric strenght         | >30 kV/mm                                                                     |

## Connection diagram



## Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT



**ATTENTION:** Maximum of 3 commoning links allowed. Any combination of same pole configuration.

**ATTENTION:** 3 liaisons communes autorisées au maximum.

Toute combinaison de configurations de polarité identiques.

**ACHTUNG:** Maximal 3 Schienenblöcke. Beliebige Kombination gleichpoliger Konfigurationen.

**ATTENZIONE:** Sono consentiti al massimo 3 pettini di collegamento in qualsiasi combinazione della stessa configurazione di poli.

**ATEÖION:** Se permite un máximo de 3 enlaces comunes.

Cualquier combinación del mismo tipo de configuración de polo



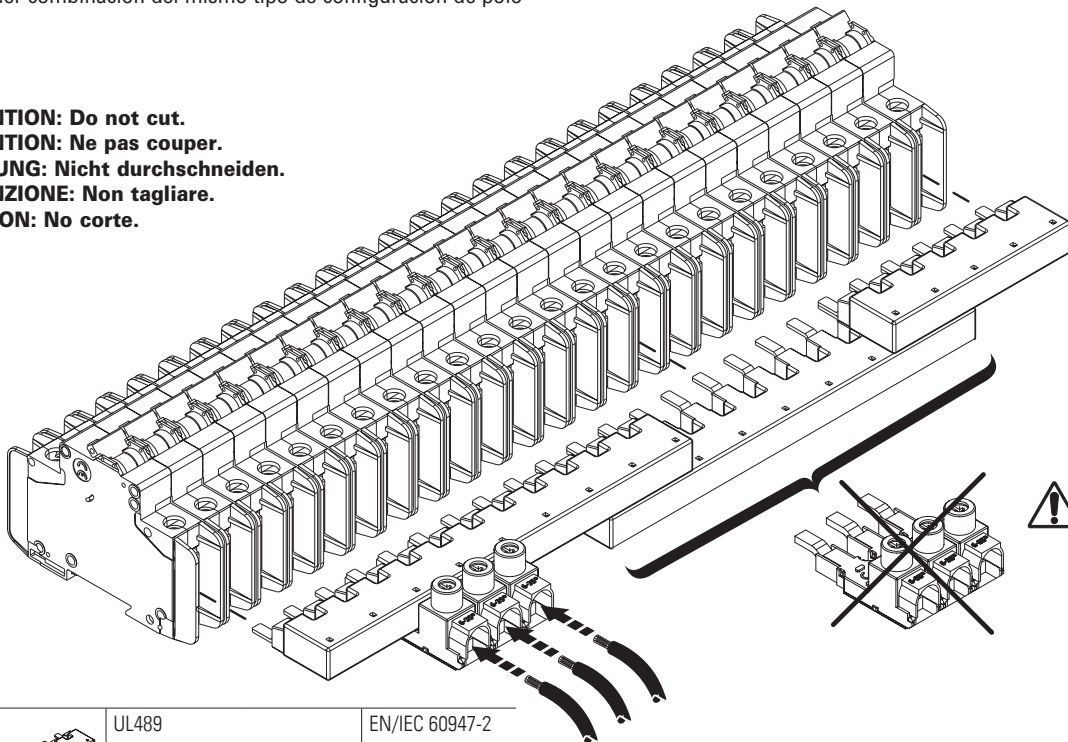
**ATTENTION:** Do not cut.

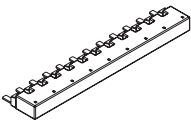
**ATTENTION:** Ne pas couper.

**ACHTUNG:** Nicht durchschneiden.

**ATTENZIONE:** Non tagliare.

**ATEÖION:** No corte.



|                                                                                     |             |                |                    |
|-------------------------------------------------------------------------------------|-------------|----------------|--------------------|
|  | UL489       | EN/IEC 60947-2 |                    |
| $U_e$                                                                               | 480 V AC    | 96 V DC        | 240/415 V AC       |
| $f$                                                                                 | 50/60 Hz    | —              | 50/60 Hz           |
| $U_{imp}$                                                                           | —           | —              | 9,5 kV             |
| $I_e$                                                                               | 80 A @ 40°C | —              | 80 A @ 30°C        |
| Terminal capacity                                                                   | —           | —              | 16 mm <sup>2</sup> |

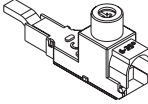
## Z-EB/50/UL

|                                                                                     |          |                |              |
|-------------------------------------------------------------------------------------|----------|----------------|--------------|
|  | UL489    | EN/IEC 60947-2 |              |
| $U_e$                                                                               | 480 V AC | 96 V DC        | 240/415 V AC |
| $f$                                                                                 | 50/60 Hz | —              | 50/60 Hz     |
| $U_{imp}$                                                                           | —        | —              | 9,5 kV       |

Cross section:

|                    |                                                                      |                                         |                     |
|--------------------|----------------------------------------------------------------------|-----------------------------------------|---------------------|
|                    | U - single wire                                                      | K - fine wire (with sleeve)             | Torque              |
|                    | R - multi wire                                                       | F - fine wire (with sleeve)             |                     |
| Max. cross section | 50 mm <sup>2</sup><br>1 AWG copper wire                              | 35 mm <sup>2</sup><br>2 AWG copper wire | 4 Nm<br>35 lbf.in   |
| Min. cross section | 1,5 mm <sup>2</sup><br>14 AWG copper wire                            |                                         |                     |
| Busbar-side        | Pin max. 5,5x2 / 0.2"x0.07"<br>Länge min. 12,7 mm / Length min. 0.5" |                                         | 2,5 Nm<br>22 lbf.in |

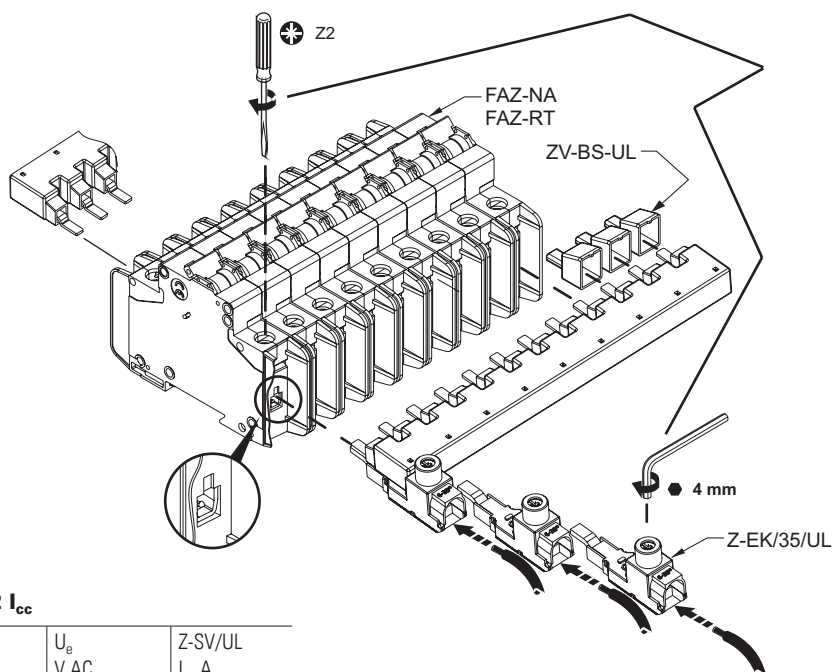
## Z-EK/35/UL

|                                                                                     |          |                |              |
|-------------------------------------------------------------------------------------|----------|----------------|--------------|
|  | UL489    | EN/IEC 60947-2 |              |
| $U_e$                                                                               | 480 V AC | 96 V DC        | 240/415 V AC |
| $f$                                                                                 | 50/60 Hz | —              | 50/60 Hz     |
| $U_{imp}$                                                                           | —        | —              | 9,5 kV       |

Cross section:

|                    |                                           |                             |                     |
|--------------------|-------------------------------------------|-----------------------------|---------------------|
|                    | U - single wire                           | K - fine wire (with sleeve) | Torque              |
|                    | R - multi wire                            | F - fine wire (with sleeve) |                     |
| Max. cross section | 35 mm <sup>2</sup><br>2 AWG copper wire   |                             | 5,5 Nm<br>50 lbf.in |
| Min. cross section | 2,5 mm <sup>2</sup><br>14 AWG copper wire |                             |                     |

## Mounting example of busbar UL489 Z-SV/UL-16 for FAZ-NA/RT



| AWG  | lb-in | Nm  |
|------|-------|-----|
| 14   | 21    | 2.3 |
| 12-8 | 25    | 2.8 |
| 6-2  | 36    | 4.0 |

### IEC/EN 60947-2 $I_{cc}$

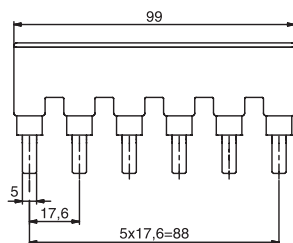
|  |               |                       |
|--|---------------|-----------------------|
|  | $U_0$<br>V AC | Z-SV/UL<br>$I_{cc}$ A |
|  | 240/415       | 15000                 |

### UL SCCR

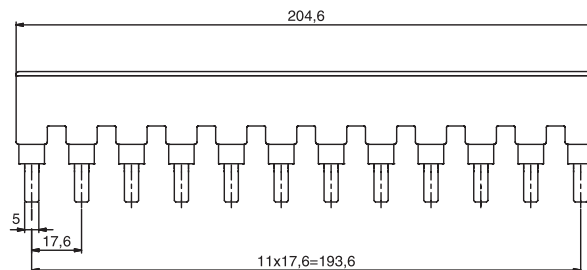
|  |                                |               |                                 |
|--|--------------------------------|---------------|---------------------------------|
|  | FAZ-NA<br>FAZ-RT<br>$I_n$<br>A | $U_0$<br>V AC | Z-SV/UL<br>SCCR<br>RMS<br>Sym A |
|  | 0.5-32                         | 480Y/277      | 10000                           |
|  | 35-40                          | 240           | 10000                           |

## Dimensions (mm)

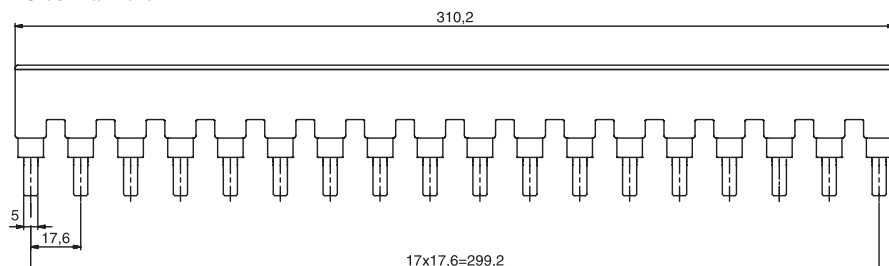
Z-SV/UL-16/.TE/6



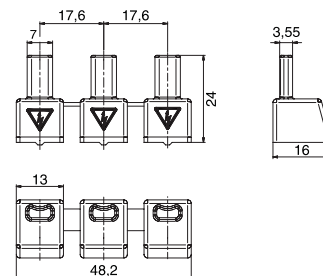
Z-SV/UL-16/.TE/12



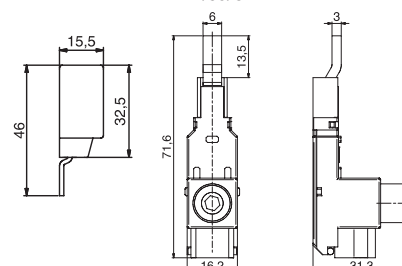
Z-SV/UL-16/.TE/18



ZV-BS-UL

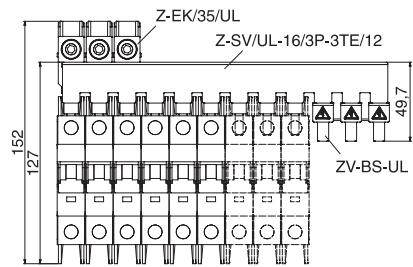


Z-EK/35/UL





Example



Z-EK/35/UL

|                                                                                    | UL489                                                                               | IEC/EN60947-2          |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|
|  | # 2-14 AWG                                                                          | 2.5-35 mm <sup>2</sup> |
|                                                                                    | 60/75 °C Cu                                                                         | Cu                     |
|  | 0.56 in                                                                             | 14 mm                  |
|                                                                                    |                                                                                     |                        |
| testet acc. to                                                                     |  | Tightening torque      |
| UL486A                                                                             | # 14 AWG                                                                            | ≥ 2.3 Nm               |
| UL486B                                                                             | # 8-12 AWG                                                                          | ≥ 2.8 Nm               |
| UL486E                                                                             | # 6-1 AWG                                                                           | 4 Nm                   |

| Description | Cu-factor | Type Designation | Article No. | Units per package |
|-------------|-----------|------------------|-------------|-------------------|
|-------------|-----------|------------------|-------------|-------------------|

## Busbar Block (Pin) Z-SV

- delivered without end caps

## Busbar Block (Pin) Z-SV-16/3P

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU)

### 16 mm<sup>2</sup> - Rated current 80 A

|          |      |            |        |    |
|----------|------|------------|--------|----|
| 3-phases | 0.84 | Z-SV-16/3P | 271072 | 20 |
|----------|------|------------|--------|----|

## Accessories for Z-SV-16/3P

### Extension terminal

|                                         |  |         |        |         |
|-----------------------------------------|--|---------|--------|---------|
| Extension terminal 6-50 mm <sup>2</sup> |  | Z-EK/50 | 264934 | 3 / 180 |
|-----------------------------------------|--|---------|--------|---------|

### End cap

|         |  |              |        |          |
|---------|--|--------------|--------|----------|
| End cap |  | Z-V-35/AK/3P | 264932 | 10 / 600 |
|---------|--|--------------|--------|----------|

## Busbar Block (Pin) Z-SV-35

- for Z-SLS, PLHT, D0.-SO/.. (1.5MU), PLHT-V (1.5MU)

### 35 mm<sup>2</sup> - Rated current 110 A

|                        |      |                  |        |   |
|------------------------|------|------------------|--------|---|
| 1-phase angulated grey | 0.83 | Z-SV-35/1P       | 113135 | 1 |
| 3-phases               | 2.74 | Z-SV-35/3P       | 264938 | 4 |
| 3-phases               | 2.74 | Z-SV-35/PLHT-V   | 264939 | 4 |
| 4-phases*              | 1.57 | Z-SV-35/3P+N-6TE | 263110 | 4 |

\* delivered with end caps

## Accessories for Z-SV-35

### End cap

|         |  |              |        |          |
|---------|--|--------------|--------|----------|
| End cap |  | Z-V-35/AK/3P | 264932 | 10 / 600 |
|---------|--|--------------|--------|----------|

## Accessories for Z-SV-35

### Extension terminals Z-EK/95

- 25-95 mm<sup>2</sup> single-/multi-wire
- 16-70 mm<sup>2</sup> fine wires with wire end sleeve
- Max. tightening torque: 19 Nm

|                       |  |            |        |         |
|-----------------------|--|------------|--------|---------|
| for Z-SV-35/1P        |  | Z-EK/95-1  | 113136 | 3 / 90  |
| for Z-SV-... 3-phases |  | Z-EK/95    | 264933 | 3 / 90  |
| for Z-SV-35/3P+N      |  | Z-EK/95-3N | 264911 | 4 / 120 |

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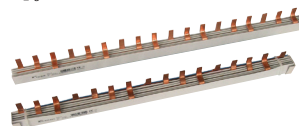
wa\_sg05913



SG4800



wa\_sg03711



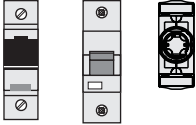
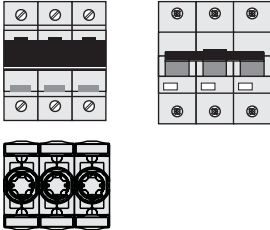
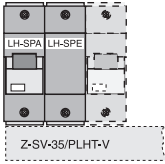
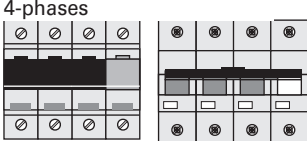
SG4800



wa\_sg05513



## Description of the Busbar Block (Pin) Z-SV

| Devices to busbar                                                                                  | Pcs. of the devices | End caps                               | Type                                |
|----------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-------------------------------------|
| <p>1-phase</p>    | x36                 |                                        | Z-SV-35/1P                          |
| <p>3-phases</p>   | x12                 | <p>Z-AK-16/2+3P</p> <p>Z-V-35AK/3P</p> | <p>Z-SV-16/3P</p> <p>Z-SV-35/3P</p> |
|                   | x33                 | Z-V-35AK/3P                            | Z-SV-35/PLHT-V                      |
| <p>4-phases</p>  | x4                  | Z-V-35AK/3P                            | Z-SV-35/3P+N-6TE                    |

## Description Busbar Block (Pin) Z-SV

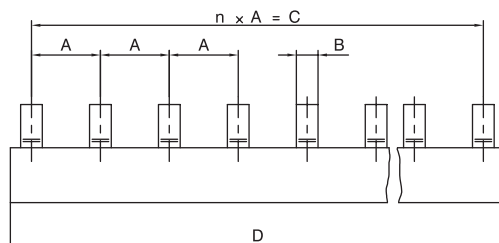
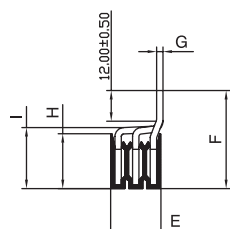
- End caps are to be ordered separately, exception Z-SV-35/3P+N-6TE
- Halogenfree plastic

## Technical Data

|                                                          | Z-SV-16                      | Z-SV-35                        |
|----------------------------------------------------------|------------------------------|--------------------------------|
| <b>Electrical</b>                                        |                              |                                |
| Rated operational voltage                                | 240/415 V AC                 | 240/415 V AC                   |
| Rated frequency                                          | 50/60 Hz                     | 50/60 Hz                       |
| Rated voltage                                            | 500 V                        | 690 V                          |
| Overvoltage category                                     | III                          | III                            |
| Rated peak withstand voltage                             | $U_{imp}$ 4 kV               | 6 kV                           |
| Rated current                                            | 80 A                         | 110 A                          |
| Conditional rated short circuit current AC with 250 A gG | 50 kA <sub>r.m.s.</sub>      | 100 kA <sub>r.m.s.</sub>       |
| <b>Mechanical</b>                                        |                              |                                |
| Busbar cross section                                     | 16 mm <sup>2</sup> Cu        | 35 mm <sup>2</sup> Cu          |
| Step distance                                            | 27 mm                        | 27 mm (Z-SV-35/PLHT-V 30.5 mm) |
| Flame class according to UL94                            | V0, glowing wire test 960 °C | V0, glowing wire test 850 °C   |
| Degree of protection, with end caps                      | IP20                         | IP20                           |
| Pollution degree                                         | 2                            | 2                              |
| Comparative tracking index                               | CTI 300                      | CTI 600                        |
| Air gap                                                  | ≥ 5 mm                       | ≥ 4.3 mm                       |
| Minimum creepage distance                                | ≥ 10.2 mm                    | ≥ 6.7 mm                       |

### Dimensions (mm)

|                       | n  | A    | B   | C   | D    | E    | F    | G   | H    | I    |
|-----------------------|----|------|-----|-----|------|------|------|-----|------|------|
| <b>Z-SV-16/3P</b>     | 35 | 27   | 5   | 945 | 971  | 14.9 | 31   | 1.5 | 17   | 19   |
| <b>Z-SV-35/3P</b>     | 35 | 27   | 8.5 | 945 | 1000 | 19.7 | 38.4 | 2.5 | 21.5 | 23.9 |
| <b>Z-SV-35/PLHT-V</b> | 32 | 30.5 | 8.5 | 976 | 1000 | 19.7 | 38.4 | 2.5 | 21.5 | 23.9 |



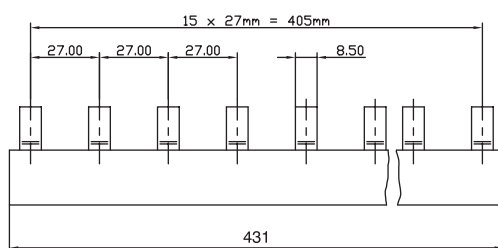
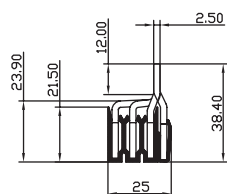
#### Accessories for Z-SV-16

Wa\_sg10802



Extension terminal  
Z-EK/50

#### Z-SV-35/3P+N-6TE



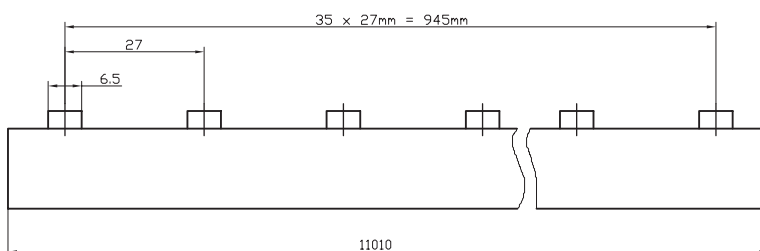
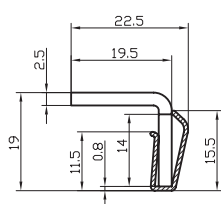
#### Accessories for Z-SV-35

Wa\_sg10802



Extension terminaln  
Z-EK/95, Z-EK/95-3N,  
Z-EK/95-1

#### Z-SV-35/1P



| Phases | MU | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|--------|----|-----------|---------------------|-------------|----------------------|
|--------|----|-----------|---------------------|-------------|----------------------|

### Euro-Vario-Busbar (Fork) EVG

- for PLS., PKN., PFIM, PFHM, PFNM
- no end caps necessary

- Do not cut!! 

### 10 mm<sup>2</sup> - Rated current 63 A

#### 1- to 4-phases

|          |    |       |                   |        |          |
|----------|----|-------|-------------------|--------|----------|
| 1-phase  | 2  | 0.015 | EVG-1PHAS/2MODUL  | 215646 | 40 / 800 |
| 1-phase  | 6  | 0.039 | EVG-1PHAS/6MODUL  | 215638 | 40 / 800 |
| 1-phase  | 12 | 0.046 | EVG-1PHAS/12MODUL | 215637 | 40 / 400 |
| 2-phases | 4  | 0.051 | EVG-2PHAS/4MODUL  | 268220 | 20 / 400 |
| 2-phases | 6  | 0.079 | EVG-2PHAS/6MODUL  | 215642 | 20 / 400 |
| 2-phases | 12 | 0.150 | EVG-2PHAS/12MODUL | 215641 | 20 / 200 |
| 3-phases | 6  | 0.086 | EVG-3PHAS/6MODUL  | 215640 | 20 / 400 |
| 3-phases | 9  | 0.128 | EVG-3PHAS/9MODUL  | 215645 | 20 / 200 |
| 3-phases | 12 | 0.168 | EVG-3PHAS/12MODUL | 215639 | 20 / 200 |
| 3-phases | 16 | 0.230 | EVG-3PHAS/16MODUL | 285381 | 20       |
| 3-phases | 20 | 0.310 | EVG-3PHAS/20MODUL | 285383 | 20 / 180 |
| 3-phases | 12 | 0.240 | EVG-3P+3N/12MODUL | 121091 | 20       |
| 4-phases | 16 | 0.320 | EVG-3P+3N/16MODUL | 105215 | 20       |
| 4-phases | 18 | 0.350 | EVG-3P+3N/18MODUL | 274161 | 20       |
| 4-phases | 8  | 0.219 | EVG-4PHAS/8MODUL  | 215644 | 10 / 100 |
| 4-phases | 12 | 0.324 | EVG-4PHAS/12MODUL | 215643 | 10 / 100 |

#### For 2-pole Combined RCD/MCB Device with a width of 3MU

|         |     |       |                           |        |          |
|---------|-----|-------|---------------------------|--------|----------|
| 1-phase | 2-5 | 0.045 | EVG-1PHAS/N/2-5MODUL/FILS | 285384 | 40 / 800 |
|---------|-----|-------|---------------------------|--------|----------|

#### For combination RCD/MCBs with RCD 4-pole

|          |     |       |                       |        |          |
|----------|-----|-------|-----------------------|--------|----------|
| 3-phases | 4+5 | 0.138 | EVG-3PHAS/N/5MODUL/LS | 215659 | 20 / 200 |
| 3-phases | 4+8 | 0.188 | EVG-3PHAS/N/8MODUL/LS | 215660 | 20 / 200 |

#### For applications with Auxiliary Switch

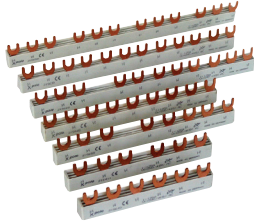
|          |      |       |                      |        |          |
|----------|------|-------|----------------------|--------|----------|
| 1-phase  | 2.5  | 0.008 | EVG-1PHAS/2MODUL/HI  | 215655 | 40 / 200 |
| 1-phase  | 13   | 0.096 | EVG-1PHAS/9MODUL/HI  | 215656 | 40       |
| 2-phases | 4.5  | 0.015 | EVG-2PHAS/4MODUL/HI  | 219573 | 20 / 400 |
| 2-phases | 12   | 0.160 | EVG-2PHAS/10MODUL/HI | 215657 | 20       |
| 3-phases | 6.5  | 0.100 | EVG-3PHAS/6MODUL/HI  | 216411 | 20 / 200 |
| 3-phases | 13.5 | 0.200 | EVG-3PHAS/12MODUL/HI | 215658 | 20       |

### 16 mm<sup>2</sup> - Rated current 80 A

#### 1- to 4-phases

|          |    |       |                      |        |          |
|----------|----|-------|----------------------|--------|----------|
| 1-phase  | 2  | 0.023 | EVG-16/1PHAS/2MODUL  | 291464 | 40 / 800 |
| 1-phase  | 6  | 0.059 | EVG-16/1PHAS/6MODUL  | 291465 | 40 / 800 |
| 1-phase  | 12 | 0.113 | EVG-16/1PHAS/12MODUL | 291466 | 40 / 400 |
| 2-phases | 4  | 0.080 | EVG-16/2PHAS/4MODUL  | 291467 | 20 / 400 |
| 2-phases | 6  | 0.120 | EVG-16/2PHAS/6MODUL  | 291468 | 20 / 400 |
| 2-phases | 12 | 0.225 | EVG-16/2PHAS/12MODUL | 291469 | 20 / 200 |
| 3-phases | 6  | 0.112 | EVG-16/3PHAS/6MODUL  | 291470 | 20 / 400 |
| 3-phases | 9  | 0.163 | EVG-16/3PHAS/9MODUL  | 291471 | 20 / 200 |
| 3-phases | 12 | 0.218 | EVG-16/3PHAS/12MODUL | 291472 | 20 / 200 |
| 3-phases | 16 | 0.300 | EVG-16/3PHAS/16MODUL | 291473 | 20 / 80  |
| 3-phases | 20 | 0.363 | EVG-16/3PHAS/20MODUL | 291474 | 10 / 100 |
| 4-phases | 8  | 0.200 | EVG-16/4PHAS/8MODUL  | 291475 | 10 / 100 |
| 4-phases | 12 | 0.284 | EVG-16/4PHAS/12MODUL | 291476 | 10 / 100 |

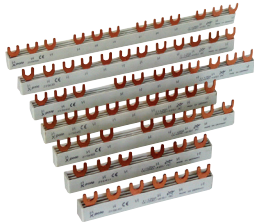
Wa\_sg02902



Wa\_sg01602



Wa\_sg02902



| Phases                                                        | MU   | Cu-factor | Type Designation         | Article No. | Units per package |
|---------------------------------------------------------------|------|-----------|--------------------------|-------------|-------------------|
| <b>For 2-pole Combined RCD/MCB Device with a width of 3MU</b> |      |           |                          |             |                   |
| 4-phases                                                      | 18   | 0.260     | EVG-16/4PHAS/L-N-X/6PC   | 116880      | 10                |
| 4-phases                                                      | 24   | 0.360     | EVG-16/4PHAS/L-N-X/8PC   | 116881      | 10                |
| <b>For combination RCD/MCBs with RCD 4-pole</b>               |      |           |                          |             |                   |
| 3-phases                                                      | 4+5  | 0.179     | EVG-16/3PHAS/N/5MODUL/LS | 291477      | 20 / 200          |
| 3-phases                                                      | 4+8  | 0.244     | EVG-16/3PHAS/N/8MODUL/LS | 291478      | 20 / 200          |
| <b>For applications with Auxiliary Switch</b>                 |      |           |                          |             |                   |
| 1-phase                                                       | 2.5  | 0.038     | EVG-16/1PHAS/2MODUL/HI   | 291479      | 40 / 800          |
| 1-phase                                                       | 8.5  | 0.105     | EVG-16/1PHAS/6MODUL/HI   | 291480      | 40 / 400          |
| 1-phase                                                       | 13   | 0.162     | EVG-16/1PHAS/9MODUL/HI   | 291481      | 40 / 160          |
| 2-phases                                                      | 4.5  | 0.080     | EVG-16/2PHAS/4MODUL/HI   | 291482      | 20 / 400          |
| 2-phases                                                      | 7    | 0.120     | EVG-16/2PHAS/6MODUL/HI   | 291483      | 20 / 200          |
| 2-phases                                                      | 12   | 0.200     | EVG-16/2PHAS/10MODUL/HI  | 291484      | 20 / 200          |
| 3-phases                                                      | 6.5  | 0.130     | EVG-16/3PHAS/6MODUL/HI   | 291485      | 20 / 200          |
| 3-phases                                                      | 13.5 | 0.260     | EVG-16/3PHAS/12MODUL/HI  | 291486      | 20 / 80           |
| 3x1-phase                                                     | 8.5  | 0.231     | EVG-16/3x1PHAS/6MODUL/HI | 291487      | 20 / 200          |
| 3x1-phase                                                     | 11.5 | 0.300     | EVG-16/3x1PHAS/8MODUL/HI | 291488      | 20 / 200          |
| 3x1-phase                                                     | 13   | 0.344     | EVG-16/3x1PHAS/9MODUL/HI | 291489      | 20 / 80           |

Wa\_sg01602



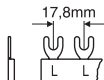
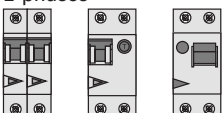
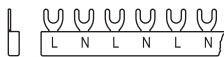
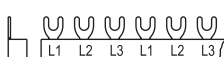
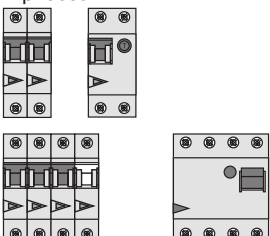
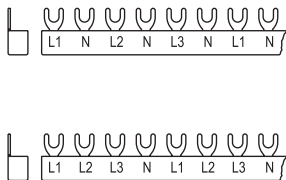
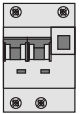
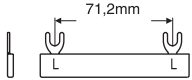
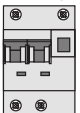
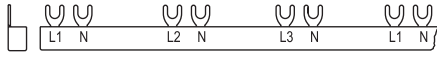
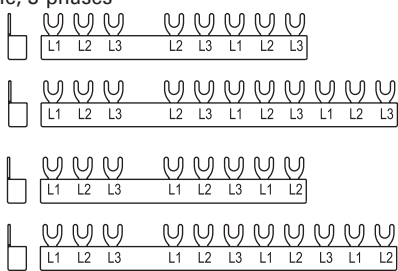
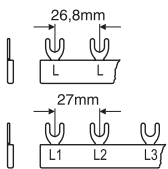
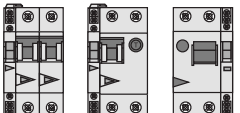
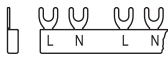
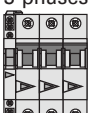
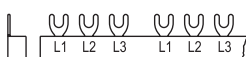
### Description Euro-Vario-Busbar (Fork) EVG

- Euro Vario busbars (EVG) offer maximum user comfort and a high degree of safety.
- Using EVG busbars helps to save up to 30 % assembly time as compared to conventional systems.
- The danger of flashover is minimised since there is no need of cutting, burring, or cleaning.
- No end caps are needed.

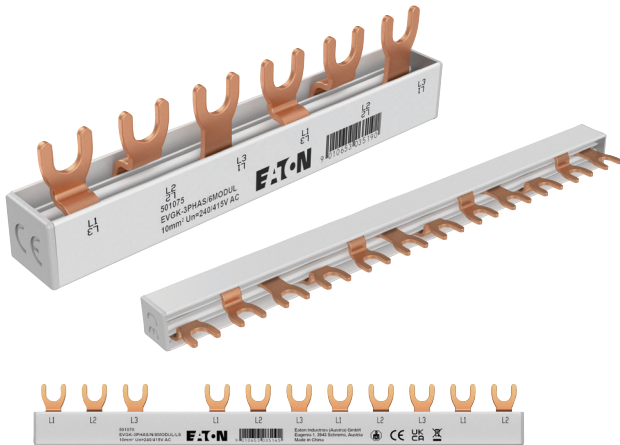
### Technical Data

| EVG                            |                              |
|--------------------------------|------------------------------|
| <b>Electrical</b>              |                              |
| Rated voltage                  | 240/415 V, 50/60 Hz          |
| Rated current                  |                              |
| 10 mm <sup>2</sup>             | 63 A                         |
| 16 mm <sup>2</sup>             | 80 A                         |
| Short-circuit current strength | 25 kA                        |
| <b>Mechanical</b>              |                              |
| Busbar length                  | 2, 6, 9, 12, 16, 20 MU       |
| Busbar cross section           | 10 and 16 mm <sup>2</sup> Cu |
| Step distance                  |                              |
| 10 mm <sup>2</sup>             | 17.8 mm / 26.8 mm / 71.2 mm  |
| 16 mm <sup>2</sup>             | 17.8 mm / 27 mm / 71.2 mm    |

## Description of Euro-Vario-Busbar (Fork) EVG

| Devices to busbar                                                                                                                                | Pcs. of the devices                                                                                                     | Type                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1-phase</b><br>                                              | x2<br>x6<br>x12<br>                    | EVG-../1PHAS/2MODUL<br>EVG-../1PHAS/6MODUL<br>EVG-../1PHAS/12MODUL                                                                                             |
| <b>2-phases</b><br>                                             | x2<br>x3<br>x6<br>                     | EVG-../2PHAS/4MODUL<br>EVG-../2PHAS/6MODUL<br>EVG-../2PHAS/12MODUL                                                                                             |
| <b>3-phases</b><br>                                             | x2<br>x3<br>x4<br>x5<br>x6<br>         | EVG-../3PHAS/6MODUL<br>EVG-../3PHAS/9MODUL<br>EVG-../3PHAS/12MODUL<br>EVG-../3PHAS/16MODUL<br>EVG-../3PHAS/20MODUL                                             |
| <b>4-phases</b><br>                                            | x8<br>x9<br>x2<br>x3<br>               | EVG-3P+3N/16MODUL<br>EVG-3P+3N/18MODUL<br>EVG-../4PHAS/8MODUL<br>EVG-../4PHAS/12MODUL                                                                          |
| <b>For 2-pole Combined RCD/MCB Device, 1-phase</b><br>        | x2<br>                               | EVG-1PHAS/2-5MODUL/FILS                                                                                                                                        |
| <b>For 2-pole Combined RCD/MCB Device, 4-phases</b><br>       | x6<br>x8<br>                        | EVG-16/4PHAS/L-N-X/6PC<br>EVG-16/4PHAS/L-N-X/8PC                                                                                                               |
| <b>For combination RCD/MCBs with RCD 4-pole, 3-phases</b><br> |                                      | EVG-3PHAS/N/5MODUL/LS<br>EVG-3PHAS/N/8MODUL/LS<br>EVG-16/3PHAS/N/5MODUL/LS<br>EVG-16/3PHAS/N/8MODUL/LS                                                         |
| <b>1-phase + Auxiliary Switch</b><br>                         | x2<br>x6<br>x9<br>x6<br>x8<br>x9<br> | EVG-../1PHAS/2MODUL/HI<br>EVG-16/1PHAS/6MODUL/HI<br>EVG-../1PHAS/9MODUL/HI<br>EVG-16/3x1PHAS/6MODUL/HI<br>EVG-16/3x1PHAS/8MODUL/HI<br>EVG-16/3x1PHAS/9MODUL/HI |
| <b>2-phases + Auxiliary Switch</b><br>                        | x2<br>x3<br>x5<br>                   | EVG-../2PHAS/4MODUL/HI<br>EVG-16/2PHAS/6MODUL/HI<br>EVG-../2PHAS/10MODUL/HI                                                                                    |
| <b>3-phases + Auxiliary Switch</b><br>                        | x2<br>x4<br>                         | EVG-../3PHAS/6MODUL/HI<br>EVG-../3PHAS/12MODUL/HI                                                                                                              |

WA\_REN\_SG\_01622\_L, WA\_REN\_SG\_01722\_R, WA\_REN\_SG\_01822\_C



### Description

- Available in 10 mm<sup>2</sup> cross section
- Fork type
- Comes with end caps
- Busbar can be cut to desired length
- End caps can be ordered separately as replacement



| Phases | MU | Cu-factor | Type<br>Designation | Article No. | Units per<br>package |
|--------|----|-----------|---------------------|-------------|----------------------|
|--------|----|-----------|---------------------|-------------|----------------------|

Busbar (Fork) EVGK

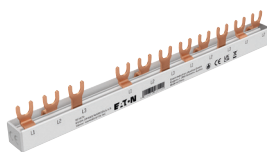
10 mm<sup>2</sup> - Rated current 63 A

WA\_REN\_SG\_01622\_L



|          |    |       |                    |           |          |
|----------|----|-------|--------------------|-----------|----------|
| 3-phases | 6  | 0.026 | EVGK-3PHAS/6MODUL  | EP-501075 | 20 / 400 |
| 3-phases | 12 | 0.068 | EVGK-3PHAS/12MODUL | EP-501069 | 20 / 200 |

WA\_REN\_SG\_01822\_L



For combination RCD/MCBs with RCD 4-pole

|          |     |       |                        |           |          |
|----------|-----|-------|------------------------|-----------|----------|
| 3-phases | 4+8 | 0.065 | EVGK-3PHAS/N/8MODUL/LS | EP-501070 | 20 / 400 |
|----------|-----|-------|------------------------|-----------|----------|

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Accessories

WA\_REN\_SG\_00822\_L



|                                        |                  |           |           |
|----------------------------------------|------------------|-----------|-----------|
| End cap 3-phases (10 mm <sup>2</sup> ) | EK-3/10-EVGK-GVK | EP-501076 | 10 / 5000 |
|----------------------------------------|------------------|-----------|-----------|

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Accessories

Busbar Tag Shrouds for busbar, yellow ZV-BS-G

SG05705



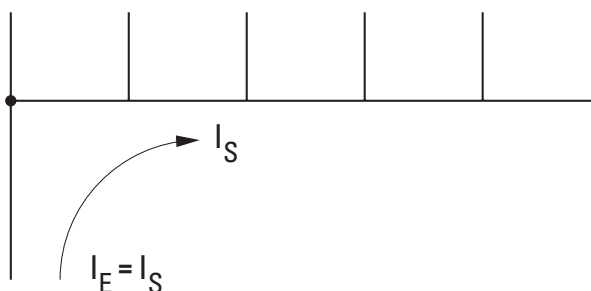
|                            |         |        |          |
|----------------------------|---------|--------|----------|
| Finger and hand touch safe | ZV-BS-G | 104903 | 10 / 600 |
|----------------------------|---------|--------|----------|

## Technical Data

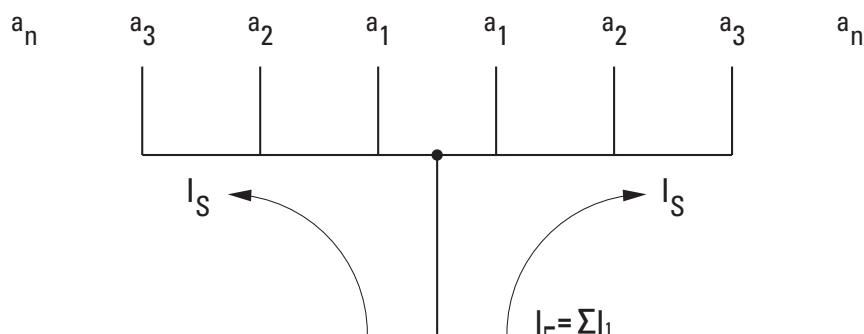
| EVGK                           |                                                                                                         |
|--------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>General</b>                 |                                                                                                         |
| Standards                      | DIN EN 61439-1:2021-10 / DIN EN 61439-6:2013-06<br>IEC 664 / IEC 60895-2-12 / VDE 0110 / DIN EN 60754-1 |
| Climate stability              | according to IEC 68-2                                                                                   |
| Overvoltage category           | III                                                                                                     |
| Pollution Degree               | 2                                                                                                       |
| Busbar Material                | E-Cu-ETP                                                                                                |
| Isolation Material             | PC-ABS                                                                                                  |
| Endcap Material                | PC-ABS                                                                                                  |
| Touch protection Material      | PP                                                                                                      |
| <b>Electrical</b>              |                                                                                                         |
| Rated operating voltage        | 240/415 V AC                                                                                            |
| Rated current                  |                                                                                                         |
| 10 mm <sup>2</sup>             | 63 A                                                                                                    |
| 16 mm <sup>2</sup>             | 80 A                                                                                                    |
| Short-circuit current strength | 25 kA /100 A gl                                                                                         |
| Disruptive Strength            | 36 kV/mm                                                                                                |
| Surge Voltage                  | $U_{imp}$ 4 kV                                                                                          |
| <b>Mechanical</b>              |                                                                                                         |
| Busbar cross section           | 10 mm <sup>2</sup>                                                                                      |
| Step distance                  | 17.8 mm                                                                                                 |

## Feeding

Side Feeding

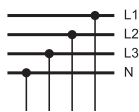


Central Feeding



Using central supply feeding you must be sure that the sum of the output current depending on  $a_1 \dots a_n$  of each busbar part is not greater than the above max. busbar current  $I_s$  / phase

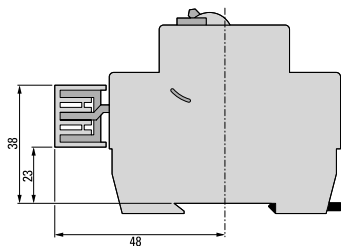
Connection diagram



Description Graphics

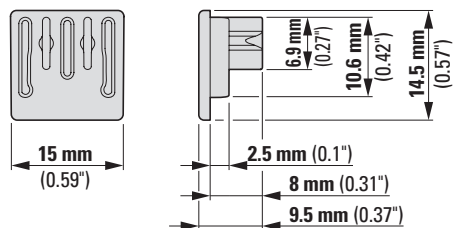
| Devices to busbar                   | Pcs. of the devices | End caps         |  | Type                   |
|-------------------------------------|---------------------|------------------|--|------------------------|
| 3-phases                            |                     |                  |  |                        |
|                                     | x2                  | EK-3/10-EVGK-GVK |  | EVGK-3PHAS/6MODUL      |
|                                     | x4                  |                  |  | EVGK-3PHAS/12MODUL     |
| For combination of RCD/MCBs. 4+8 MU |                     |                  |  |                        |
|                                     |                     | EK-3/10-EVGK-GVK |  | EVGK-3PHAS/N/8MODUL/LS |

Dimensions (mm)

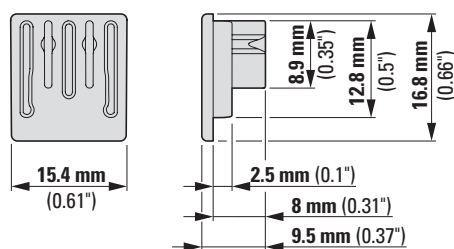


### End Cap dimensions (mm)

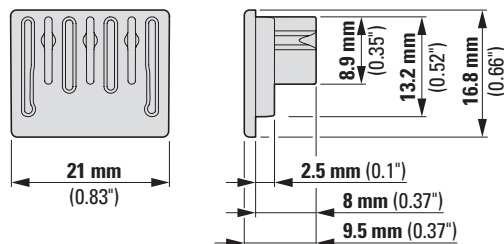
EK-3/10-EVGK-GVK



EK-3/16-EVGK-GVK

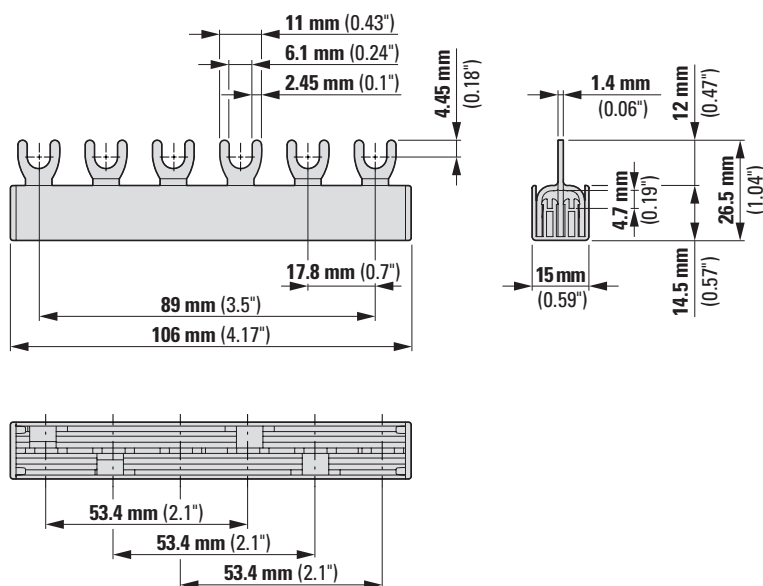


EK-3N/16-EVGK-GVK



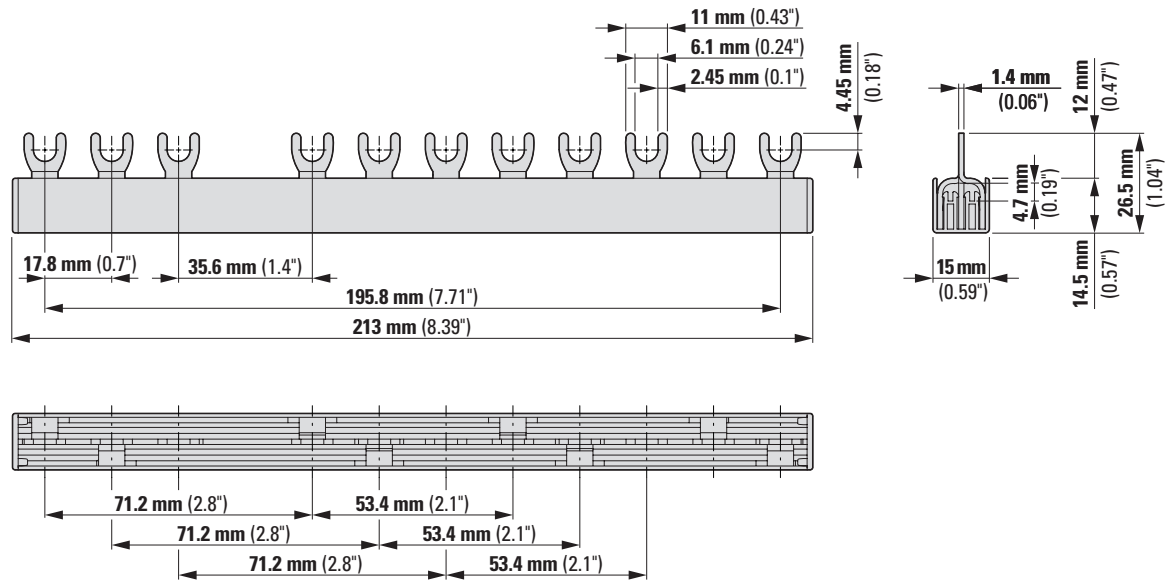
### Dimensions (mm)

EVGK-3PHAS/6MODUL

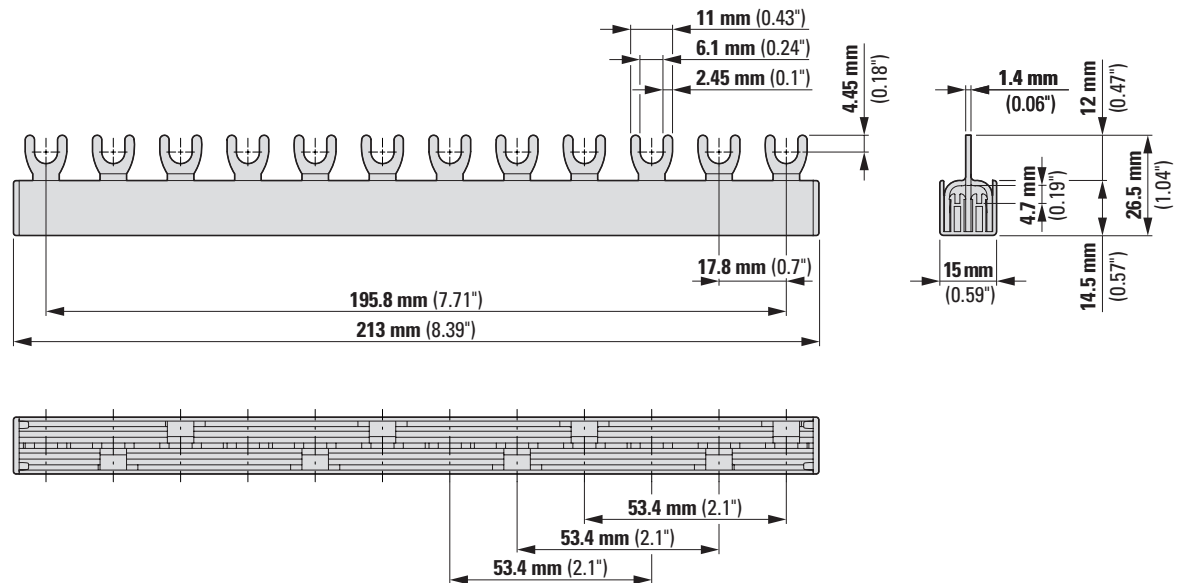


Dimensions (mm)

EVGK-3PHAS/8MODUL/LS



EVGK-3PHAS/12MODUL



# 1.144

## Busbar Systems

Vertical Busbar BB-V-16/1P+N

xPole

wa\_sg02616



| Description                        | Type<br>Designation | Article No. | Units per<br>package |
|------------------------------------|---------------------|-------------|----------------------|
| Vertical Busbar 16mm² BB-V-16/1P+N |                     |             |                      |
| 2-phases                           | BB-V-16/1P+N        | 186887      | 5                    |



wa\_sg02616

Description Vertical Busbar 16mm<sup>2</sup> BB-V-16/1P+N

Attention:

The thermal overload protection for the RCCB installing next to the vertical busbar must be considered (please refer to our catalogue register RCCB  
 $I_n = 16\text{A RCCB} \Rightarrow 10\text{ A gG/gL Fuse/Main Incomer}$   
 $I_n = 25\text{-}40\text{A RCCB} \Rightarrow 25\text{ A gG/g Fuse/Main Incomer}$   
 $I_n = 63\text{A RCCB} \Rightarrow 40\text{ A gG/gL Fuse/Main Incomer}$   
or country specific wiring regulations).

The thermal emission from the vertical busbar can affect the tripping characteristics of the neighboring RCDs, please follow notes in our product documentation regarding possible temperature derating.  
Thermal overload protection for the vertical busbar according to EN61439-3 must be considered  $\Rightarrow$  nominal current 80A, max. 84A for 15 minutes, maximum setting for ELCB NF: 60A.

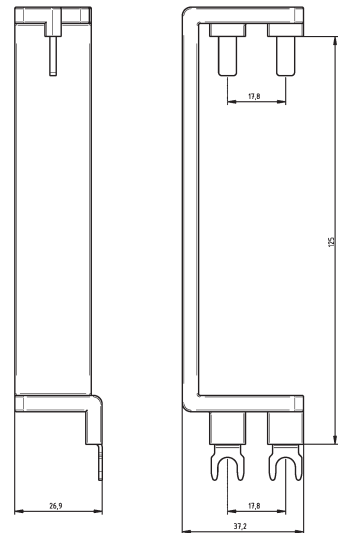


Products are EU comform and correspond to the RoHS of the EU

Technical Data

| BB-V-16/1P+N                                           |                                               |
|--------------------------------------------------------|-----------------------------------------------|
| General                                                |                                               |
| Busbar                                                 | Copper                                        |
| Surface busbar                                         | plain                                         |
| Insulation                                             | PA66                                          |
| Surface insulation                                     | grey RAL 7035                                 |
| Standards                                              | EN 60947-1:2007 / IEC 60947-1:2007            |
| Temperature resistance                                 | 125 °C – UL94 V0                              |
| CTI Insulation                                         | 600 V                                         |
| Insulation coordination                                | Overvoltage category III / Pollution degree 2 |
| Electrical                                             |                                               |
| Max. electrical load                                   | 690 V AC                                      |
| Protection class                                       | IP20                                          |
| Rated peak withstand voltage                           | $U_{imp}$ 6 kV                                |
| Rated insulation voltage                               | $U_i$ 800 V                                   |
| Capacity at 35 °C ambient temperature                  |                                               |
| Max. current with bar cross section 16 mm <sup>2</sup> | $I_s$ /Phase 80 A                             |

Dimensions (mm)



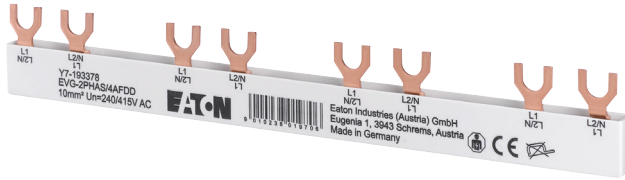
# 1.146

## Busbar Systems

AFDD-Busbar EVG-2PHAS/4AFDD

xPole

sg05517







|                    |       |                 |        |    |
|--------------------|-------|-----------------|--------|----|
| 10 mm <sup>2</sup> |       |                 |        |    |
| 2-phase            | 0.114 | EVG-2PHAS/4AFDD | 193378 | 10 |

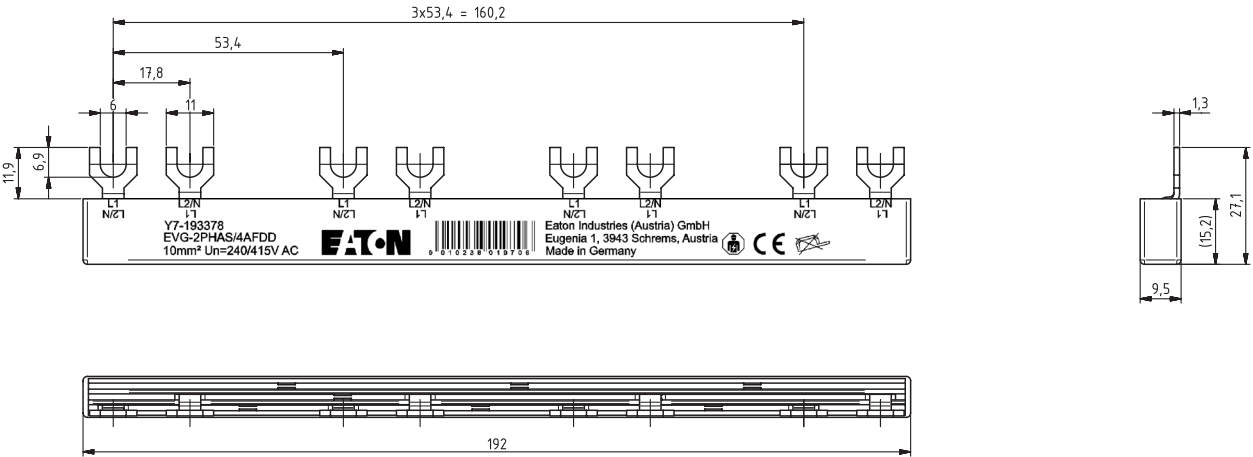
Technical Data



Products are EU comform and correspond to the RoHS of the EU

| EVG-2PHAS/4AFDD                                                              |                                               |
|------------------------------------------------------------------------------|-----------------------------------------------|
| <b>General</b>                                                               |                                               |
| Busbar                                                                       | Copper                                        |
| Surface busbar                                                               | plain                                         |
| Insulation                                                                   | PC/ABS                                        |
| Surface insulation                                                           | grey                                          |
| Standards                                                                    | EN 60947-1:2007 / IEC 60947-1:2007            |
| Heat deflection temperature                                                  | 90 °C – UL94 V0                               |
| Glow Wire Flammability Index                                                 | 960 °C / 1 mm                                 |
| Insulation coordination                                                      | Overvoltage category III / Pollution degree 2 |
| <b>Electrical</b>                                                            |                                               |
| Max. operating voltage                                                       | 690 V AC/DC                                   |
| Protection class                                                             | IP20                                          |
| Rated impulse withstand voltage                                              | U <sub>imp</sub> ≥ 4,5 kV                     |
| Max. operating voltage                                                       |                                               |
| 1-, 3-phase                                                                  | 690 V IEC<br>480Y/277V & 240 V AC             |
| <b>Load Capacity at 35 °C ambient temperature depending of feeding point</b> |                                               |
| Max. busbar current feeding at beginning / ending                            | I <sub>g</sub> /Phase 50 A                    |
| Busbar cross section                                                         | 10 mm <sup>2</sup>                            |
| Connection cross section                                                     | 10 mm <sup>2</sup>                            |

Dimensions (mm)



Description

Type  
Designation

Article No.

Units per  
package

## Busbar for auxiliary contact

4 mm<sup>2</sup>

Short pin

Z-VPS-4/1p+HS

302375

20/200

Long pin

Z-VPL-4/1p+HS

302376

20/200

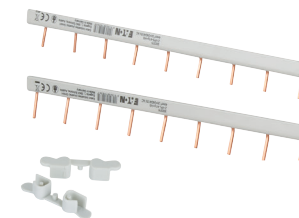
End cap

Z-VP-AK/1p

302377

10/500

sg00121, sg00221, sg00621



## Description Busbar 4 mm<sup>2</sup>



Products are CE conform and correspond to the RoHS of the EU

## Technical Data

### Z-VPS / Z-VPL

#### General

|                             |                                               |
|-----------------------------|-----------------------------------------------|
| Busbar                      | Copper                                        |
| Surface busbar              | plain                                         |
| Insulation                  | PC/ABS                                        |
| Surface insulation          | grey                                          |
| Standards                   | EN 60947-1:2007 / IEC 60947-1:2007            |
| Heat deflection temperature | 90 °C flame-retardant                         |
| Comparative Tracking Index  | PLC 1                                         |
| Insulation coordination     | Overvoltage category III / Pollution degree 2 |

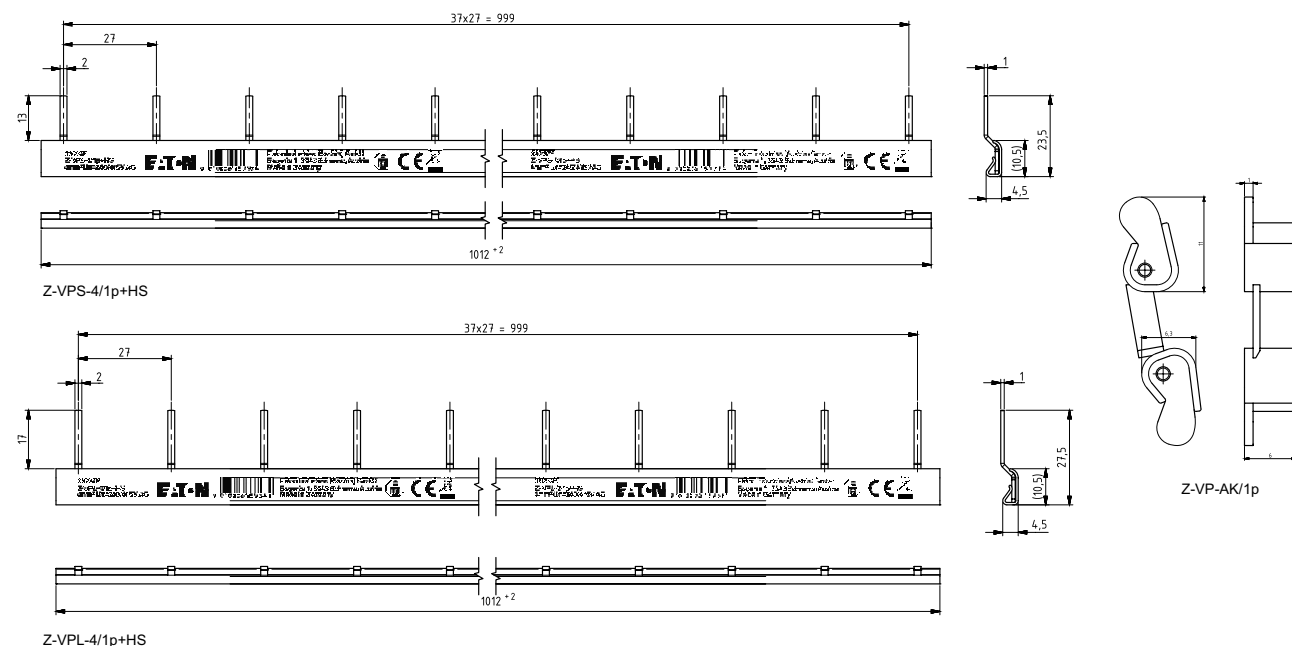
#### Electrical

|                        |                      |
|------------------------|----------------------|
| Max. operating voltage | 1000 V AC / 1500V DC |
| Protection class       | IP20                 |

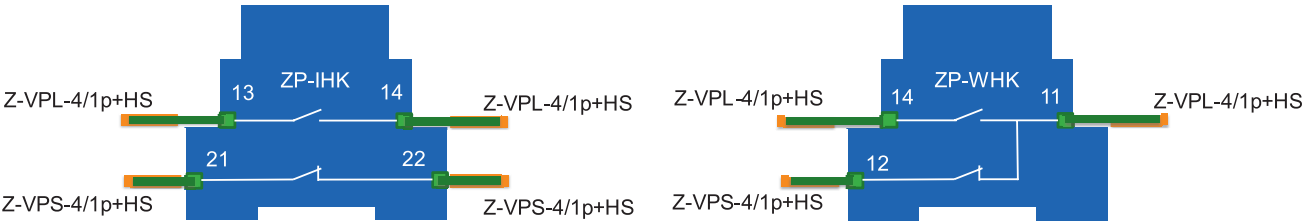
### Load Capacity at 35 °C ambient temperature depending of feeding point

|                                                   |                            |
|---------------------------------------------------|----------------------------|
| Max. busbar current feeding at beginning / ending | I <sub>s</sub> /Phase 32 A |
| Busbar cross section                              | 4 mm <sup>2</sup>          |

## Dimensions (mm)



Connection examples



sg00321



## Busbar EVG-3PHAS/N/6MODUL/LS

10 mm<sup>2</sup>, 16 mm<sup>2</sup>, 25 mm<sup>2</sup>

|          |                       |        |    |
|----------|-----------------------|--------|----|
| 3-phases | EVG-3PHAS/N/6MODUL/LS | 303366 | 10 |
|----------|-----------------------|--------|----|

## Description Busbar EVG-3PHAS/N/6MODUL/LS



Products are EU conform and correspond to the RoHS of the EU

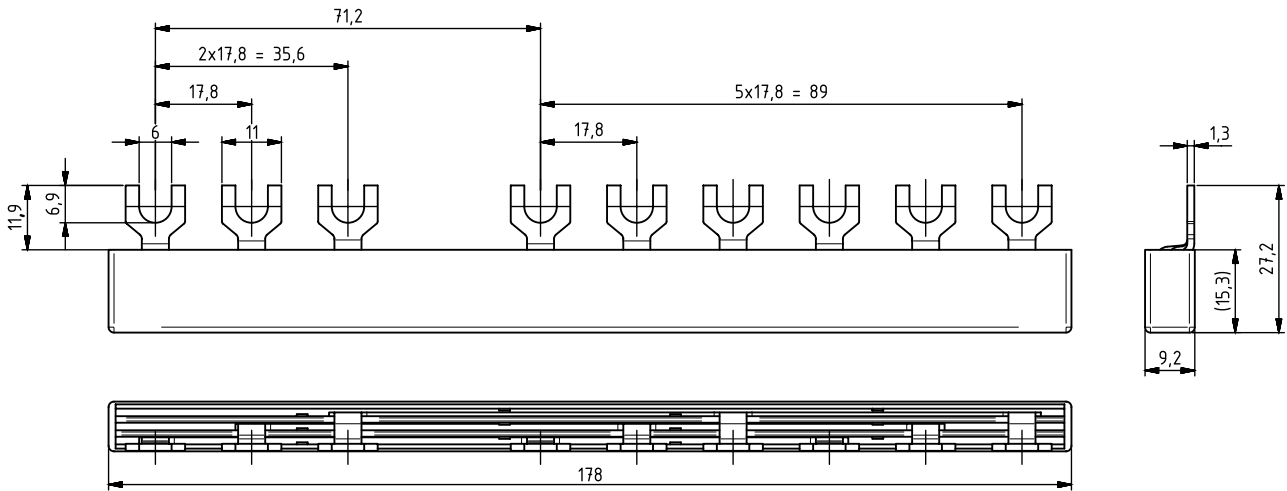
## Technical Data

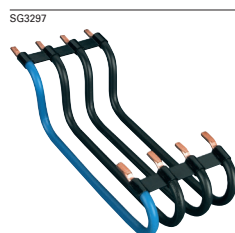
| EVG3/PHAS/N/6/MODUL/LS   |                                               |
|--------------------------|-----------------------------------------------|
| <b>General</b>           |                                               |
| Busbar                   | Copper                                        |
| Surface busbar           | plain                                         |
| Insulation               | PC/ABS                                        |
| Surface insulation       | grey                                          |
| Standards                | EN 60947-1:2007 / IEC 60947-1:2007            |
| Temperature resistance   | 90 °C flammgeschützt                          |
| CTI Insulation           | 300 V                                         |
| Insulation coordination  | Overvoltage category III / Pollution degree 2 |
| <b>Electrical</b>        |                                               |
| Impulse voltage strenght | ≥ 4.5 kV                                      |
| Min. air distance        | > 5.5 mm                                      |
| Min. creeping distance   | > 5 mm                                        |
| Max. operating voltage   | 1Ph: 1000V AC/DC<br>2Ph-4Ph : 690 V AC/DC     |
| Protection class         | IP20                                          |
| Short circuit rating     | ICC 15 kA - NH3 250 A gC500V JM               |
| Dielectric strenght      | > 32 kV / mm                                  |

## Load Capacity at 35 °C ambient temperature depending of feeding point

|                                           |                    |                    |                    |
|-------------------------------------------|--------------------|--------------------|--------------------|
| Busbar cross section                      | 10 mm <sup>2</sup> | 16 mm <sup>2</sup> | 25 mm <sup>2</sup> |
| Feeding at beginning / ending             |                    |                    |                    |
| Max. busbar current I <sub>g</sub> /Phase | 63 A               | 80 A               | 100 A              |
| Connection cross section mm <sup>2</sup>  | 10 mm <sup>2</sup> | 16 mm <sup>2</sup> | 25 mm <sup>2</sup> |

Dimensions (mm)





| Poles | Type Designation | Article No. | Units per package |
|-------|------------------|-------------|-------------------|
|-------|------------------|-------------|-------------------|

### Row-connectors-system for compact distribution boards with 125 mm row spacing

|     |                 |        |   |
|-----|-----------------|--------|---|
| 1   | RVS-1PHAS/125   | 215610 | 3 |
| N   | RVS-1N/125      | 215612 | 3 |
| 1+N | RVS-1PHAS+N/125 | 215615 | 3 |
| 3   | RVS-3PHAS/125   | 215617 | 3 |
| 3+N | RVS-3PHAS+N/125 | 215620 | 3 |

### Row-connectors-system for distribution boards with 150 mm row spacing

|     |                 |        |   |
|-----|-----------------|--------|---|
| 1   | RVS-1PHAS/150   | 215611 | 3 |
| N   | RVS-1N/150      | 215613 | 3 |
| 1+N | RVS-1PHAS+N/150 | 216410 | 3 |
| 3   | RVS-3PHAS/150   | 215618 | 3 |
| 3+N | RVS-3PHAS+N/150 | 215621 | 3 |

### Row-connectors-system for connections across 2 rows with 125 mm row spacing

|     |                 |        |   |
|-----|-----------------|--------|---|
| 1   | RVS-1PHAS/250   | 216409 | 3 |
| N   | RVS-1N/250      | 215614 | 3 |
| 1+N | RVS-1PHAS+N/250 | 215616 | 3 |
| 3   | RVS-3PHAS/250   | 215619 | 3 |
| 3+N | RVS-3PHAS+N/250 | 215622 | 3 |

## Specification | Rigid Row Connectors

### Description

The row connectors offer the greatest possible application comfort with the highest level of safety. The use of the row connectors results in a large saving of assembly time compared to conventional systems.

The rigid row connectors are used for the safe distribution of phases to several DIN rail rows. Thanks to the flattened connection pieces, two rigid wiring bridges can be fed into one lift terminal at the same time.

The row connectors can be folded up between the individual phases thanks to the flexible retaining bridges and can therefore also be used in extremely flat distribution boards.

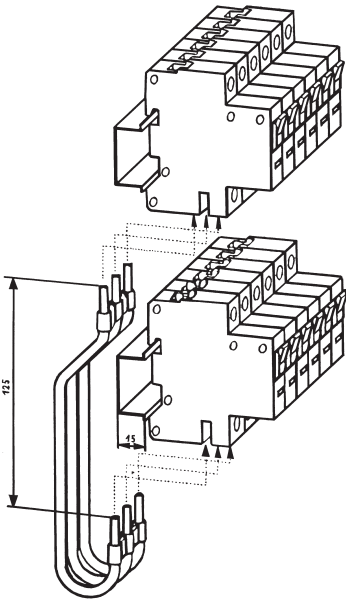
If required, the row connectors can also be easily separated at these distance holders.

## Technical Data

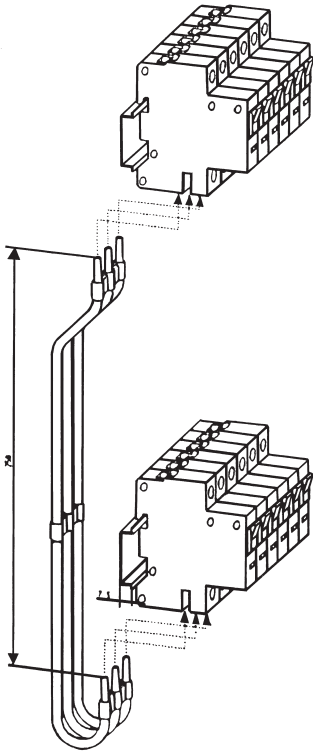
|                                   | RVS                                                         |
|-----------------------------------|-------------------------------------------------------------|
| <b>Electrical</b>                 |                                                             |
| Standards and regulations         | IEC 60664                                                   |
| Rated voltage                     | max. 500 V                                                  |
| Capacity                          | max. 120 A                                                  |
| Short circuit rating              | 25 kA                                                       |
| <b>Mechanical</b>                 |                                                             |
| Length                            | 125, 150, 250 mm                                            |
| Phase indication labels available | Phase black, N-conductor blue, earth conductor yellow/green |
| Conductor material                | Copper                                                      |
| Terminal protection               | finger and hand touch safe according to DGUV VS3, EN 50274  |
| Ambient temperature               | -20°C to +40°C                                              |
| Resistance to climatic conditions | according to IEC 60068                                      |

Dimensions (mm)

RVS-3PHAS/125



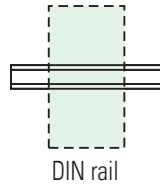
RVS-3PHAS/250



SG80911



## Mounting



## Frame

- D0** D0 Fuse-Bases
- D0** D0 Switch-Disconnectors
- C** Cylindrical Switch-Disconnectors



**D0**Rated current  
(A)

Poles

Width  
(mm)Type  
Designation

Article No.

Units per  
package**Fuse-Base D01+D02****Fuse-Base FCFBD02DI**

- One design for Fuse-Links size D02 and D01, because adapter springs for screw caps D02 are in scope of delivery
- Only screw cap D02 for all applications necessary
- Mounting on DIN-rail or mounting plate possible
- Finger and hand touch safe according to DGUV VS3, EN 50274
- Fuse-Base is equipped with holes for sealing

SG80211



|    |   |    |             |        |    |
|----|---|----|-------------|--------|----|
| 63 | 1 | 27 | FCFBD02DI-1 | 148599 | 15 |
| 63 | 3 | 81 | FCFBD02DI-3 | 148810 | 5  |

Description

Type  
Designation

Article No.

Units per  
package**Screw Caps Z-D0./SK**

wa\_sg04013



|               |          |        |    |
|---------------|----------|--------|----|
| D01 max. 16 A | Z-D01/SK | 100650 | 20 |
| D02 max. 63 A | Z-D02/SK | 100651 | 20 |

**Adapter Spring Z-D02/SIKA-HF**

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

wa\_sg02612



|         |               |        |           |
|---------|---------------|--------|-----------|
| D02-D01 | Z-D02/SIKA-HF | 263149 | 50 / 3000 |
|---------|---------------|--------|-----------|

**Accessories for FCFBD02DI-**

Fuse-Links Z-D0./SE-...

Cartridge-ring adapter inserts Z-D02-PE-... and Z-D02-D01-PE-...

Adapter Spring Z-D02/SIKA-HF (scope of delivery)

Cartridge-ring adapter insert plier Z-D0-PE-Zsee chapter Accessories Fuse Devices.

For busbar blocks and feed terminals refer to fuse-switch-disconnector and busbar systems.

**Description Fuse-Base FCFBD02DI**

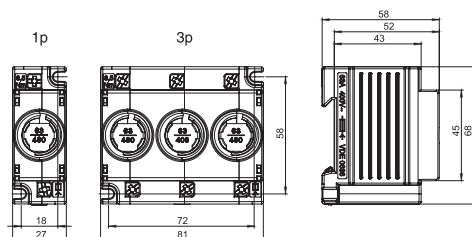
- According to DIN VDE 0636-301
- For Fuse-Links size D02 and D01
- Can be sealed with leads
- Silicone-, halogen- and phosphorfree
- Cartridge-ring adapter inserts Z-D02-PE and Z-D02-D01-PE required for current coding
- Low-loss stainless steel terminal (anti-magnetic)



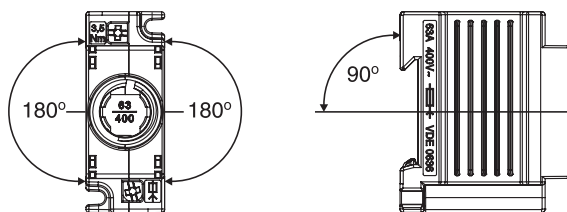
## Technical Data

| FCFBD02DI                                                                           |                                                                                                                                |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>                                                                   |                                                                                                                                |
| Number of poles                                                                     | 1P, 3P                                                                                                                         |
| Rated voltage                                                                       | 400 V AC, 250 V DC                                                                                                             |
| Rated current                                                                       |                                                                                                                                |
| D01                                                                                 | 16 A                                                                                                                           |
| D02                                                                                 | 63 A                                                                                                                           |
| Conditional rated short circuit current tested with inserts Operating class gG (gL) |                                                                                                                                |
| AC                                                                                  | 50 kA                                                                                                                          |
| DC                                                                                  | 8 kA                                                                                                                           |
| Short-circuit current strength                                                      | 25 kA                                                                                                                          |
| <b>Mechanical</b>                                                                   |                                                                                                                                |
| Frame size                                                                          | 45 mm                                                                                                                          |
| Device height                                                                       | 68 mm                                                                                                                          |
| Device width                                                                        | 27 mm per pole                                                                                                                 |
| Weight                                                                              |                                                                                                                                |
| 1P                                                                                  | 74 g                                                                                                                           |
| 3P                                                                                  | 213 g                                                                                                                          |
| Mounting                                                                            | Quick fastening on DIN rail according to IEC/EN 60715<br>Screw fastening on mounting plate screw $\leq 4$ mm, head $\leq 7$ mm |
| Upper and lower terminals                                                           | lift terminals                                                                                                                 |
| Terminal capacity                                                                   | 1.5-35 mm <sup>2</sup>                                                                                                         |
| Tightening torque of terminal screws                                                | 3.5 Nm                                                                                                                         |
| Flame class according to UL94                                                       | V0                                                                                                                             |
| Comparative tracking index                                                          | CTI 600                                                                                                                        |

## Dimensions (mm)



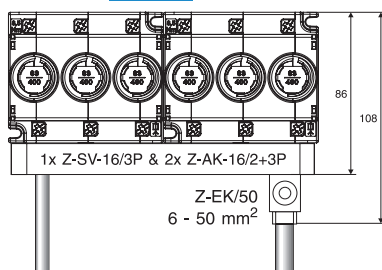
## Operation position



## Examples

3-phases

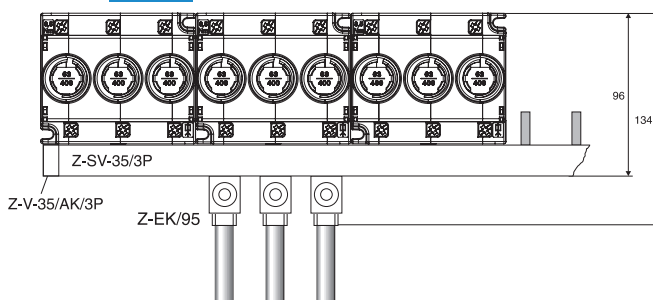
16 mm<sup>2</sup>



**Terminal capacity Z-EK/95, Z-EK/95-1:**  
25-95 mm<sup>2</sup> single-/fine-wire  
16-70 mm<sup>2</sup> fine wires with wire end sleeve

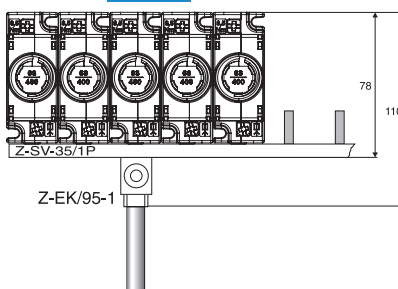
3-phases

35 mm<sup>2</sup>



1-phase

35 mm<sup>2</sup>





| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

Switch-Disconnecter-Fuse D01

With visual tripping indicator Z-SLS/D01 (empty)

- Rated operational voltage 230/400 V AC  
1-pole 60 V DC, 2-pole 110 V DC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding is integrated
- Can be sealed with leads
- Supply side from top or bottom

SG80411



|     |         |               |        |    |
|-----|---------|---------------|--------|----|
| 1   | max. 16 | Z-SLS/D01/1   | 263155 | 18 |
| 1+N | max. 16 | Z-SLS/D01/1+N | 263158 | 9  |
| 2   | max. 16 | Z-SLS/D01/2   | 263156 | 9  |
| 3   | max. 16 | Z-SLS/D01/3   | 263157 | 6  |
| 3+N | max. 16 | Z-SLS/D01/3+N | 263159 | 4  |

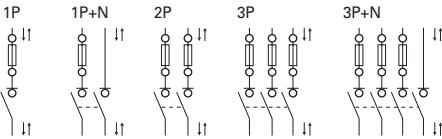
Accessories

Fuse-Links Z-D01/SE-...see chapter Accessories Fuse Devices

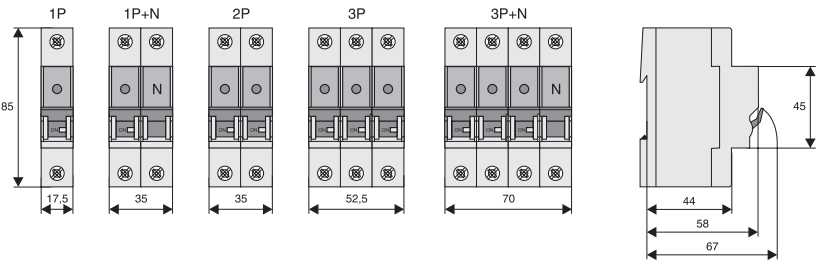
Description Switch-Disconnecter-Fuse D01

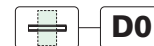
- Design according to IEC/EN 60947-3
- Mechanical current coding by means of integrated, adjustable coding ring
- Plug-in technology without screw caps
- Visual tripping indicator is flashing
- Suitable for the following fuse-links  
D01: 2, 4, 6, 10, 16 A

Connection diagram



Dimensions (mm)

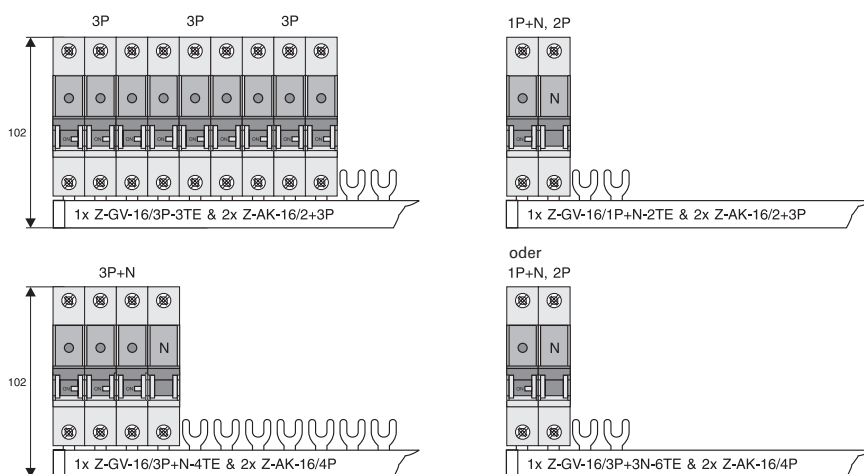




### Technical Data

| Z-SLS/D01                                        |           |                                                       |
|--------------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                                |           |                                                       |
| Number of poles                                  |           | 1P, 1P+N, 2P, 3P, 3P+N                                |
| Rated operational voltage                        | $U_e$     | 400 V                                                 |
| AC                                               |           | 1P to 60 V / 2P to 110 V                              |
| DC                                               |           |                                                       |
| Rated operational current                        | $I_e$     | 16 A                                                  |
| Rated constant current                           | $I_u$     | 16 A                                                  |
| Conditional rated short circuit current          |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                             |           | AC 22B, DC 21B                                        |
| Overvoltage category                             |           | IV                                                    |
| Rated peak withstand voltage                     | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path $I_e$                |           | 0.64 W                                                |
| Power loss per current path with fuse-link $I_e$ |           | 2.24 W                                                |
| <b>Mechanical</b>                                |           |                                                       |
| Frame size                                       |           | 45 mm                                                 |
| Device height                                    |           | 86 mm                                                 |
| Device width                                     |           | 17.5 mm per pole (1MU)                                |
| Weight                                           |           |                                                       |
| 1P                                               |           | 90 g                                                  |
| 1P+N                                             |           | 170 g                                                 |
| 2P                                               |           | 180 g                                                 |
| 3P                                               |           | 270 g                                                 |
| 3P+N                                             |           | 350 g                                                 |
| Mounting                                         |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection                             |           | IP20                                                  |
| Upper and lower terminals                        |           | lift terminals                                        |
| Terminal capacity                                |           | 1.5-25 mm <sup>2</sup>                                |
| Tightening torque of terminal screws             |           | max. 2.5 Nm                                           |
| Temperature range                                |           | -25 to +60 °C                                         |
| Flame class                                      |           | V0, glowing wire test 960 °C                          |
| Pollution degree                                 |           | 3                                                     |
| Comparative tracking index                       |           | CTI 600                                               |

### Examples





| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

Fuse-Switch-Disconnecter D02+D01

Standard Z-SLS/NEOZ (empty)

- Rated operational voltage 1-pole 230 V AC / 110 V DC  
2-pole 400 V AC / 250 V DC  
1+N, 3-pole, 3+N, 3+PEN 400 V AC
- Suitable for fuse-links with operating classes gG (gL), aM
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom

SG80611



|       |         |                  |        |    |
|-------|---------|------------------|--------|----|
| 1     | max. 63 | Z-SLS/NEOZ/1     | 248235 | 12 |
| 1+N   | max. 63 | Z-SLS/NEOZ/1+N   | 248237 | 6  |
| 2     | max. 63 | Z-SLS/NEOZ/2     | 248233 | 6  |
| 3     | max. 63 | Z-SLS/NEOZ/3     | 248234 | 4  |
| 3+N   | max. 63 | Z-SLS/NEOZ/3+N   | 248236 | 3  |
| 3+PEN | max. 63 | Z-SLS/NEOZ/3+PEN | 182399 | 3  |

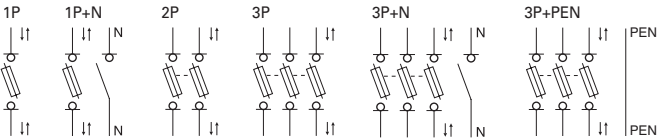
Accessories

- Metal locking device for 1-pole Z-SLZ/SC
- Plastic locking device for 1-pole Z-SLZ/SP
- Fuse-Link set with visual tripping indicator Z-SLS/B-..
- Plug-in Busbars ...

Description Fuse-Switch-Disconnecter Z-SLS/NEOZ, Standard

- Design according to IEC/EN 60947-3
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links  
D01: 1, 2, 4, 6, 10, 13, 16 A  
D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

Connection diagram

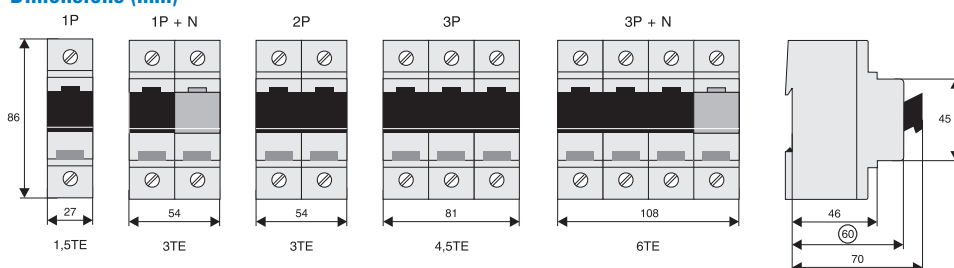




### Technical Data

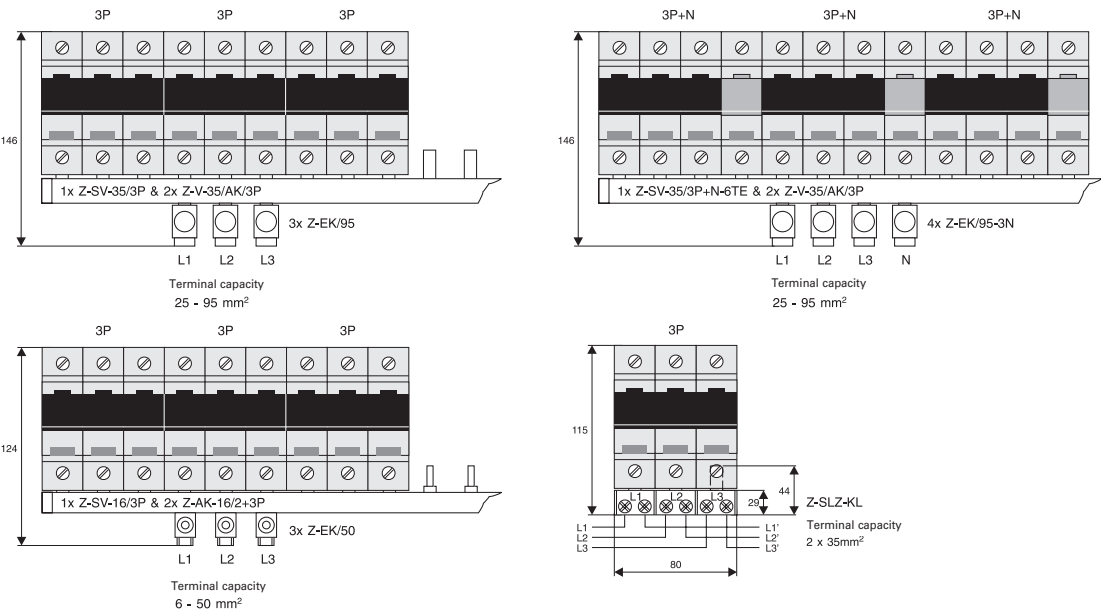
|                                                             |           | Z-SLS/NEOZ                                            |
|-------------------------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                                           |           |                                                       |
| Number of poles                                             |           | 1P, 1P+N, 2P, 3P, 3P+N                                |
| Rated operational voltage                                   | $U_e$     |                                                       |
| AC 1P, 1P+N                                                 |           | 230 V                                                 |
| 2P, 3P, 3P+N                                                |           | 400 V                                                 |
| DC 1P                                                       |           | bis 110 V                                             |
| 2P                                                          |           | bis 250 V                                             |
| Rated operational current                                   | $I_e$     | 63 A                                                  |
| Rated constant current                                      | $I_u$     | 63 A                                                  |
| Conditional rated short circuit current                     |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                                        |           | AC 22B/400V/63A, DC 21B/110V/63A per pole             |
| Overvoltage category                                        |           | IV                                                    |
| Rated peak withstand voltage                                | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path $I_e$                           |           |                                                       |
| L1, L2, L3                                                  |           | 0.5 W                                                 |
| N                                                           |           | 1 W                                                   |
| Power loss per current path with fuse-link $I_e$ L1, L2, L3 |           | 6.6 W                                                 |
| Max. permissible power loss of fuse-links                   |           | 5.5 W                                                 |
| <b>Mechanical</b>                                           |           |                                                       |
| Frame size                                                  |           | 45 mm                                                 |
| Device height                                               |           | 86 mm                                                 |
| Device width                                                |           | 27 mm per pole (1.5MU)                                |
| Weight                                                      |           |                                                       |
| 1P                                                          |           | 113 g                                                 |
| 1P+N                                                        |           | 225 g                                                 |
| 2P                                                          |           | 224 g                                                 |
| 3P                                                          |           | 450 g                                                 |
| 3P+N                                                        |           | 472 g                                                 |
| Mounting                                                    |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection (behind front plate)                   |           | IP20C                                                 |
| Upper and lower terminals                                   |           | lift terminals                                        |
| Terminal capacity                                           |           | 1.5-35 mm <sup>2</sup>                                |
| Tightening torque of terminal screws                        |           | max. 4 Nm                                             |
| Temperature range                                           |           |                                                       |
| Ambient air                                                 |           | -25 to +40 °C, on 24h average ≤+35 °C                 |
| Storage                                                     |           | -25 to +60 °C                                         |
| Temperature rise limits                                     |           |                                                       |
| Terminals                                                   |           | ≤+70 °K                                               |
| Manual operating means                                      |           | ≤+25 °K                                               |
| Parts intended to be touched                                |           | ≤+40 °K                                               |
| Parts need not to be touched                                |           | ≤+50 °K                                               |
| Flame class                                                 |           | V0, glowing wire test 960 °C                          |
| Pollution degree                                            |           | 3                                                     |
| Comparative tracking index                                  |           | CTI 600                                               |

### Dimensions (mm)





Examples





| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

## Fuse-Switch-Disconnecter D02+D01

### Complete with captive current code Z-SLS/CEK

- Rated operational voltage 1-pole 50-230 V AC / 50 - 110 V DC  
3-pole 50-400 V AC
- Fuse carrier with visual tripping indicator and fuses inclusive
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom

SG80711



|       |    |               |        |    |
|-------|----|---------------|--------|----|
| 1pole | 10 | Z-SLS/CEK10/1 | 272587 | 12 |
| 1pole | 16 | Z-SLS/CEK16/1 | 263135 | 12 |
| 1pole | 25 | Z-SLS/CEK25/1 | 263136 | 12 |
| 3pole | 16 | Z-SLS/CEK16/3 | 248243 | 4  |
| 3pole | 25 | Z-SLS/CEK25/3 | 248244 | 4  |
| 3pole | 35 | Z-SLS/CEK35/3 | 248245 | 4  |
| 3pole | 40 | Z-SLS/CEK40/3 | 150687 | 4  |
| 3pole | 50 | Z-SLS/CEK50/3 | 248246 | 4  |
| 3pole | 63 | Z-SLS/CEK63/3 | 263160 | 4  |

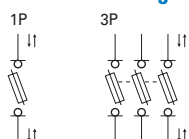
## Accessories

- Metal locking device for 1-pole Z-SLZ/SC
- Plastic locking device for 1-pole Z-SLZ/SP
- Fuse-Link set with visual tripping indicator Z-SLS/B-...
- Plug-in Busbars ...

## Description Fuse-Switch-Disconnecter Z-SLS/CEK, complete with captive current code

- Design according to IEC/EN 60947-3
- Can be used as main fuse downstream of the meter according to the Technical Connection Rules of the Austrian Power Supply Companies („TAEV“)
- Current coding by the manufacturer
- Plug-in technology without screw caps
- Suitable for the following fuse-links  
D01: 10, 16 A  
D02: 25, 35, 40, 50, 63 A
- Can be sealed with leads
- Visual tripping indicator included

## Connection diagram



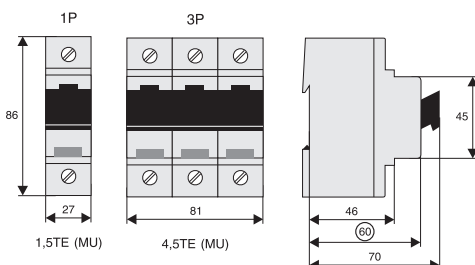




## Technical Data

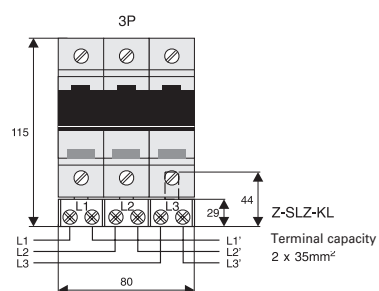
|                                               |           | Z-SLS/CEK                                             |
|-----------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                             |           |                                                       |
| Number of poles                               |           | 1P, 3P                                                |
| Rated operational voltage                     | $U_e$     | 50-230 V AC / 50-110 V DC                             |
| 1P                                            |           | 50-400 V AC                                           |
| 3P                                            |           |                                                       |
| Rated constant current                        | $I_u$     | 10, 16, 25 A                                          |
| 1P                                            |           | 16, 25, 35, 40, 50, 63 A                              |
| 3P                                            |           |                                                       |
| Conditional rated short circuit current       |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                          |           | AC 22B/400V/63A, DC 21B/110V/63A per pole             |
| Overvoltage category                          |           | IV                                                    |
| Rated peak withstand voltage                  | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path at 63A L1, L2, L3 |           | 0.5 W                                                 |
| Power loss per current path                   |           |                                                       |
| with fuse-link                                |           | L1, L2, L3                                            |
| 10 A                                          |           | 2.0 W                                                 |
| 16 A                                          |           | 2.5 W                                                 |
| 25 A                                          |           | 3.7 W                                                 |
| 35 A                                          |           | 4.3 W                                                 |
| 40 A                                          |           | 5.2 W                                                 |
| 50 A                                          |           | 5.7 W                                                 |
| 63 A                                          |           | 6.6 W                                                 |
| Max. permissible power loss of fuse-links     |           | 5.5 W                                                 |
| <b>Mechanical</b>                             |           |                                                       |
| Frame size                                    |           | 45 mm                                                 |
| Device height                                 |           | 86 mm                                                 |
| Device width                                  |           | 27mm per pole (1.5MU)                                 |
| Weight                                        |           |                                                       |
| 1P                                            |           | 147 g                                                 |
| 3P                                            |           | 441 g                                                 |
| Mounting                                      |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection (behind front plate)     |           | IP20C                                                 |
| Upper and lower terminals                     |           | lift terminals                                        |
| Terminal capacity                             |           | 1.5-35 mm <sup>2</sup>                                |
| Tightening torque of terminal screws          |           | max. 4 Nm                                             |
| Temperature range                             |           |                                                       |
| Ambient air                                   |           | -25 to +40 °C, on 24h average ≤+35 °C                 |
| Storage                                       |           | -25 to +60 °C                                         |
| Temperature rise limits                       |           |                                                       |
| Terminals                                     |           | ≤+70 °K                                               |
| Manual operating means                        |           | ≤+25 °K                                               |
| Parts intended to be touched                  |           | ≤+40 °K                                               |
| Parts need not to be touched                  |           | ≤+50 °K                                               |
| Flame class                                   |           | V0, glowing wire test 960 °C                          |
| Pollution degree                              |           | 3                                                     |
| Comparative tracking index                    |           | CTI 600                                               |

## Dimensions (mm)





## Example



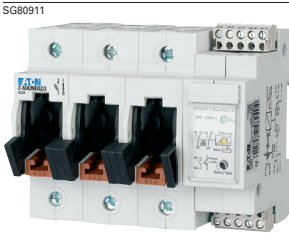


| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

Fuse-Switch-Disconnecter D02+D01

With fuse monitoring Z-SLK/NEOZ (empty)

- Rated operational voltage 1-pole 50-230 V AC / 50-110 V DC  
2-pole 50-400 V AC / 50-250 V DC  
3-pole, 3+N 50-400 V AC
- Mechanical current coding with Fuse-Link set
- Can be sealed with leads
- Supply side from top or bottom



|        |         |                |        |   |
|--------|---------|----------------|--------|---|
| 1+HS   | max. 63 | Z-SLK/NEOZ/1   | 248238 | 6 |
| 2+HS   | max. 63 | Z-SLK/NEOZ/2   | 248239 | 4 |
| 3+HS   | max. 63 | Z-SLK/NEOZ/3   | 248240 | 3 |
| 3+N+HS | max. 63 | Z-SLK/NEOZ/3+N | 248241 | 2 |

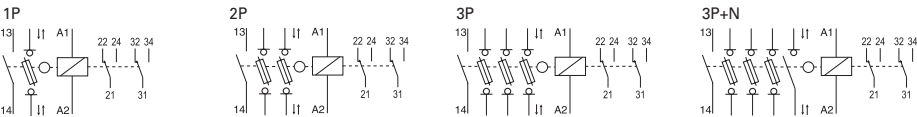
Accessories

- Metal locking device for 1-pole Z-SLZ/SC
- Plastic locking device for 1-pole Z-SLZ/SP
- Fuse-Link set with visual tripping indicator Z-SLS/B...
- Plug-in Busbars ...

Description Fuse-Switch-Disconnecter Z-SLK/NEOZ, with fuse monitoring

- Design according to IEC/EN 60947-3
- Fuse monitoring by relay contact
- Mechanical current coding
- Plug-in technology without screw caps
- Suitable for the following fuse-links  
D01: 1, 2, 4, 6, 10, 13, 16 A  
D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads
- Other AC/DC voltages requires special types

Connection diagram



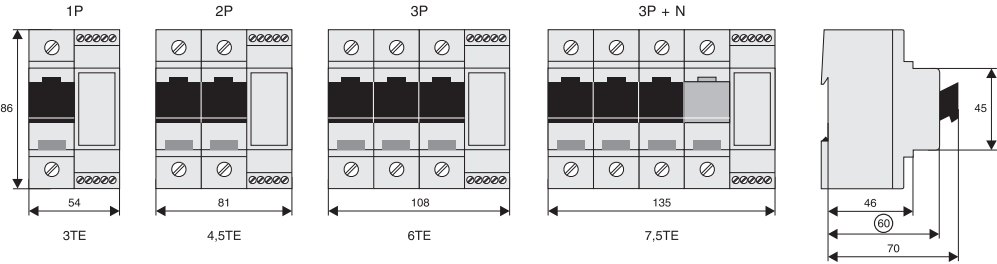


### Technical Data

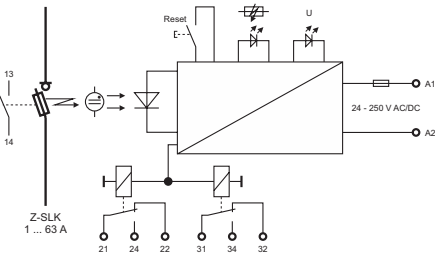
|                                                             |           | Z-SLK/NEOZ                                            |
|-------------------------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                                           |           |                                                       |
| Number of poles                                             |           | 1P, 2P, 3P, 3P+N                                      |
| Rated operational voltage                                   | $U_o$     |                                                       |
| AC 1P                                                       |           | 50-230 V AC                                           |
| 2P, 3P, 3P+N                                                |           | 50-400 V                                              |
| DC 1P                                                       |           | 50-110 V DC                                           |
| 2P                                                          |           | 50-250 V                                              |
| Rated operational current                                   | $I_o$     | 63 A                                                  |
| Rated constant current                                      | $I_u$     | 63 A                                                  |
| Conditional rated short circuit current                     |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                                        |           | AC 22B/400V/63A, DC 21B/110V/63A per pole             |
| Overvoltage category                                        |           | IV                                                    |
| Rated peak withstand voltage                                | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path $I_o$                           |           |                                                       |
| L1, L2, L3                                                  |           | 0.5 W                                                 |
| N                                                           |           | 1 W                                                   |
| Power loss per current path with fuse-link $I_o$ L1, L2, L3 |           | 6.6 W                                                 |
| Max. permissible power loss of fuse-links                   |           | 5.5 W                                                 |
| Auxiliary Switch 1 NO                                       |           | 5 A / 250 V AC                                        |
| <b>Relay Component electrical components</b>                |           |                                                       |
| Rated operational voltage range                             |           | 24-250 V AC/DC                                        |
| Rated operational voltage tolerance                         |           | ±10%                                                  |
| Power consumption                                           |           | 1.25 VA                                               |
| Frequency                                                   |           | DC (0Hz) 50-60 Hz                                     |
| Function display                                            |           |                                                       |
| Line voltage                                                |           | 1 LED green                                           |
| Trouble                                                     |           | 1 LED red                                             |
| Duty                                                        |           | 100%                                                  |
| Responding delay                                            |           | approx. 100 ms - 1 s                                  |
| Reset time                                                  |           | 1 s                                                   |
| Relay contacts                                              |           | 2 CO, 5 A / 250 V AC                                  |
| Auxiliary switch rated impulse withstand voltage            |           | 4 kV                                                  |
| Overvoltage category                                        |           | III                                                   |
| <b>Mechanical</b>                                           |           |                                                       |
| Frame size                                                  |           | 45 mm                                                 |
| Device height                                               |           | 86 mm                                                 |
| Device width                                                |           | 27 mm/pole (1.5MU) + 27 mm                            |
| Weight                                                      |           |                                                       |
| 1P                                                          |           | 224 g                                                 |
| 2P                                                          |           | 345 g                                                 |
| 3P                                                          |           | 450 g                                                 |
| 3P+N                                                        |           | 590 g                                                 |
| Mounting                                                    |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection (behind front plate)                   |           | IP20C                                                 |
| Upper and lower terminals                                   |           | lift terminals                                        |
| Terminal capacity                                           |           | 1.5-35 mm <sup>2</sup>                                |
| Tightening torque of terminal screws                        |           | max. 4 Nm                                             |
| Temperature range                                           |           |                                                       |
| Ambient air                                                 |           | -25 to +40 °C, on 24h average ≤+35 °C                 |
| Storage                                                     |           | -25 to +60 °C                                         |
| Temperature rise limits                                     |           |                                                       |
| Terminals                                                   |           | ≤+70 °K                                               |
| Manual operating means                                      |           | ≤+25 °K                                               |
| Parts intended to be touched                                |           | ≤+40 °K                                               |
| Parts need not to be touched                                |           | ≤+50 °K                                               |
| Flame class                                                 |           | V0, glowing wire test 960 °C                          |
| Pollution degree                                            |           | 3                                                     |
| Comparative tracking index                                  |           | CTI 600                                               |
| <b>Relay Component mechanical components</b>                |           |                                                       |
| Upper and lower terminals                                   |           | lift terminals                                        |
| Terminal capacity                                           |           |                                                       |
| solid                                                       |           | 0.14-4 mm <sup>2</sup>                                |
| fine-wire                                                   |           | 0.14-2.5 mm <sup>2</sup>                              |
| Tightening torque of terminal screws                        |           | 0.5-0.7 Nm                                            |



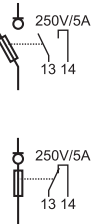
Dimensions (mm)



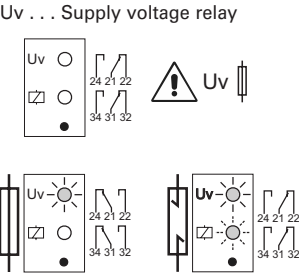
Simplified diagram



Function - Switch position



Relay - Fuse monitoring





Rated current  
(A)

Type  
Designation

Article No.

Units per  
package

### Fuse-Link sets complete Z-SLS/B

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- 1 set consists of 3 fuse-links, 3 gauge-pieces, 1 plastic box in the color of the visual tripping indicator  
- to snap on DIN rail

### With visual tripping indicator Z-SLS/B

- Rated operational voltage 50-400 V AC / 50-250 V DC

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|    |             |        |        |
|----|-------------|--------|--------|
| 1  | Z-SLS/B-1A  | 268983 | 1 / 12 |
| 2  | Z-SLS/B-2A  | 268984 | 1 / 12 |
| 4  | Z-SLS/B-4A  | 268985 | 1 / 12 |
| 6  | Z-SLS/B-6A  | 268986 | 1 / 12 |
| 10 | Z-SLS/B-10A | 268987 | 1 / 12 |
| 13 | Z-SLS/B-13A | 289972 | 1 / 12 |
| 16 | Z-SLS/B-16A | 268988 | 1 / 12 |
| 20 | Z-SLS/B-20A | 268989 | 1 / 12 |
| 25 | Z-SLS/B-25A | 268990 | 1 / 12 |
| 32 | Z-SLS/B-32A | 289973 | 1 / 12 |
| 35 | Z-SLS/B-35A | 268991 | 1 / 12 |
| 40 | Z-SLS/B-40A | 289974 | 1 / 12 |
| 50 | Z-SLS/B-50A | 268992 | 1 / 12 |
| 63 | Z-SLS/B-63A | 268993 | 1 / 12 |

### With visual tripping indicator Z-SLS/B

- Rated operational voltage 24-60 V AC / V DC

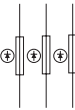
|    |                |        |        |
|----|----------------|--------|--------|
| 2  | Z-SLS/B/24-2A  | 268995 | 1 / 12 |
| 4  | Z-SLS/B/24-4A  | 268996 | 1 / 12 |
| 6  | Z-SLS/B/24-6A  | 268997 | 1 / 12 |
| 10 | Z-SLS/B/24-10A | 268998 | 1 / 12 |
| 13 | Z-SLS/B/24-13A | 289975 | 1 / 12 |
| 16 | Z-SLS/B/24-16A | 268999 | 1 / 12 |
| 20 | Z-SLS/B/24-20A | 269000 | 1 / 12 |
| 25 | Z-SLS/B/24-25A | 269001 | 1 / 12 |
| 32 | Z-SLS/B/24-32A | 289976 | 1 / 12 |
| 35 | Z-SLS/B/24-35A | 269002 | 1 / 12 |
| 40 | Z-SLS/B/24-40A | 289977 | 1 / 12 |
| 50 | Z-SLS/B/24-50A | 269003 | 1 / 12 |
| 63 | Z-SLS/B/24-63A | 269004 | 1 / 12 |



Description Fuse-Link sets complete Z-SLS/B

- Fuse-Links with flashing function (Z-SLS/B) in case of disconnection
- Supplied as a set with 3 fuse-links and 3 gauge-pieces in plastic box of different colours which can be mounted onto DIN rail.
- Dimensions of plastic box:  
Frame size 45 mm  
Depth 75 mm  
Width 54 mm

Connection diagram

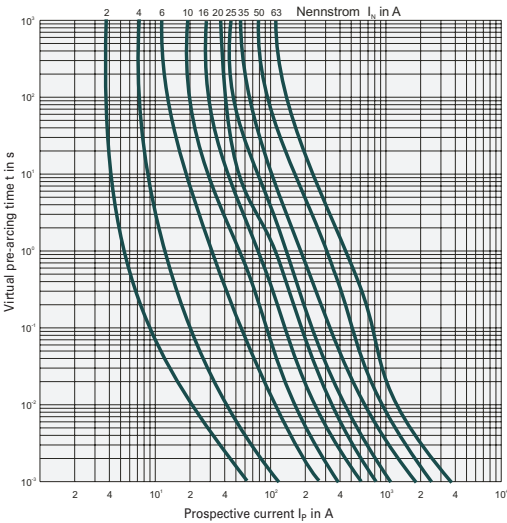


Technical Data

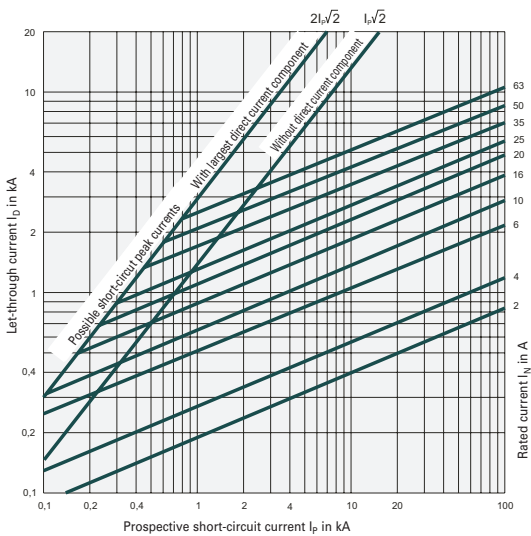
|                 | Z-SLS/B                      |
|-----------------|------------------------------|
| Electrical      |                              |
| Operating class | gG (gL)                      |
| Rated voltage   |                              |
| Z-SLS/B/24      | 24-60 V AC, 24-60 V DC       |
| Z-SLS/B         | 50-400 V AC / 50-250V DC     |
| Test voltage    | 5 kV                         |
| Mechanical      |                              |
| Size            |                              |
| D01             | 1, 2, 4, 6, 10, 13, 16 A     |
| D02             | 20, 25, 32, 35, 40, 50, 63 A |

Characteristics

Time/current characteristics of D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of D0-Fuse-Links 2 ... 63A gG(gL)





Rated current  
(A)

Type  
Designation

Article No.

Units per  
package

### Solid-link Set complete Z-SLS/TR-SET

- For Z-SLS/NEOZ, Z-SLK/NEOZ, Z-SLS/CEK
- 1 set consists of 3 solid-link inserts, 3 gauge-pieces, 1 plastic box to be snapped onto DIN rail
- By installing this set, the fuse-switch-disconnector is converted into a switch-disconnector

SG81311



63

Z-SLS/TR-SET

100660

1 / 12

### Description Solid-link Set complete Z-SLS/TR-SET

- Supplied as a set with 3 solid-links inserts and 3 gauge-pieces in plastic box which can be mounted onto DIN rail.
- Dimensions of plastic box:
 

|            |       |
|------------|-------|
| Frame size | 45 mm |
| Depth      | 75 mm |
| Width      | 54 mm |

### Connection diagram



### Technical Data

| Z-SLS/TR-SET           |            |
|------------------------|------------|
| <b>Electrical</b>      |            |
| Rated voltage          | 400 V AC   |
| Rated constant current | $I_u$ 63 A |
| Test voltage           | 5 kV       |
| <b>Mechanical</b>      |            |
| Size D02               | 63 A       |



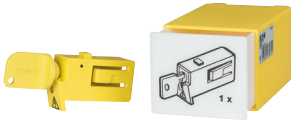


| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

Switch-on-locking Z-SLZ/SP

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ
- Only one lock per device required

SG81011



|              |          |        |        |
|--------------|----------|--------|--------|
| Plastic lock | Z-SLZ/SP | 268981 | 1 / 12 |
|--------------|----------|--------|--------|



| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

## Fuse-Switch-Disconnecter D02+D01

### With visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts

|     |         |              |        |    |
|-----|---------|--------------|--------|----|
| 1   | max. 63 | Z-SLS/CB/1   | 248247 | 12 |
| 1+N | max. 63 | Z-SLS/CB/1+N | 167282 | 6  |
| 2   | max. 63 | Z-SLS/CB/2   | 248248 | 6  |
| 3   | max. 63 | Z-SLS/CB/3   | 248249 | 4  |
| 3+N | max. 63 | Z-SLS/CB/3+N | 167283 | 3  |

SG80811



## Accessories

Fuse-Links Z-D0./SE-..

Cartridge-ring adapter inserts D01 Z-D02-D01/PE-..

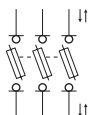
Cartridge-ring adapter inserts D02 Z-D02/PE-..

Adapter Spring D01 Z-SLS/CB-HF see chapter Accessories Fuse Devices

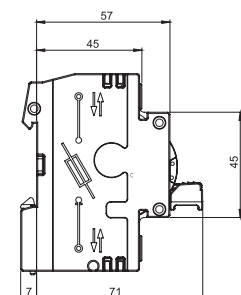
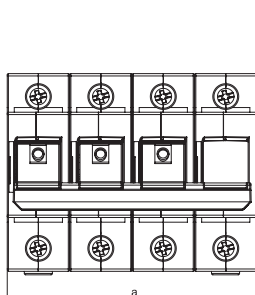
## Description Fuse-Switch-Disconnecter with visual tripping indicator Z-SLS/CB - Current coding by cartridge-ring adapter inserts

- Design according to IEC/EN 60947-3
- Current coding by means of cartridge-ring adapter inserts
- Visual tripping indicator is flashing
- Suitable for the following fuse-links
  - D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE-.. and Adapter Spring Z-SLS/CB-HF
  - D02: 20, 25, 32, 35, 40, 50, 63 A
- Can be sealed with leads

## Connection diagram



## Dimensions (mm)



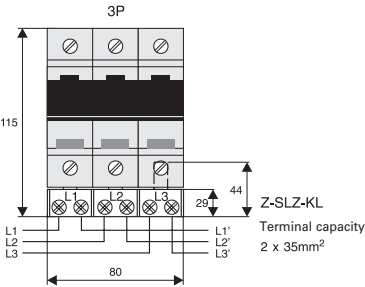
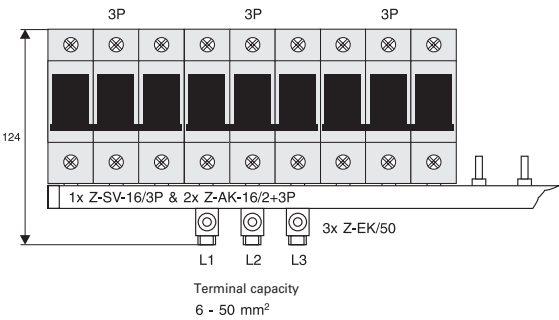
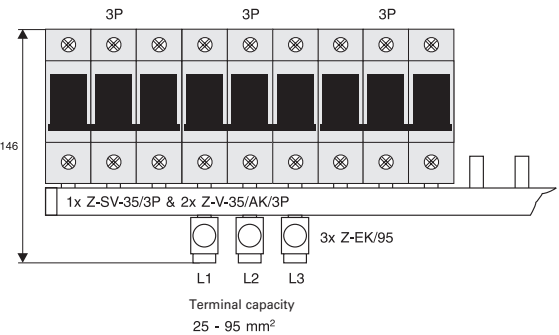
| Poles | Dimension a [mm] |
|-------|------------------|
| 1P    | 27               |
| 1+N   | 54               |
| 2P    | 54               |
| 3P    | 81               |
| 3+N   | 108              |



Technical Data

| Z-SLS/CB                                         |           |                                                       |
|--------------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                                |           |                                                       |
| Number of poles                                  |           | 1P, 1+N, 2P, 3P, 3+N                                  |
| Rated operational voltage                        | $U_e$     | 230 V AC<br>400 V AC                                  |
| 1P, 1P+N                                         |           |                                                       |
| 2P, 3P, 3P+N                                     |           |                                                       |
| Rated operational current                        | $I_e$     | 63 A                                                  |
| Rated constant current                           | $I_u$     | 63 A                                                  |
| Conditional rated short circuit current          |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                             |           | AC 22B                                                |
| Overvoltage category                             |           | IV                                                    |
| Rated peak withstand voltage                     | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path $I_e$                |           | 0.5 W                                                 |
| Power loss per current path with fuse-link $I_e$ |           | 7.5 W                                                 |
| <b>Mechanical</b>                                |           |                                                       |
| Frame size                                       |           | 45 mm                                                 |
| Device height                                    |           | 86 mm                                                 |
| Device width                                     |           | 27 mm per pole (1.5MU)                                |
| Weight                                           |           |                                                       |
| 1P                                               |           | 120 g                                                 |
| 1P+N                                             |           | 230 g                                                 |
| 2P                                               |           | 230 g                                                 |
| 3P                                               |           | 350 g                                                 |
| 3P+N                                             |           | 448 g                                                 |
| Mounting                                         |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection                             |           | IP20                                                  |
| Upper and lower terminals                        |           | lift terminals                                        |
| Terminal capacity                                |           | 1.5-35 mm <sup>2</sup>                                |
| Tightening torque of terminal screws             |           | max. 4 Nm                                             |
| Temperature range                                |           | -25 to +60 °C                                         |
| Flame class                                      |           | V0, glowing wire test 960 °C                          |
| Pollution degree                                 |           | 3                                                     |
| Comparative tracking index                       |           | CTI 600                                               |

Examples





| Size | Type<br>Designation | Article No. | Units per<br>package |
|------|---------------------|-------------|----------------------|
|------|---------------------|-------------|----------------------|

**Adapter Spring Z-SLS/CB-HF**

- For Z-SLS/CB/. for the use of fuse-links size D01

wa\_sg02712



|     |             |        |          |
|-----|-------------|--------|----------|
| D01 | Z-SLS/CB-HF | 263154 | 12 / 288 |
|-----|-------------|--------|----------|

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

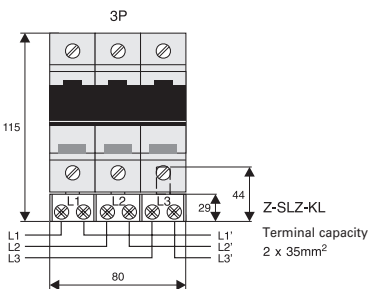
**Double Terminal Z-SLZ/KL**

- For Z-SLS/NEOZ, Z-SLS/CEK, Z-SLK/NEOZ

SG60212



|                                   |          |        |    |
|-----------------------------------|----------|--------|----|
| Terminal 2 x 3x35 mm <sup>2</sup> | Z-SLZ/KL | 268982 | 15 |
|-----------------------------------|----------|--------|----|



**Accessories for Z-SLS**

For busbar blocks and feed terminals refer to the technical part, fuse-switch-disconnector, and ordering part, busbar systems.



| Poles | Rated constant current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|-------|-------------------------------|---------------------|-------------|----------------------|
|-------|-------------------------------|---------------------|-------------|----------------------|

Switch-Disconnecter-Fuse D02+D01

With visual tripping indicator D02-LTS

- Rated operational voltage 400 V AC
- Suitable for fuse-links with operating classes gG (gL), aM
- Only 4MU in width, busbar compatible to Xpole switchgear
- Current coding by cartridge-ring adapter inserts
- Can be sealed with leads
- Supply side from top or bottom
- Version with Auxiliary Switch D02-LTS/63-3-HK
- Delivered with Adapter Springs for fuse-links D01 or cylindrical fuse-links 10x38

SG80711



|    |         |                 |        |   |
|----|---------|-----------------|--------|---|
| 3  | max. 63 | D02-LTS/63-3    | 114320 | 3 |
| 3  | max. 63 | D02-LTS/63-3-HK | 114322 | 3 |
| 3N | max. 63 | D02-LTS/63-3N   | 114321 | 3 |

Accessories for D02-LTS

| Max. Rated operational current<br>$I_g$ (A) | Size | Type<br>Designation | Article No. | Units per<br>package |
|---------------------------------------------|------|---------------------|-------------|----------------------|
|---------------------------------------------|------|---------------------|-------------|----------------------|

Adapter Spring Z-D02-LTS-HF

- To accomodate D01 fuse-links or cylindrical fuse-links 10x38 in the Switch-disconnetorfuse D02-LTS/63...

SG81811

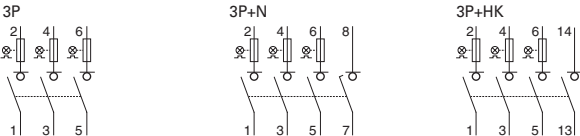


|    |         |              |        |          |
|----|---------|--------------|--------|----------|
| 16 | D02-D01 | Z-D02-LTS-HF | 114323 | 12 / 288 |
| 32 | C 10x38 |              |        |          |

Description Switch-Disconnecter-Fuse D02-LTS - Current coding by cartridge-ring adapter inserts

- Design according to IEC/EN 60947-3
- Current coding by means of cartridge-ring adapter inserts
- Visual tripping indicator is flashing
- Suitable for fuse-links with operating classes gG (gL), aM
  - D01: 2, 4, 6, 10, 13, 16 A with cartridge-ring adapter insert Z-D02-D01/PE... and Adapter Spring Z-D02-LTS-HF
  - D02: 20, 25, 32, 35, 50, 63 A
  - Cylindrical 10x38 up to 32 A with adapter spring Z-D02-LTS-HF
- Can be sealed with leads

Connection diagram

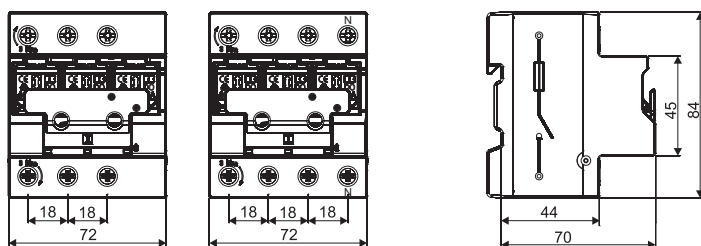




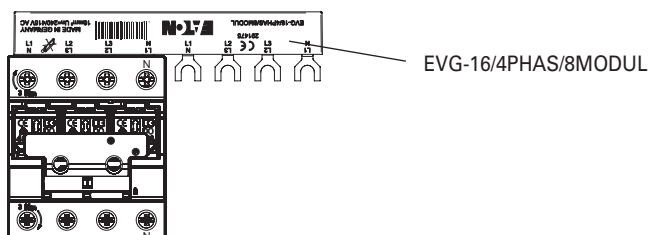
### Technical Data

|                                                  |           | D02-LTS                                               |
|--------------------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                                |           |                                                       |
| Number of poles                                  |           | 3P, 3P+N, 3P+HK                                       |
| Rated operational voltage                        | $U_e$     | 400 V AC                                              |
| Rated operational voltage range                  |           | 48-400 V AC                                           |
| Rated operational current                        | $I_e$     | 63 A                                                  |
| Rated constant current                           | $I_u$     | 63 A                                                  |
| Conditional rated short circuit current          |           | 50 kA <sub>r.m.s.</sub>                               |
| Utilization category                             |           | AC 22B                                                |
| Overvoltage category                             |           | IV                                                    |
| Rated peak withstand voltage                     | $U_{imp}$ | 6 kV                                                  |
| Power loss per current path $I_e$                |           | 1.8 W                                                 |
| Power loss per current path with fuse-link $I_e$ |           | 7.3 W                                                 |
| Max. permissible power loss of fuse-links        |           | 5.5 W                                                 |
| <b>Auxiliary Switch</b>                          |           |                                                       |
| 1P 1 NO                                          |           | 5 A / 250 V AC                                        |
| Max. thermal back-up protection                  |           | 2 A gL                                                |
| <b>Mechanical</b>                                |           |                                                       |
| Frame size                                       |           | 45 mm                                                 |
| Device height                                    |           | 86 mm                                                 |
| Device width                                     |           | 18 mm per pole (1MU)                                  |
| <b>Weight</b>                                    |           |                                                       |
| 3P                                               |           | 340 g                                                 |
| 3P+N                                             |           | 380 g                                                 |
| 3P+HK                                            |           | 380 g                                                 |
| Mounting                                         |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection                             |           | IP20                                                  |
| Upper and lower terminals                        |           | lift terminals                                        |
| Terminal capacity                                |           | 1.5-25 mm <sup>2</sup>                                |
| Tightening torque of terminal screws             |           | max. 3 Nm                                             |
| Temperature range                                |           | -25 to +60 °C                                         |
| Flame class                                      |           | V0, glowing wire test 960 °C                          |
| Pollution degree                                 |           | 3                                                     |
| Comparative tracking index                       |           | CTI 600                                               |

### Dimensions (mm)



### Example 3P, 3P+N





| Poles | Size | Type<br>Designation | Article No. | Units per<br>package |
|-------|------|---------------------|-------------|----------------------|
|-------|------|---------------------|-------------|----------------------|

### Fuse-Disconnecter (empty)

- For cylindrical fuse-links
- The visual tripping indicator indicates the tripped fuse-link
- Can be sealed with leads

#### For industry Z-SH

##### Without visual tripping indicator

|     |       |         |        |          |
|-----|-------|---------|--------|----------|
| 1   | 10x38 | Z-SH/1  | 263876 | 12 / 120 |
| 1+N | 10x38 | Z-SH/1N | 263877 | 12 / 120 |
| 2   | 10x38 | Z-SH/2  | 263878 | 6 / 60   |
| 3   | 10x38 | Z-SH/3  | 263879 | 4 / 40   |
| 3+N | 10x38 | Z-SH/3N | 263880 | 4 / 40   |

##### With visual tripping indicator

|     |       |          |        |          |
|-----|-------|----------|--------|----------|
| 1   | 10x38 | Z-SHL/1  | 263883 | 12 / 120 |
| 1+N | 10x38 | Z-SHL/1N | 263884 | 12 / 120 |
| 2   | 10x38 | Z-SHL/2  | 263885 | 6 / 60   |
| 3   | 10x38 | Z-SHL/3  | 263886 | 4 / 40   |
| 3+N | 10x38 | Z-SHL/3N | 263887 | 4 / 40   |

| Rated current<br>(A) | Size | Type<br>Designation | Article No. | Units per<br>package |
|----------------------|------|---------------------|-------------|----------------------|
|----------------------|------|---------------------|-------------|----------------------|

#### For household applications Z-SI, 1pole

##### Without visual tripping indicator

|    |           |           |        |          |
|----|-----------|-----------|--------|----------|
| 10 | 8.5x23    | Z-SI/10/1 | 263889 | 12 / 120 |
| 16 | 10.3x25.8 | Z-SI/16/1 | 263890 | 12 / 120 |
| 20 | 8.5x31.5  | Z-SI/20/1 | 263891 | 12 / 120 |
| 25 | 10.3x31.5 | Z-SI/25/1 | 263892 | 12 / 120 |
| 32 | 10.3x38   | Z-SI/32/1 | 263893 | 12 / 120 |

##### With visual tripping indicator

|    |           |            |        |          |
|----|-----------|------------|--------|----------|
| 20 | 8.5x31.5  | Z-SIL/20/1 | 263901 | 12 / 120 |
| 25 | 10.3x31.5 | Z-SIL/25/1 | 263902 | 12 / 120 |
| 32 | 10.3x38   | Z-SIL/32/1 | 263903 | 12 / 120 |

#### For household applications Z-SI, 1+Npole

##### Without visual tripping indicator

|    |           |            |        |          |
|----|-----------|------------|--------|----------|
| 10 | 8.5x23    | Z-SI/10/1N | 263894 | 12 / 120 |
| 16 | 10.3x25.8 | Z-SI/16/1N | 263895 | 12 / 120 |
| 20 | 8.5x31.5  | Z-SI/20/1N | 263896 | 12 / 120 |
| 25 | 10.3x31.5 | Z-SI/25/1N | 263897 | 12 / 120 |
| 32 | 10.3x38   | Z-SI/32/1N | 263898 | 12 / 120 |

##### With visual tripping indicator

|    |           |             |        |          |
|----|-----------|-------------|--------|----------|
| 20 | 8.5x31.5  | Z-SIL/20/1N | 263938 | 12 / 120 |
| 25 | 10.3x31.5 | Z-SIL/25/1N | 263939 | 12 / 120 |
| 32 | 10.3x38   | Z-SIL/32/1N | 263940 | 12 / 120 |

### Accessories for Z-SH, Z-SI

SG81211



SG36412



SG00412



SG53912





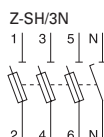
## Description Fuse-Disconnecter for Industrial Applications Z-SH

- Design according to IEC/EN 60947-3
- Design
  - without visual tripping indicator Z-SH
  - with visual tripping indicator Z-SHL
- Can be sealed with leads
- Supplied without fuse-links

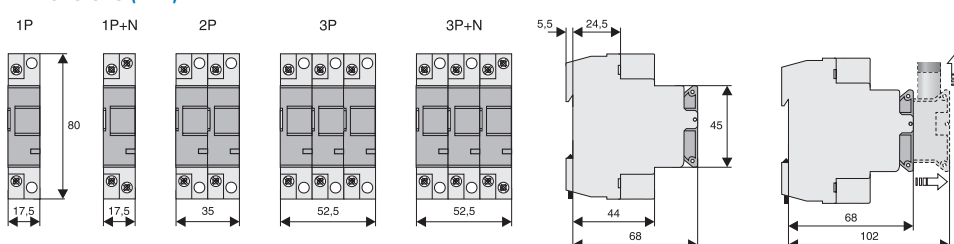
## Technical Data

| Z-SH                                 |                                                       |
|--------------------------------------|-------------------------------------------------------|
| <b>Electrical</b>                    |                                                       |
| Number of poles                      | 1P, 1P+N, 2P, 3P, 3P+N                                |
| Rated voltage                        |                                                       |
| 1P, 1P+N                             | 230 V AC                                              |
| 2P, 3P, 3P+N                         | 400 V AC                                              |
| Rated operational current            | $I_e$ 32 A                                            |
| Conditional short-circuit current    | 10 kA <sub>r.m.s.</sub>                               |
| Utilization category                 | AC 20B                                                |
| Overvoltage category                 | IV                                                    |
| Rated peak withstand voltage         | $U_{imp}$ 4 kV                                        |
| Fuse-Links                           | 10, 16, 20, 25, 32 A                                  |
| Operating class                      | gG(gL) / aM                                           |
| Max. Power loss per current path     | 3.2 W                                                 |
| <b>Mechanical</b>                    |                                                       |
| Frame size                           | 45 mm                                                 |
| Device height                        | 80 mm                                                 |
| Device width                         | according to dimensioned drawing                      |
| Weight                               |                                                       |
| 1P                                   | Z-SH 74 g      Z-SHL 76 g                             |
| 1P+N                                 | 84 g      86 g                                        |
| 2P                                   | 156 g      158 g                                      |
| 3P                                   | 234 g      236 g                                      |
| 3P+N                                 | 244 g      246 g                                      |
| Mounting                             | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection (built-in)      | IP20 (IP40)                                           |
| Upper and lower terminals            | lift terminals                                        |
| Terminal capacity                    | 1.5-10 mm <sup>2</sup>                                |
| Tightening torque of terminal screws | max. 2 Nm                                             |
| Temperature range                    | -25 to +60 °C                                         |
| Dimensions of fuse-link              | 10.3 x 38 mm                                          |

## Connection diagram



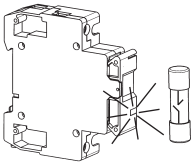
## Dimensions (mm)



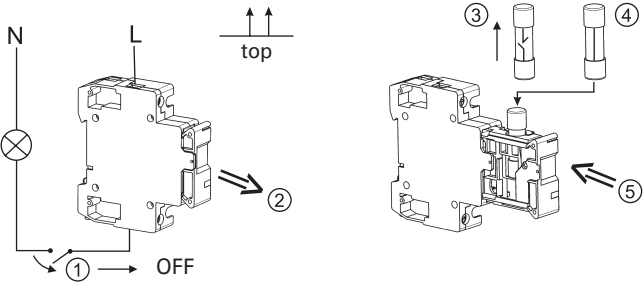




Visual Tripping Indicator



Attention



 Do not switch the fuse-disconnector under load



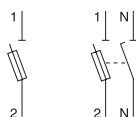
## Description Fuse-Disconnecter for Household Applications Z-SI

- Design according to IEC/EN 60947-3
- Design
  - without visual tripping indicator Z-SI
  - with visual tripping indicator Z-SIL
- Can be sealed with leads
- The open fuse drawer can be secured against re-switch-on by means of a padlock
- Supplied without fuse-links

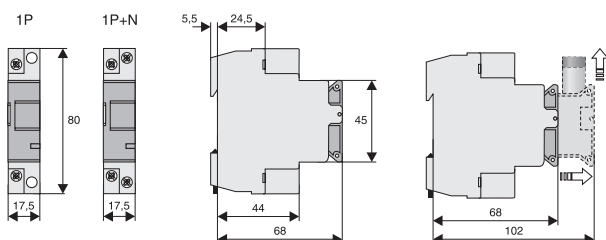
## Technical Data

|                                      |           | Z-SI                                                  |
|--------------------------------------|-----------|-------------------------------------------------------|
| <b>Electrical</b>                    |           |                                                       |
| Number of poles                      |           | 1P, 1P+N                                              |
| Rated voltage                        |           | 230 V AC                                              |
| Rated operational current            | $I_e$     | 32 A                                                  |
| Conditional short-circuit current    |           | 10 kA <sub>r.m.s.</sub>                               |
| Utilization category                 |           | AC 20B                                                |
| Rated peak withstand voltage         | $U_{imp}$ | 4 kV                                                  |
| Fuse-Links                           |           | 10, 16, 20, 25, 32 A                                  |
| Operating class                      |           | gG(gL) / aM                                           |
| Max. Power loss per current path     |           | 3.2 W                                                 |
| <b>Mechanical</b>                    |           |                                                       |
| Frame size                           |           | 45 mm                                                 |
| Device height                        |           | 80 mm                                                 |
| Device width                         |           | 17.5 mm                                               |
| Weight                               |           | Z-SI Z-SIL                                            |
| 1P                                   |           | 74 g 76 g                                             |
| 1P+N                                 |           | 84 g 86 g                                             |
| Mounting                             |           | Quick fastening on DIN rail according to IEC/EN 60715 |
| Degree of protection (built-in)      |           | IP20 (IP40)                                           |
| Upper and lower terminals            |           | lift terminals                                        |
| Terminal capacity                    |           | 1.5-10 mm <sup>2</sup>                                |
| Tightening torque of terminal screws |           | max. 2 Nm                                             |
| Dimensions of fuse-link              |           |                                                       |
| Rated current (A)                    |           | mm                                                    |
| 10                                   |           | 8.5 x 23                                              |
| 16                                   |           | 10.3 x 25.8                                           |
| 20                                   |           | 8.5 x 31.5                                            |
| 25                                   |           | 10.3 x 31.5                                           |
| 32                                   |           | 10.3 x 38                                             |

## Connection diagram

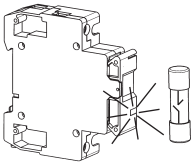


## Dimensions (mm)

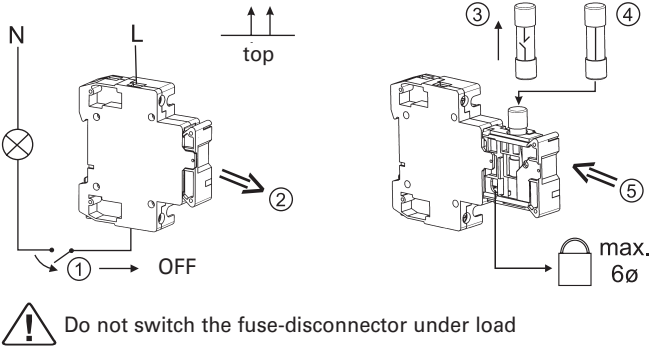




Visual Tripping Indicator



Attention





| Poles | Size | Type<br>Designation | Article No. | Units per<br>package |
|-------|------|---------------------|-------------|----------------------|
|-------|------|---------------------|-------------|----------------------|

### Fuse-Switch-Disconnecter (empty) C10-SLS, VLCE

- The visual tripping indicator indicates the tripped fuse-link
- Rated operational voltage 690 V AC
- For cylindrical fuse-links with operating classes gG (gL), aM
- Can be sealed with leads
- Supply side from top or bottom

#### Size 10x38, Rated operational current 32 A, C10-SLS

##### Without Visual Tripping Indicator

|     |       |               |        |          |
|-----|-------|---------------|--------|----------|
| 1   | 10x38 | C10-SLS/32/1  | 112220 | 12 / 108 |
| 1+N | 10x38 | C10-SLS/32/1N | 112221 | 12 / 108 |
| 2   | 10x38 | C10-SLS/32/2  | 112222 | 6 / 54   |
| 3   | 10x38 | C10-SLS/32/3  | 112223 | 4 / 36   |
| 3+N | 10x38 | C10-SLS/32/3N | 112224 | 4 / 36   |

##### With Visual Tripping Indicator

|   |       |                  |        |          |
|---|-------|------------------|--------|----------|
| 1 | 10x38 | C10-SLS/32/1-L 1 | 112225 | 12 / 108 |
| 2 | 10x38 | C10-SLS/32/2-L   | 112227 | 6 / 54   |
| 3 | 10x38 | C10-SLS/32/3-L   | 112228 | 4 / 36   |

SG27212



#### Size 14x51, Rated operational current 50 A, VLCE14

##### Without Visual Tripping Indicator

|     |       |             |        |         |
|-----|-------|-------------|--------|---------|
| 1   | 14x51 | VLCE14-1P   | 192373 | 12 / 96 |
| 1+N | 14x51 | VLCE14-1P+N | 192375 | 6 / 48  |
| 2   | 14x51 | VLCE14-2P   | 192376 | 6 / 48  |
| 3   | 14x51 | VLCE14-3P   | 192377 | 4 / 32  |
| 3+N | 14x51 | VLCE14-3P+N | 192379 | 3 / 24  |

##### With Visual Tripping Indicator

|   |       |             |        |         |
|---|-------|-------------|--------|---------|
| 1 | 14x51 | VLCE14-1P/L | 192374 | 12 / 96 |
| 3 | 14x51 | VLCE14-3P/L | 192378 | 4 / 32  |

wa\_sg01917



#### Size 22x58, Rated operational current 100 A, VLCE22

##### Without Visual Tripping Indicator

|     |       |             |        |         |
|-----|-------|-------------|--------|---------|
| 1   | 22x58 | VLCE22-1P   | 192380 | 3 / 105 |
| 1+N | 22x58 | VLCE22-1P+N | 192381 | 2 / 48  |
| 2   | 22x58 | VLCE22-2P   | 192382 | 2 / 48  |
| 3   | 22x58 | VLCE22-3P   | 192370 | 1 / 35  |
| 3+N | 22x58 | VLCE22-3P+N | 192372 | 1 / 24  |

##### With Visual Tripping Indicator

|   |       |             |        |        |
|---|-------|-------------|--------|--------|
| 3 | 22x58 | VLCE22-3P/L | 192371 | 1 / 35 |
|---|-------|-------------|--------|--------|

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### Accessories

|            |             |
|------------|-------------|
| Fuse-Links | Z-C10/SE... |
|            | Z-C14/SE... |
|            | Z-C22/SE... |

see chapter Accessories Fuse Devices



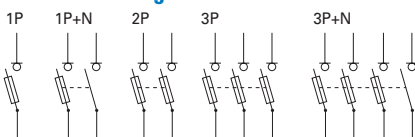
### Description Fuse-Switch-Disconnecter C10-SLS, VLCE

- Design according to IEC/EN 60947-3
- Design /L with visual tripping indicator (flashing)
- Suitable for cylindrical fuse-links with operating classes gG, aM
  - 10x38 C10-SLS
  - 14x51 VLCE14
  - 22x58 VLCE22
- Can be sealed with leads
- Supplied without fuse-links

### Technical Data

|                                               |           | C10-SLS                                               | VLCE14                               | VLCE22                             |
|-----------------------------------------------|-----------|-------------------------------------------------------|--------------------------------------|------------------------------------|
| <b>Electrical</b>                             |           |                                                       |                                      |                                    |
| Number of poles                               |           | 1P, 1P+N, 2P, 3P, 3P+N                                | 1P, 1P+N, 2P, 3P, 3P+N               | 1P, 1P+N, 2P, 3P, 3P+N             |
| Rated operational voltage                     | $U_e$     |                                                       |                                      |                                    |
| 1P                                            |           | 690 V, 50 Hz                                          | 690 V, 50 Hz                         | 690 V, 50 Hz                       |
| 1P+N                                          |           | 400 V, 50 Hz                                          | 690 V, 50 Hz                         | 690 V, 50 Hz                       |
| 2P, 3P, 3P+N                                  |           | 690 V, 50 Hz                                          | 690 V, 50 Hz                         | 690 V, 50 Hz                       |
| Rated operational current                     | $I_e$     | 32 A                                                  | 50 A                                 | 100 A                              |
| Conditional rated short circuit current       |           | 100 kA (at 400 V)                                     | 120 kA                               | 120 kA                             |
| Rated short-time withstand current            | $I_{cw}$  | 300 A                                                 | 600 A                                | 1200 A                             |
| Utilization category                          | $U_i$     | AC 22B                                                | AC 22B                               | AC 21B                             |
| Rated insulation voltage                      |           | 690 V                                                 | 690 V                                | 690 V                              |
| Overvoltage category                          |           | II                                                    | III                                  | III                                |
| Rated impulse withstand voltage               | $U_{imp}$ | 4 kV                                                  | 8 kV                                 | 8 kV                               |
| Power loss per current path without fuse-link |           | 0.9 W                                                 | 1 W                                  | 3.1 W                              |
| Maximum permissible power loss of fuse-links  |           |                                                       |                                      |                                    |
| gG                                            |           | 3 W                                                   | 5 W                                  | 9.5 W                              |
| aM                                            |           | 1.2 W                                                 | 3 W                                  | 7 W                                |
| <b>Mechanical</b>                             |           |                                                       |                                      |                                    |
| Frame size                                    |           | 45 mm                                                 | 45 mm                                | 45 mm                              |
| Device height                                 |           | 83.3 mm                                               | 94 mm                                | 121 mm                             |
| Device width                                  |           | 17.5 mm / pole                                        | W = 27 mm / pole                     | W = 36 mm / pole                   |
| Weight                                        |           |                                                       |                                      |                                    |
| 1P                                            |           | 58 g                                                  | 100 g                                | 156 g                              |
| 1P+N                                          |           | 70 g                                                  | 222 g                                | 351 g                              |
| 2P                                            |           | 120 g                                                 | 206 g                                | 317 g                              |
| 3P                                            |           | 180 g                                                 | 310 g                                | 476 g                              |
| 3P+N                                          |           | 195 g                                                 | 434 g                                | 671 g                              |
| Mounting                                      |           | Quick fastening on DIN rail according to IEC/EN 60715 |                                      |                                    |
| Degree of protection                          |           | IP20                                                  | IP20                                 | IP20                               |
| Upper and lower terminals                     |           | lift terminals                                        | lift terminals                       | lift terminals                     |
| Terminal capacity                             |           | 0.5 - 10 mm <sup>2</sup><br>AWG 20-8                  | 1.5 - 35 mm <sup>2</sup><br>AWG 18-6 | 4 - 50 mm <sup>2</sup><br>AWG 12-2 |
| Tightening torque of terminal screws          |           | ≤ 1.2 Nm                                              | 2.5 - 3 Nm                           | 2.5 - 3 Nm                         |
| Ambient temperature range                     |           | -25 to +40 °C                                         | -25 to +40 °C                        | -25 to +40 °C                      |
| Flame class                                   |           | glow wire 960 °C                                      | glow wire 960 °C                     | glow wire 960 °C                   |
| Pollution degree                              |           | 2                                                     | 3                                    | 3                                  |
| Comparative tracking index                    |           | CTI 450                                               | CTI 450                              | CTI 450                            |

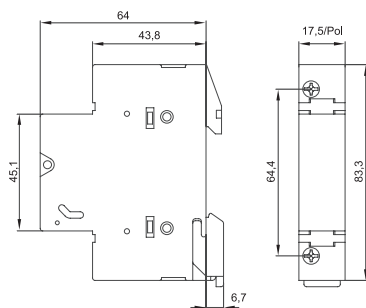
### Connection diagram



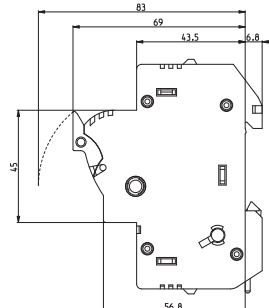


## Dimensions (mm)

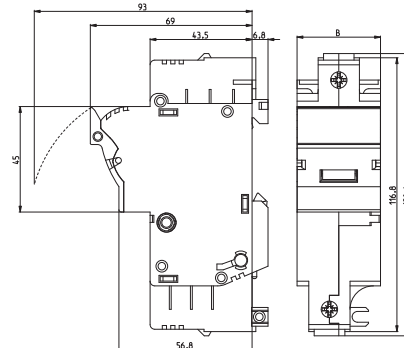
C10-SLS



VLCE14



VLCE22





| Size | Rated current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|------|----------------------|---------------------|-------------|----------------------|
|------|----------------------|---------------------|-------------|----------------------|

Fuse-Links Z-D0./SE, Operating class gG (gL)

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail



|     |    |             |        |        |
|-----|----|-------------|--------|--------|
| D01 | 2  | Z-D01/SE-2  | 288934 | 12/288 |
| D01 | 4  | Z-D01/SE-4  | 288935 | 12/288 |
| D01 | 6  | Z-D01/SE-6  | 288936 | 12/288 |
| D01 | 10 | Z-D01/SE-10 | 288937 | 12/288 |
| D01 | 13 | Z-D01/SE-13 | 288938 | 12/288 |
| D01 | 16 | Z-D01/SE-16 | 288939 | 12/288 |
| D02 | 20 | Z-D02/SE-20 | 288940 | 12/144 |
| D02 | 25 | Z-D02/SE-25 | 288941 | 12/144 |
| D02 | 32 | Z-D02/SE-32 | 288942 | 12/144 |
| D02 | 35 | Z-D02/SE-35 | 288943 | 12/144 |
| D02 | 40 | Z-D02/SE-40 | 288944 | 12/144 |
| D02 | 50 | Z-D02/SE-50 | 288945 | 12/144 |

Description Fuse-Links Z-D0./SE, Operating class gG (gL)

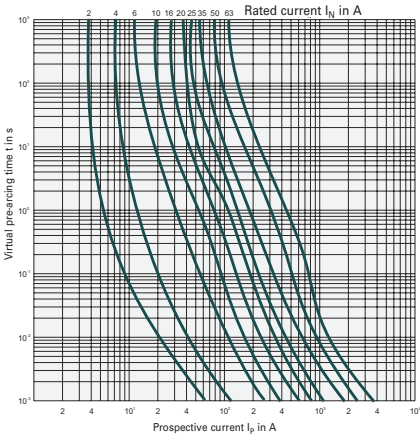
- According to DIN VDE 0636, DIN 49522
- For Fuse-Switch-Disconnecter Z-SLS, -SLK
- For Fuse-Bases D0.-SO and Z-D02/R/3

Technical Data

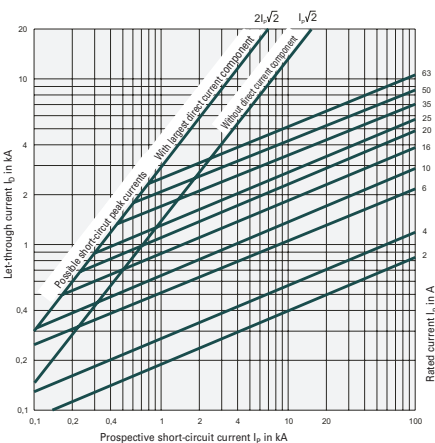
| Z-D0./SE                              |                              |
|---------------------------------------|------------------------------|
| Electrical                            |                              |
| Operating class                       | gG (gL)                      |
| Rated voltage                         |                              |
| AC                                    | 400 V                        |
| DC                                    | 250 V                        |
| Rated frequency                       | 45-65 Hz                     |
| Rated insulation voltage              | U <sub>i</sub> 2500 V        |
| Rated short-circuit breaking capacity |                              |
| AC                                    | 50 kA                        |
| DC                                    | 8 kA                         |
| Mechanical                            |                              |
| Size                                  |                              |
| D01                                   | 1, 2, 4, 6, 10, 13, 16 A     |
| D02                                   | 20, 25, 32, 35, 40, 50, 63 A |

Characteristics Z-D0./SE

Time/current characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)



Let-through characteristics of Z-D0-Fuse-Links 2 ... 63A gG(gL)





| Size | Rated current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|------|----------------------|---------------------|-------------|----------------------|
|------|----------------------|---------------------|-------------|----------------------|

### Cartridge-Ring Adapter Insert

#### Cartridge-Ring Adapter Insert Z-D0./PE

- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

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|     |        |             |        |        |
|-----|--------|-------------|--------|--------|
| D01 | 2      | Z-D01/PE-2  | 288909 | 12/288 |
| D01 | 4      | Z-D01/PE-4  | 288910 | 12/288 |
| D01 | 6      | Z-D01/PE-6  | 288911 | 12/288 |
| D01 | 10, 13 | Z-D01/PE-10 | 288912 | 12/288 |
| D02 | 20     | Z-D02/PE-20 | 288913 | 12/288 |
| D02 | 25     | Z-D02/PE-25 | 288914 | 12/288 |
| D02 | 35, 32 | Z-D02/PE-35 | 288915 | 12/288 |
| D02 | 40     | Z-D02/PE-40 | 288916 | 12/288 |
| D02 | 50     | Z-D02/PE-50 | 288917 | 12/288 |

#### Cartridge-Ring Adapter Insert Z-D02-D01/PE

- D01 for Fuse-Base D02 and Fuse-Switch-Disconnecter D02
- In practical plastic box in the color of the visual tripping indicator - to snap on DIN rail

SG81511



### Description Cartridge-Ring Adapter Insert Z-D0./PE, Z-D02-D01/PE

- According to DIN 49523
- Used for current coding of D0.-SO, Z-D02/R/3, Z-SLS/CB

### Technical Data

| Z-D0./PE, Z-D02-D01/PE |           |
|------------------------|-----------|
| <b>Electrical</b>      |           |
| Rated current          |           |
| D01                    | 2 - 10 A  |
| D02                    | 20 - 50 A |
| D02-D01                | 2 - 16 A  |





| Size | Rated current (A) | Type Designation | Article No. | Units per package |
|------|-------------------|------------------|-------------|-------------------|
|------|-------------------|------------------|-------------|-------------------|

Screw Caps Z-D0/SK

wa\_sg04013



|     |         |          |        |    |
|-----|---------|----------|--------|----|
| D01 | max. 16 | Z-D01/SK | 100650 | 20 |
| D02 | max. 63 | Z-D02/SK | 100651 | 20 |

Description Screw Caps Z-D0/SK

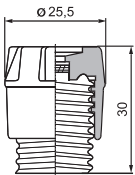
- Used for D0.-SO, Z-D02/R/3
- Adapter Spring Z-D02/SIKA-HF for application of D01 fuse-links into the screw cap Z-D02/SK available

Technical Data

| Z-D0/SK           |  |           |  |  |
|-------------------|--|-----------|--|--|
| <b>Electrical</b> |  |           |  |  |
| Rated current     |  |           |  |  |
| D01               |  | max. 16 A |  |  |
| D02               |  | max. 63 A |  |  |
| <b>Mechanical</b> |  |           |  |  |
| Electrical thread |  |           |  |  |
| D01               |  | E14       |  |  |
| D02               |  | E18       |  |  |

Practical Hint

A complete and functioning D-fuse system consists of base + fuse-link + cartridge-ring adapter insert + screw cap.  
The cartridge-ring adapter insert is not required for the highest rated current of each size (D01...16A and D02...63A).



| Size | Type Designation | Article No. | Units per package |
|------|------------------|-------------|-------------------|
|------|------------------|-------------|-------------------|

Adapter Spring Z-D02/SIKA-HF

- To apply D01-Fuse-Links into the screw cap Z-D02/SK

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Cartridge-ring adapter insert plier Z-D0-PE-Z

SG19707

|          |           |        |        |
|----------|-----------|--------|--------|
| D01, D02 | Z-D0-PE-Z | 114324 | 1 / 10 |
|----------|-----------|--------|--------|





| Size                                 | Rated current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|--------------------------------------|----------------------|---------------------|-------------|----------------------|
| <b>Screw-in Gauge Ring Z-DII./PS</b> |                      |                     |             |                      |
| DII E27                              | 2                    | Z-DII/PS-2A         | 112138      | 25/1500              |
| DII E27                              | 4                    | Z-DII/PS-4A         | 112139      | 25/1500              |
| DII E27                              | 6                    | Z-DII/PS-6A         | 112140      | 25/1500              |
| DII E27                              | 10                   | Z-DII/PS-10A        | 112141      | 25/1500              |
| DII E27                              | 16                   | Z-DII/PS-16A        | 112142      | 25/1500              |
| DII E27                              | 20                   | Z-DII/PS-20A        | 112143      | 25/1500              |
| DII E27                              | 25                   | Z-DII/PS-25A        | 112144      | 25/1500              |
| DIII E33                             | 35                   | Z-DIII/PS-35A       | 112145      | 25/850               |
| DIII E33                             | 50                   | Z-DIII/PS-50A       | 112146      | 25/850               |
| DIII E33                             | 63                   | Z-DIII/PS-63A       | 112147      | 25/850               |

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### Description Screw-in Gauge Ring Z-DII./PS

- Used for current coding of DII.-SO/...PS

### Technical Data

#### Z-DII./PS

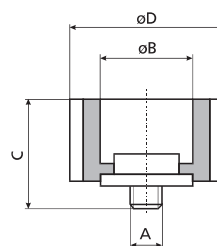
#### Electrical

Rated current

|      |           |
|------|-----------|
| DII  | 2 - 25 A  |
| DIII | 35 - 63 A |

#### Dimensions (mm)

| I <sub>n</sub> (A)     | A     | B    | C  | D  |
|------------------------|-------|------|----|----|
| DII for Fuse-Base E27  |       |      |    |    |
| 2                      | 3/16" | 6.5  | 17 | 24 |
| 4                      | 3/16" | 6.5  | 17 | 24 |
| 6                      | 3/16" | 6.5  | 17 | 24 |
| 10                     | 3/16" | 8.5  | 17 | 24 |
| 16                     | 3/16" | 10.5 | 17 | 24 |
| 20                     | 3/16" | 12.5 | 17 | 24 |
| 25                     | 3/16" | 14.5 | 17 | 24 |
| DIII for Fuse-Base E33 |       |      |    |    |
| 35                     | 3/16" | 16.5 | 17 | 24 |
| 50                     | 3/16" | 18.5 | 17 | 24 |
| 63                     | 3/16" | 20.5 | 17 | 24 |





| Size                     | Rated voltage<br>(V AC) | Type<br>Designation | Article No. | Units per<br>package |
|--------------------------|-------------------------|---------------------|-------------|----------------------|
| Screw Caps CD, Z-DII./SK |                         |                     |             |                      |
| DIII E33                 | 690                     | Z-DIII/SK-690       | 118904      | 3                    |

SG07608

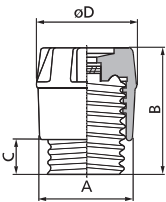


Description Screw Caps CD, Z-DII./SK

- Used for DII.-SO

Technical Data

| Dimensions (mm)    |     |    |    |    |
|--------------------|-----|----|----|----|
| I <sub>n</sub> (A) | A   | B  | C  | D  |
| CD27               | E27 | 44 | 12 | 34 |
| CD33               | E33 | 44 | 12 | 43 |
| Z-DIII/SK-690      | 43  | 65 | 12 | 43 |



Practical Hint

A complete and functioning D-fuse system consists of

- base for screw-in gauge ring + fuse-link + screw-in gauge ring + screw cap
- base for gauge ring + fuse-link + gauge ring + screw cap

The gauge ring is not required for the highest rated current of each size (DII ... 25 A and DIII ... 63 A).



| Size | Type<br>Designation | Article No. | Units per<br>package |
|------|---------------------|-------------|----------------------|
|------|---------------------|-------------|----------------------|

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Solid-Links Z-NH-../TR

|    |            |        |         |
|----|------------|--------|---------|
| 00 | Z-NH-00/TR | 263114 | 3 / 180 |
| 1  | Z-NH-1/TR  | 263115 | 6 / 60  |
| 2  | Z-NH-2/TR  | 263116 | 6 / 60  |
| 3  | Z-NH-3/TR  | 263117 | 3 / 30  |



| Size | Rated current<br>(A) | Type<br>Designation | Article No. | Units per<br>package |
|------|----------------------|---------------------|-------------|----------------------|
|------|----------------------|---------------------|-------------|----------------------|

NH-Fuse-Links, 500 V AC, Z-NH

- Operating class gG (gL)



|   |     |            |        |   |
|---|-----|------------|--------|---|
| 1 | 63  | Z-NH-1/63  | 290011 | 3 |
| 1 | 80  | Z-NH-1/80  | 290012 | 3 |
| 2 | 250 | Z-NH-2/250 | 290022 | 3 |

Description NH-Fuse-Links, 500 V AC, Z-NH

- Design according to ÖVE-SN 40, IEC 60269, VDE 0636, SEV 1066
- Dimensions according to Austrian standard ÖNORM E-6020, DIN 43.620
- NH-fuse-links of operating class gG/gL are used for line protection. They reliably disconnect overcurrent and short-circuit current above the permitted levels up to the nominal breaking current.
- gG/gL NH-fuse-links also protect electrical systems and equipment against the electrodynamic effects of high short-circuit currents.
- Insulating bodies of steatite/corderite
- Full contact blade of silver-plated copper
- Double blow-out indicator (flat indicator and centre indicator), live grips
- Corrosion-proof
- NH-fuse-links have a selectivity of 1:1.6 (ratio of the series-connected nominal currents), permitting optimum utilization and protection of line cross-sections.
- Strict current limitation permits reduced mechanical dimensions of electrical systems
- High breaking capacity of 120 kA

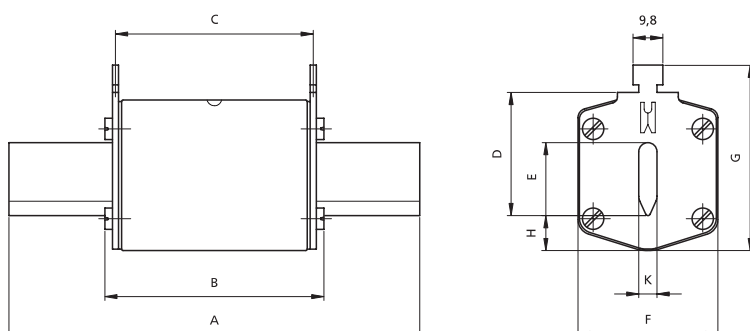


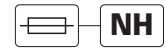
## Technical Data

|                           | Z-NH-1/  | Z-NH-2/   |
|---------------------------|----------|-----------|
| <b>Electrical</b>         |          |           |
| Rated voltage             |          |           |
| AC                        | 500 V    | 500 V     |
| DC                        | 440 V    | 440 V     |
| Nominal current           | 50-250 A | 100-400 A |
| Rated frequency           | 45-62 Hz | 45-62 Hz  |
| Nominal breaking capacity |          |           |
| AC                        | 120 kA   | 120 kA    |
| DC                        | 25 kA    | 25 kA     |
| Nominal breaking capacity |          |           |
| I <sub>n</sub> = 10 A     | -        | -         |
| 16 A                      | -        | -         |
| 20 A                      | -        | -         |
| 25 A                      | -        | -         |
| 35 A                      | -        | -         |
| 40 A                      | -        | -         |
| 50 A                      | 5.4 W    | -         |
| 63 A                      | 6.3 W    | -         |
| 80 A                      | 7.2 W    | -         |
| 100 A                     | 8.6 W    | 8.8 W     |
| 125 A                     | 11.9 W   | 12.1 W    |
| 160 A                     | 13.9 W   | 14.0 W    |
| 200 A                     | 15.2 W   | 15.2 W    |
| 250 A                     | 21.8 W   | 21.8 W    |
| 315 A                     | -        | 23.7 W    |
| 400 A                     | -        | 30.5 W    |
| 500 A                     | -        | -         |
| 630 A                     | -        | -         |

## Dimensions (mm)

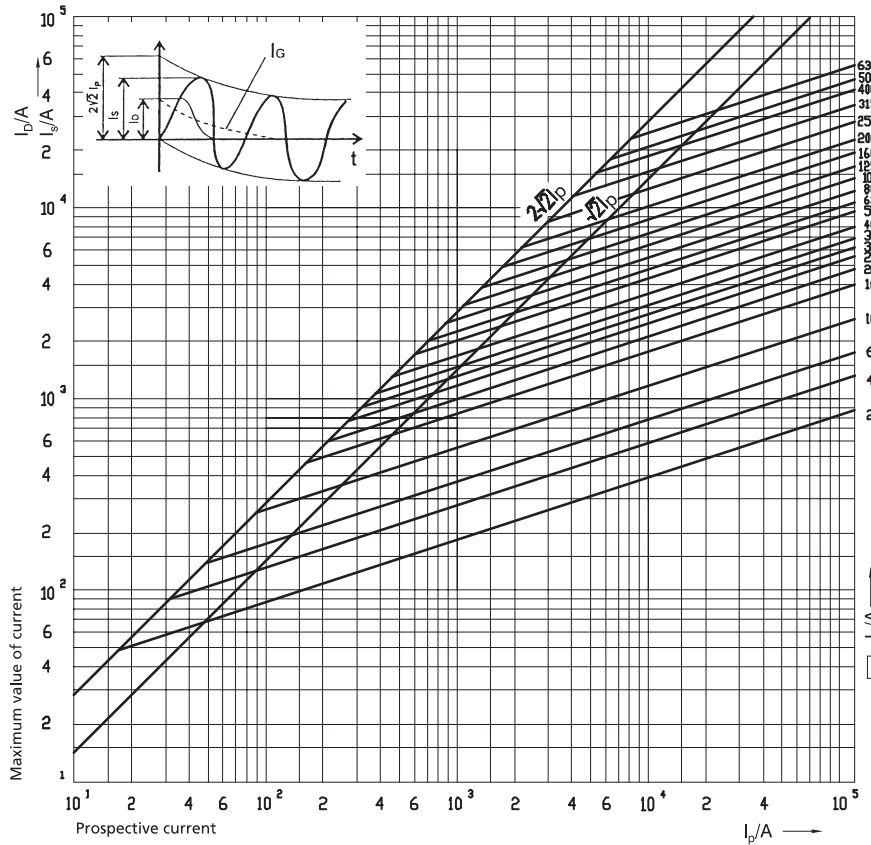
| Type     | Size        | A   | B   | C  | D  | E  | F  | G  | H  | K   |
|----------|-------------|-----|-----|----|----|----|----|----|----|-----|
| Z-NH-00/ | up to 100 A | 000 | 79  | 53 | 47 | 35 | 15 | 21 | 52 | 7.5 |
|          | 125 - 160 A | 00  | 79  | 53 | 47 | 35 | 15 | 28 | 56 | 12  |
| Z-NH-1/  | up to 160 A | 1C  | 135 | 68 | 65 | 40 | 15 | 28 | 61 | 12  |
|          | 200 - 250 A | 1   | 135 | 72 | 65 | 40 | 20 | 46 | 65 | 14  |
| Z-NH-2/  | up to 250 A | 2C  | 150 | 72 | 65 | 48 | 20 | 46 | 73 | 14  |
|          | 315 - 400 A | 2   | 150 | 72 | 65 | 48 | 26 | 54 | 73 | 14  |
| Z-NH-3/  | up to 400 A | 3C  | 150 | 72 | 65 | 60 | 26 | 54 | 84 | 14  |
|          | 500 - 630 A | 3   | 150 | 72 | 65 | 60 | 33 | 65 | 84 | 14  |



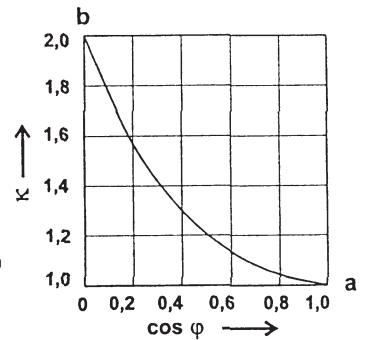


### Let-through Current Characteristic, Current Limitation Diagram

The characteristic shows the limited let-through current values (peak values) depending on the prospective short-circuit current (r. m. s.) under unfavourable connection conditions and depending on the respective nominal current.



### Correction Factor for DC Component



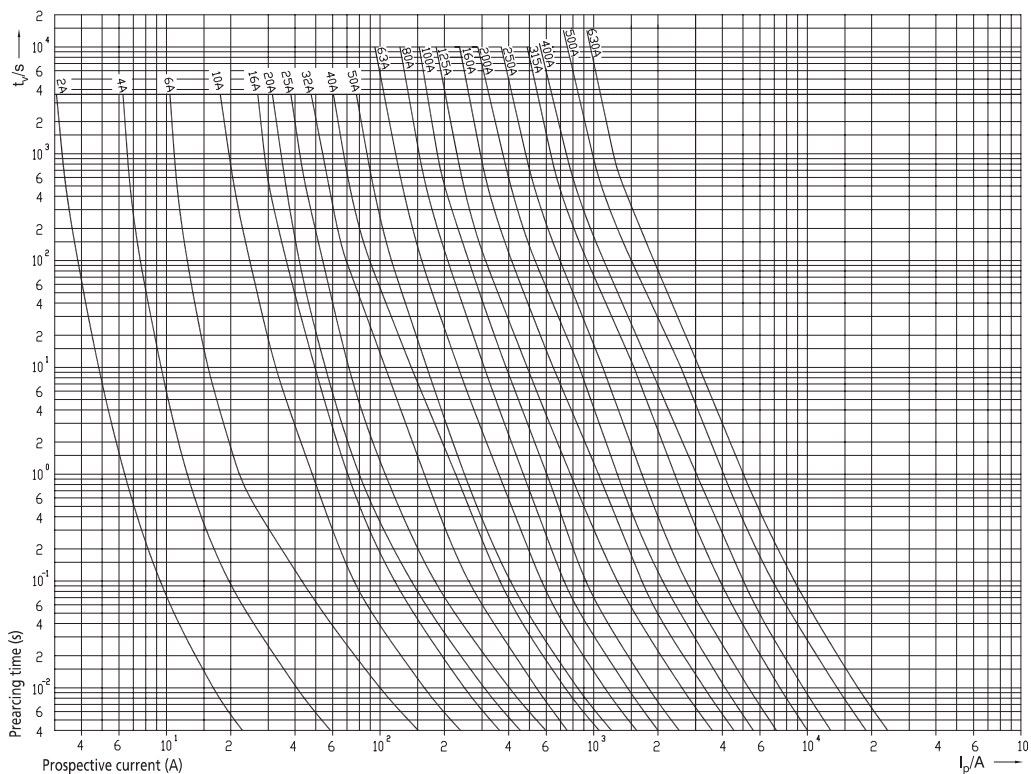
a Surge short-circuit current without DC component ( $\kappa = 1$ )  
b Surge short-circuit current with maximum DC component ( $\kappa = 2$ )

$I_D$  let-through current  
 $I_G$  declining DC component  
 $I_p$  prospective short-circuit current  
 $I_s$  surge short-circuit current =  $I_p \cdot \kappa \cdot \sqrt{2}$   
 $\kappa = 2$  for  $\cos \varphi = 0$ ,  $\kappa = 1$  for  $\cos \varphi = 1$

### Time-Current Characteristics

For NH-fuse-links 2 - 630 A operating class gL/gG

The time-current characteristics are valid at an ambient temperature of  $20 \pm 5^\circ\text{C}$  and for the cable (line) cross-sections assigned in the regulations for test arrangements.



sg68912



138103900

| Stromkreis-Verzeichnis |    |    |    |
|------------------------|----|----|----|
| 1                      | 1  | 16 | 16 |
| 2                      | 2  | 17 | 17 |
| 3                      | 3  | 18 | 18 |
| 4                      | 4  | 19 | 19 |
| 5                      | 5  | 20 | 20 |
| 6                      | 6  | 21 | 21 |
| 7                      | 7  | 22 | 22 |
| 8                      | 8  | 23 | 23 |
| 9                      | 9  | 24 | 24 |
| 10                     | 10 | 25 | 25 |
| 11                     | 11 | 26 | 26 |
| 12                     | 12 | 27 | 27 |
| 13                     | 13 | 28 | 28 |
| 14                     | 14 | 29 | 29 |
| 15                     | 15 | 30 | 30 |

↑ Stromkreisverzeichnis beschriften und auf die Innenseite der Tür kleben  
Zugehörige Nummernschilder auf Geräte kleben ↓



sg68912



Schuko socket outlet Z-SD230

| Type                                                                      | Article No. | Units per package |
|---------------------------------------------------------------------------|-------------|-------------------|
| Designation                                                               |             |                   |
| Schuko Standard                                                           | Z-SD230     | 266875 10 / 50    |
| Earth pin with integrated increased protection against accidental contact | Z-SD230-BS  | 266876 10 / 50    |

Accessories Busbar Block

|          |                 |                 |
|----------|-----------------|-----------------|
| Busbar   | Z-SV-10/1P+N-SD | 269526 10       |
| End caps | Z-V-AK/2+3P     | 264930 10 / 600 |

Description Schuko socket outlet Z-SD230

- Design according to VDE, ÖVE, IEC 60884-1, DIN 49440-1
- Modular busbar connection system L/N
- Screw fastening is possible
- Width 2.5MU
- Busbar block Z7-SD/1P+N 10 mm<sup>2</sup> available
- Model -BS with integrated increased protection against accidental contact and earth pin

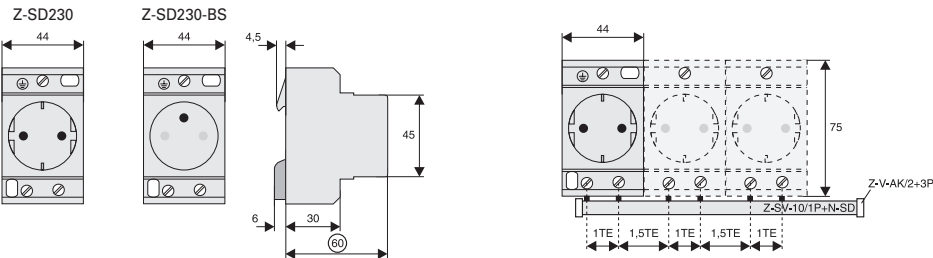
Technical Data

| Z-SD230                                   |                                                                   |
|-------------------------------------------|-------------------------------------------------------------------|
| <b>Electrical</b>                         |                                                                   |
| Standards                                 | IEC 60884-1, DIN 49440-1                                          |
| Rated voltage                             | 250 V AC                                                          |
| Rated current                             | 10/16 A                                                           |
| <b>Mechanical</b>                         |                                                                   |
| Frame size                                | 45 mm                                                             |
| Device height                             | 76 mm                                                             |
| Device width                              | 44 mm                                                             |
| Mounting                                  | quick fastening on DIN rail IEC/EN 60715, screw-mounting possible |
| Degree of protection, built-in            | IP40, IP20 without front cover                                    |
| Upper and lower terminals                 | lift terminals                                                    |
| Terminal capacity                         | 1 to 2x2.5 mm <sup>2</sup>                                        |
| Ambient operational temperature           | -5° C .....+40° C; max. Ø 35° C @ 24 h                            |
| Recommended torque for Terminals L, N, PE | 0.8 Nm                                                            |

Connection diagram



Dimensions (mm)



## Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

SG59511



Rated current / Design

Type  
Designation

Article No.

Units per  
package

### Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

|                       |         |        |        |
|-----------------------|---------|--------|--------|
| 63 A                  | Z-D63   | 248267 | 12/120 |
| 63 A with test socket | Z-D63/P | 248268 | 12/120 |
| 100 A                 | Z-D80   | 248269 | 12/120 |

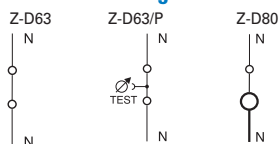
### Description Neutral Conductor Lead-Through Terminal, Feed Terminal Z-D

- Compatible with standard busbar to Xtra Combination devices
- Z-D80: Feeder block for busbar system 80 A.  
Lift terminal (35 mm<sup>2</sup>) and open mouthed terminal above, lift terminal (50 mm<sup>2</sup>) below.  
Busbar positioning optionally above or below
- Z-D80: with testing bush 4 mm Ø, 10 A for N-conductor

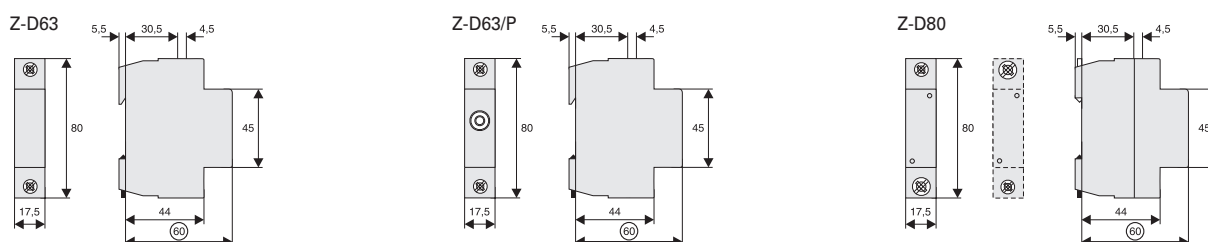
### Technical Data

|                                | Z-D63                                                             | Z-D63/P                     | Z-D80                       |
|--------------------------------|-------------------------------------------------------------------|-----------------------------|-----------------------------|
| <b>Electrical</b>              |                                                                   |                             |                             |
| Rated current                  | 63 A                                                              | 63 A                        | 100 A                       |
| Frequency                      | 50-60 Hz                                                          | 50-60 Hz                    | 50-60 Hz                    |
| N-conductor test bush          | —                                                                 | 10 A, Ø 4 mm                | —                           |
| <b>Mechanical</b>              |                                                                   |                             |                             |
| Frame size                     | 45 mm                                                             | 45 mm                       | 45 mm                       |
| Device height                  | 80 mm                                                             | 80 mm                       | 80 mm                       |
| Device width                   | 17.5 mm (1MU)                                                     | 17.5 mm (1MU)               | 17.5 mm (1MU)               |
| Mounting                       | quick fastening with 2 lock-in positions on DIN rail IEC/EN 60715 |                             |                             |
| Degree of protection, built-in | IP40                                                              | IP40                        | IP40                        |
| Terminals                      |                                                                   |                             |                             |
| above                          | open mouthed/lift terminals                                       | open mouthed/lift terminals | open mouthed/lift terminals |
| below                          | open mouthed/lift terminals                                       | open mouthed/lift terminals | lift terminals              |
| Terminal capacity              |                                                                   |                             |                             |
| above                          | 1-25 mm <sup>2</sup>                                              | 1-25 mm <sup>2</sup>        | 1-35 mm <sup>2</sup>        |
| below                          | 1-25 mm <sup>2</sup>                                              | 1-25 mm <sup>2</sup>        | 2.5-50 mm <sup>2</sup>      |
| Busbar thickness               | 0.8 - 2 mm                                                        | 0.8 - 2 mm                  | 0.8 - 2 mm                  |

### Connection diagram



### Dimensions (mm)



| Type<br>Designation | Article No. | Units per<br>package |
|---------------------|-------------|----------------------|
|---------------------|-------------|----------------------|

Front Plate Tripping Device Z-MFPA

SG58911



|        |        |        |
|--------|--------|--------|
| Z-MFPA | 248302 | 6 / 60 |
|--------|--------|--------|

Description Front Plate Tripping Device Z-MFPA

- Mechanical tripping device for PXF, PXX, FAZ, PLSM, Z-A40, PKNM and PKDM, responds when the front plate of a distribution box is removed
- Maximum tripping capacity: 4 + 4 poles symmetrically
- Can be interlocked by twisting when the tripping pin is in the pressed position

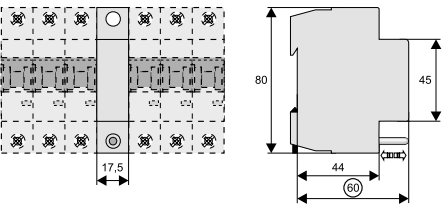
Technical Data

|                                | Z-MFPA                                   |
|--------------------------------|------------------------------------------|
| Mechanical                     |                                          |
| Frame size                     | 45 mm                                    |
| Device height                  | 80 mm                                    |
| Device width                   | 17.5 mm                                  |
| Mounting                       | quick fastening on DIN rail IEC/EN 60715 |
| Degree of protection, built-in | IP40                                     |

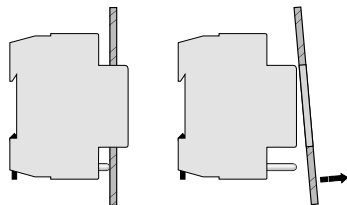
Function Diagram



Dimensions (mm)



Function

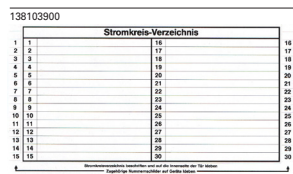


## Circuit Description GR, Plastic Box Z-BOX, Neutral Disconnecter

| Number of Circuits | Dimensions<br>(mm) | Type<br>Designation | Article No. | Units per<br>package |
|--------------------|--------------------|---------------------|-------------|----------------------|
|--------------------|--------------------|---------------------|-------------|----------------------|

### Circuit Description GR

- Self-adhesive table for synoptic description of circuits, to be attached inside or on a distribution box.
- Pre-printed individual adhesive labels for device designation included



|    |         |      |           |   |
|----|---------|------|-----------|---|
| 30 | 210x120 | GR-2 | 138103900 | 1 |
| 90 | 210x300 | GR-3 | 138104100 | 1 |

| Colour | Dimensions<br>(mm) | Type<br>Designation | Article No. | Units per<br>package |
|--------|--------------------|---------------------|-------------|----------------------|
|--------|--------------------|---------------------|-------------|----------------------|

### Plastic Box Z-BOX

- Empty, can be snapped onto DIN rail
- For spare fuse links, small spare parts



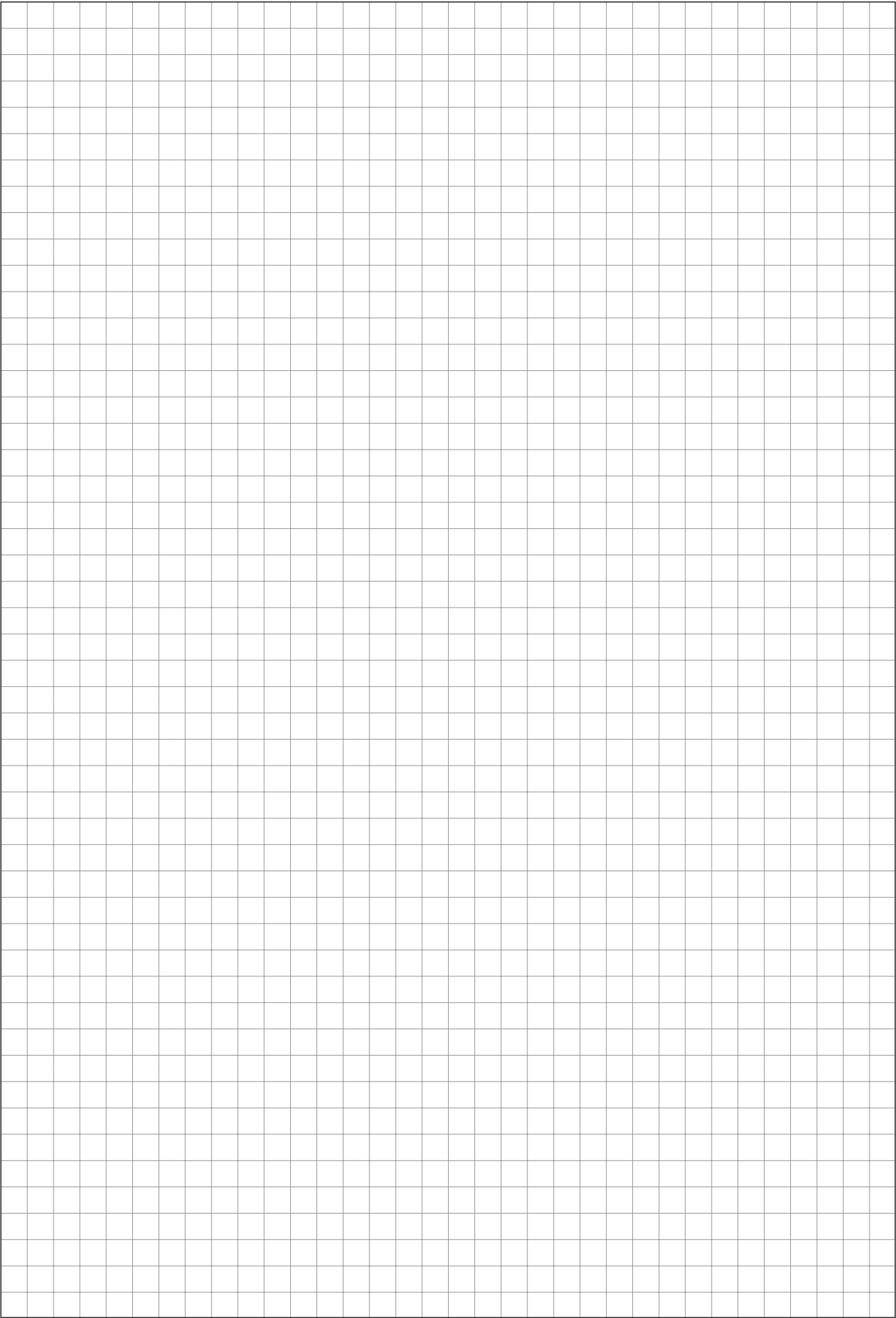
|      |          |           |        |        |
|------|----------|-----------|--------|--------|
| blue | 45x54x75 | Z-BOX/BLA | 286062 | 12/120 |
|------|----------|-----------|--------|--------|

| Description | Type<br>Designation | Article No. | Units per<br>package |
|-------------|---------------------|-------------|----------------------|
|-------------|---------------------|-------------|----------------------|

### Neutral disconnecter



|                      |       |        |   |
|----------------------|-------|--------|---|
| Neutral disconnecter | Z-NTS | 248443 | 1 |
|----------------------|-------|--------|---|



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