

# Switches



D371E121

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# Telux - - Cam Switches

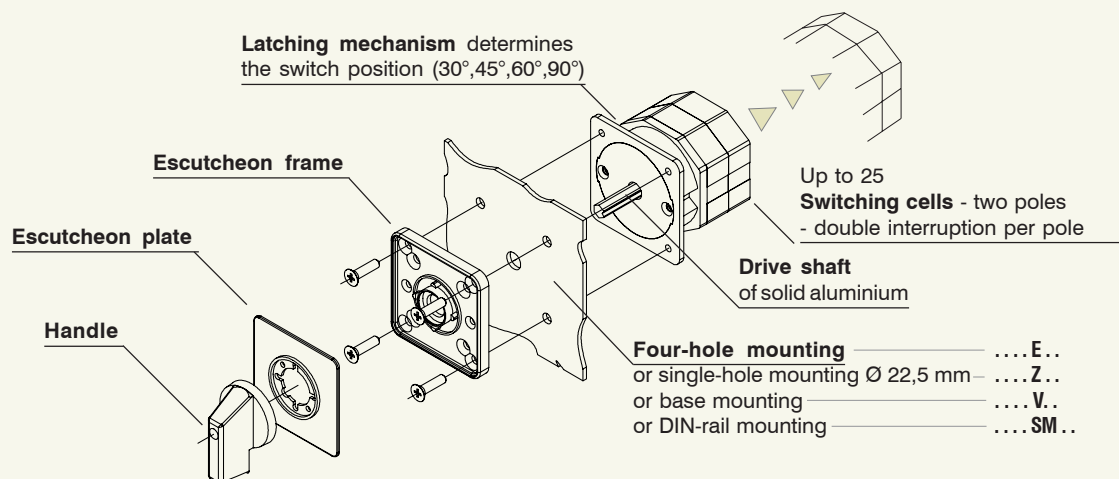
| Ratings |                        |        |                    |               |                  |      |          | Designs         |                            |              |           |
|---------|------------------------|--------|--------------------|---------------|------------------|------|----------|-----------------|----------------------------|--------------|-----------|
| Typ     | Rated current Therm.   |        |                    | Motor         |                  |      | Plate mm | Panel moun.     | Single hole mount. Ø22,5mm | Flush mount. |           |
|         | I <sub>th open</sub> A | AC21 A | atU <sub>e</sub> V | AC3 3~400V kW | AC23 3~400V A kW | IP40 |          | with Plate IP65 | without Plate IP65         | IP40         |           |
| M4H     | 10                     | 10     | 440                | 2,2           | 6                | 3    | 30□      | M4H E ●◆        | M4H Z ●◆                   | M4H ZO ●◆    | -         |
| M10H    | 20                     | 20     | 690                | 5,5           | 16               | 7,5  | 48□      | M10H E ●◆       | M10H Z ●◆                  | M10H ZO ●◆   | -         |
| M10     | 20                     | 20     | 440                | 5,5           | 16               | 7,5  | 48□      | -               | -                          | -            | M10 UP ●◆ |
| M20     | 32                     | 32     | 690                | 11            | 30               | 15   | 48□      | M20 E ●◆        | M20 Z ●◆                   | M20 ZO ●◆    | -         |
| N20     | 32                     | 32     | 690                | 11            | 30               | 15   | 64□      | N20 E ●◆        | -                          | -            | N20 UP ●◆ |
| N33F    | 50                     | 50     | 690                | 15            | 45               | 22   | 64□      | N33F E ●◆       | N33F Z ●◆                  | -            | -         |
| N32     | 40                     | 40     | 690                | 11            | 30               | 15   | 64□      | -               | -                          | -            | -         |
| N40     | 63                     | 63     | 690                | 15            | 45               | 22   | 88□      | N40 E ●◆        | -                          | -            | -         |
| N60     | 85                     | 85     | 690                | 25            | 60               | 30   | 88□      | N60 E ●◆        | -                          | -            | -         |
| N80     | 115                    | 115    | 690                | 30            | 85               | 45   | 88□      | N80 E ●◆        | -                          | -            | -         |
| L100    | 125                    | 125    | 690                | 15            | 45               | 22   | 88□      | L100 E ●◆       | -                          | -            | -         |
| L160    | 180                    | 180    | 690                | 25            | 60               | 30   | 88□      | L160 E ●◆       | -                          | -            | -         |
| N100    | 150                    | 150    | 690                | 40            | 110              | 55   | 132□     | N100 E ●◆       | -                          | -            | -         |
| N200    | 250                    | 250    | 690                | 70            | 140              | 70   | 132□     | N200 E ●◆       | -                          | -            | -         |
| L400    | 400                    | 400    | 690                | 70            | 140              | 70   | 132□     | L400 E ●◆       | -                          | -            | -         |
| L600    | 600                    | 400    | 690                | 70            | 140              | 70   | 132□     | L600 E ●◆       | -                          | -            | -         |
| L800    | 800                    | 400    | 690                | 70            | 140              | 70   | 132□     | L800 E ●◆       | -                          | -            | -         |
| L1200   | 1200                   | 400    | 690                | 70            | 140              | 70   | 132□     | L1200 E ●◆      | -                          | -            | -         |

## Cam Switches 10 - 250A

Cam switches can be used for virtually all purposes, e.g. as motor, main, control or instrument switches. Over and above the switching programs mentioned in the list, an effectively limitless number of special programs can be implemented.

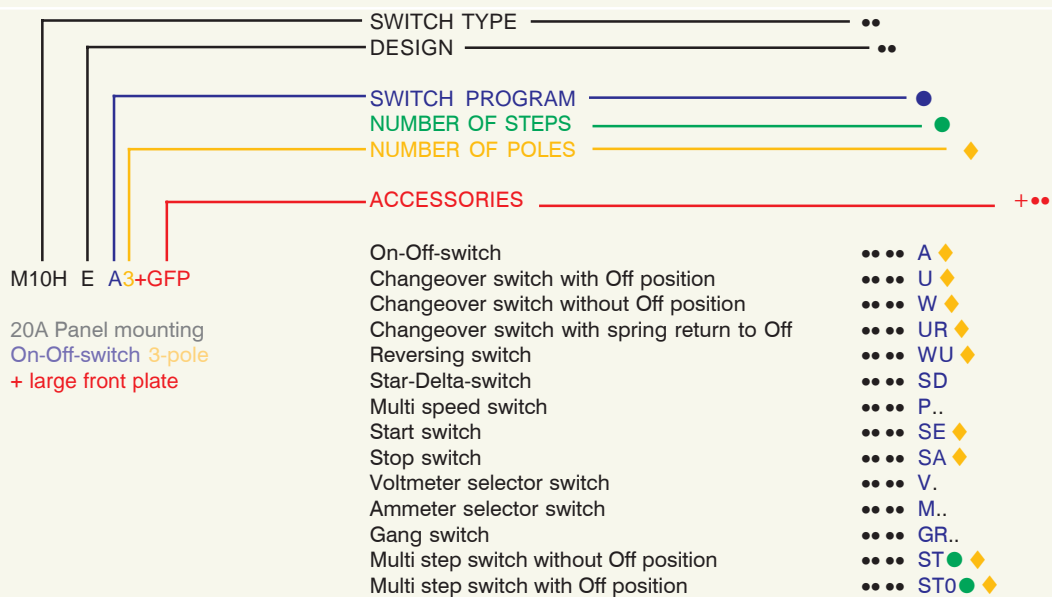
## Load switch L.. 125 - 1200A




Load switches are primarily employed where resistive or slightly inductive current loads are to be switched on and off, or switching takes place without loading. Load switches are assembled by parallel switching of two or more of cam switch contacts. With customer built main terminal protection, load switch L... can also be used as main switch.



| Designs<br>Base mounting<br>IP40 | DIN-rail<br>mounting<br>IP40 | Modular<br>IP40 | Plastic enclosed<br>..P.. IP40<br>..PF.. IP65 | horizontal, IP65 | Motor switch<br>enclosed<br>IP65 | Terminal box<br>mounting<br>IP65 | Cast enclosed<br>..G.. IP40<br>..GF.. IP65 |
|----------------------------------|------------------------------|-----------------|-----------------------------------------------|------------------|----------------------------------|----------------------------------|--------------------------------------------|
| -                                | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| M10H V ♦♦                        | M10H SM ♦♦                   | M10H SMA ♦♦     | -                                             | -                | M10H PM ♦♦                       | -                                | -                                          |
| -                                | -                            | -               | M10 P(F) ♦♦                                   | -                | -                                | M10 KE ♦♦                        | -                                          |
| M20 V ♦♦                         | M20 SM ♦♦                    | M20 SMA ♦♦      | -                                             | -                | -                                | -                                | -                                          |
| N20 V ♦♦                         | N20 SM ♦♦                    | -               | N20 P(F) ♦♦                                   | -                | N20 PM ♦♦                        | N20 KE ♦♦                        | N20 G(F) ♦♦                                |
| N33F V ♦♦                        | N33F SM ♦♦                   | -               | N33F P(F) ♦♦                                  | -                | N33F PM ♦♦                       | N33F KE ♦♦                       | -                                          |
| -                                | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| N40 V ♦♦                         | -                            | -               | N40 P(F) ♦♦                                   | N40 PLF ♦♦       | -                                | -                                | -                                          |
| N60 V ♦♦                         | -                            | -               | N60 P(F) ♦♦                                   | N60 PLF ♦♦       | -                                | -                                | -                                          |
| N80 V ♦♦                         | -                            | -               | N80 P(F) ♦♦                                   | N80 PLF ♦♦       | -                                | -                                | -                                          |
| L100 V ♦♦                        | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| L160 V ♦♦                        | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| N100 V ♦♦                        | -                            | -               | N100 P(F) ♦♦                                  | -                | -                                | -                                | -                                          |
| N200 V ♦♦                        | -                            | -               | N200 P(F) ♦♦                                  | -                | -                                | -                                | -                                          |
| L400 V ♦♦                        | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| L600 V ♦♦                        | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| L800 V ♦♦                        | -                            | -               | -                                             | -                | -                                | -                                | -                                          |
| L1200 V ♦♦                       | -                            | -               | -                                             | -                | -                                | -                                | -                                          |

## Ordering



| Type   | Ratings                                     |        |                      | Protection degree from front in mounted position |               |      |                              | Main Switch Emergency Stop                                                        |                                                                                     |                                                                                     |
|--------|---------------------------------------------|--------|----------------------|--------------------------------------------------|---------------|------|------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|        | Rated current Therm. I <sub>th open</sub> A | AC21 A | bei U <sub>e</sub> V | Motor AC3 3~400V kW                              | AC23 3~400V A |      | Plate Switch disconnector mm | Panel mounting IP66                                                               | Single hole mount. Ø22,5mm IP66                                                     | Base mounting with door coupling adjust. installation depth IP66                    |
| LTS20  | 20                                          | 20     | 690                  | 5,5                                              | 16            | 7,5  | 48□                          |  |  |  |
| LTS25  | 25                                          | 25     | 690                  | 7,5                                              | 20            | 10   | 48□                          | LTS25 EHN1 ..<br>LTS25 EHN4 ..                                                    | LTS25 ZHN1 ..                                                                       | LTS25 VZVHN4 ..<br>LTS25 VHN4 ..                                                    |
| LTS32  | 32                                          | 32     | 690                  | 11                                               | 25            | 12,5 | 48□                          | LTS32 EHN1 ..<br>LTS32 EHN4 ..                                                    | LTS32 ZHN1 ..                                                                       | LTS32 VZVHN4 ..<br>LTS32 VHN4 ..                                                    |
| LTS40  | 40                                          | 40     | 690                  | 15                                               | 32            | 16   | 48□                          | LTS40 EHN1 ..<br>LTS40 EHN4 ..                                                    | LTS40 ZHN1 ..                                                                       | LTS40 VZVHN4 ..<br>LTS40 VHN4 ..                                                    |
| LTS63  | 63                                          | 63     | 690                  | 18,5                                             | 45            | 22   | 48□                          | LTS63 EHN1 ..<br>LTS63 EHN4 ..                                                    | -                                                                                   | LTS63 VZVHN4 ..<br>LTS63 VHN4 ..                                                    |
| LTS80  | 80                                          | 80     | 690                  | 18,5                                             | 45            | 22   | 48□                          | LTS80 EHN1 ..<br>LTS80 EHN4 ..                                                    | -                                                                                   | LTS80 VZVHN4 ..<br>LTS80 VHN4 ..                                                    |
| LTS85  | 85                                          | 85     | 690                  | 22                                               | 60            | 30   | 64□                          | LTS85 EHN4 ..                                                                     | -                                                                                   | LTS85 VZVHN4 ..<br>LTS85 VHN4 ..                                                    |
| LTS100 | 100                                         | 100    | 690                  | 30                                               | 72            | 37   | 64□                          | LTS100 EHN4 ..                                                                    | -                                                                                   | LTS100 VZVHN4 ..<br>LTS100 VHN4 ..                                                  |
| LTS125 | 125                                         | 125    | 690                  | 37                                               | 85            | 45   | 64□                          | LTS125 EHN4 ..                                                                    | -                                                                                   | LTS125 VZVHN4 ..<br>LTS125 VHN4 ..                                                  |
| LT160  | 160                                         | 160    | 690                  | 45                                               | 110           | 55   | 88□                          | LT160 EHN34 ..                                                                    | -                                                                                   | LT160 VHN34 ..                                                                      |

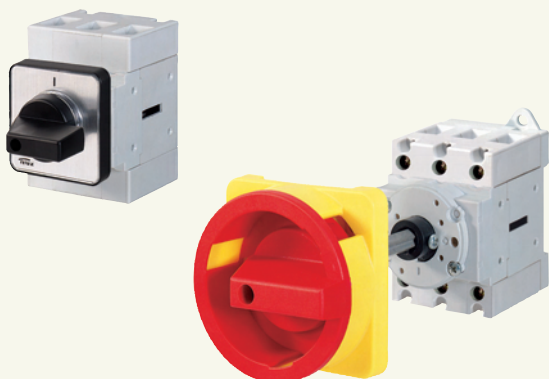
### Switch disconnecter LT.. 20 - 160A

Switch disconnectors are to be used as an ON-OFF-switch where a high breaking capacity with high contact pressure and in fact better short circuit behavior is necessary. These applications are:

**Main switches** according to IEC/EN 60204 respectively VDE0113 with interlocking device, terminal protection and restreictive contacts.

**Switch disconnectors** according to IEC/EN 60947-3 and VDE 0660 part 107 with break distance for 690V.

**Motor switches** 3-pole or 4-pole; according to IEC/EN 60947-3 respectively VDE 0660 part 107, motor switches series LT are dimensioned for switching high rated current AC3 and AC23A.



### Main switches and Main switches with Emergency-Stop function

According to standards IEC/EN60204 or VDE0113, all electrical equipment of industrial machines must be equipped with a main switch. This must permit disconnection of all the electrical equipment during cleaning, maintenance and repair work, and other extended periods when it is stationary.

In case of two or more main switches, an interlock system must be used. It is recommended to use a multiple-pole main switch (cam switch).

**Main switches** have to correspond to:

- Switch disconnecter according to IEC/EN 60947-3 and VDE 0660 part 107 for utilization category AC23-B or DC-23B.
- Disconnectors are selected according to thermal rated current. They must possess a contact that ensures load switching via the contactors (see switching program A3-10). This contact must have a sufficient AC15 switching capacity.
- The interruption capacity of the switch must equal or exceed the locked rotor current of the largest motor plus the total current of all other electrical equipment in the circuit.

Requirements:








Interruption of the electrical equipment, with only on and off positions clearly marked with O and I.

It must be lockable in the off setting.

The line terminals of the main switch must be protected according to utilization category IP2X.

Colour of handle black or grey.

**Main switches with Emergency-Off function** are additional supplied with red handles and contrasting yellow escutcheon plates.

| Main Switch Emergency Stop                                                        |                                                                                   |                                                                                   | Main Switch                                                                       |                                                                                    | Switch Disconnectors                                                                |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Base mounting w. door coupling depth not adjustable IP66                          | for Distribution Boards IP40                                                      | Plastic enclosed IP65                                                             | Panel mounting IP66                                                               | Base mounting with door coupling IP66                                              | Panel mounting IP66                                                                 | for Distribution Boards IP40                                                        |
|  |  |  |  |  |  |  |
| LTS20 VZHN1 ..<br>LTS20 VZHN4 ..                                                  | LTS20 SMAHN1 ..                                                                   | LTS20 PFHN4 ..                                                                    | LTS20 EH1 ..<br>LTS20 EH4 ..                                                      | LTS20 VZVH4 ..<br>LTS20 VH4 ..                                                     | LTS20 E ..                                                                          | LTS20 SMA ..                                                                        |
| LTS25 VZHN1 ..<br>LTS25 VZHN4 ..                                                  | LTS25 SMAHN1 ..                                                                   | LTS25 PFHN4 ..                                                                    | LTS25 EH1 ..<br>LTS25 EH4 ..                                                      | LTS25 VZVH4 ..<br>LTS25 VH4 ..                                                     | LTS25 E ..                                                                          | LTS25 SMA ..                                                                        |
| LTS32 VZHN1 ..<br>LTS32 VZHN4 ..                                                  | LTS32 SMAHN1 ..                                                                   | LTS32 PFHN4 ..                                                                    | LTS32 EH1 ..<br>LTS32 EH4 ..                                                      | LTS32 VZVH4 ..<br>LTS32 VH4 ..                                                     | LTS32 E ..                                                                          | LTS32 SMA ..                                                                        |
| LTS40 VZHN1 ..<br>LTS40 VZHN4 ..                                                  | LTS40 SMAHN1 ..                                                                   | LTS40 PFHN4 ..                                                                    | LTS40 EH1 ..<br>LTS40 EH4 ..                                                      | LTS40 VZVH4 ..<br>LTS40 VH4 ..                                                     | LTS40 E ..                                                                          | LTS40 SMA ..                                                                        |
| LTS63 VZHN1 ..<br>LTS63 VZHN4 ..                                                  | LTS63 SMAHN1 ..                                                                   | LTS63 PFHN4 ..                                                                    | LTS63 EH1 ..<br>LTS63 EH4 ..                                                      | LTS63 VZVH4 ..<br>LTS63 VH4 ..                                                     | LTS63 E ..                                                                          | LTS63 SMA ..                                                                        |
| LTS80 VZHN1 ..<br>LTS80 VZHN4 ..                                                  | LTS80 SMAHN1 ..                                                                   | LTS80 PFHN4 ..                                                                    | LTS80 EH1 ..<br>LTS80 EH4 ..                                                      | LTS80 VZVH4 ..<br>LTS80 VH4 ..                                                     | LTS80 E ..                                                                          | LTS80 SMA ..                                                                        |
| LTS85 VZHN4 ..                                                                    | LTS85 SMAHN1 ..                                                                   | LTS85 PFHN4 ..                                                                    | LTS85 EH4 ..                                                                      | LTS85 VZVH4 ..<br>LTS85 VH4 ..                                                     | LTS85 E ..                                                                          | LTS85 SMA ..                                                                        |
| LTS100 VZHN4 ..                                                                   | LTS100 SMAHN1 ..                                                                  | LTS100 PFHN4 ..                                                                   | LTS100 EH4 ..                                                                     | LTS100 VZVH4 ..<br>LTS100 VH4 ..                                                   | LTS100 E ..                                                                         | LTS100 SMA ..                                                                       |
| LTS125 VZHN4 ..                                                                   | LTS125 SMAHN1 ..                                                                  | LTS125 PFHN4 ..                                                                   | LTS125 EH4 ..                                                                     | LTS125 VZVH4 ..<br>LTS125 VH4 ..                                                   | LTS125 E ..                                                                         | LTS125 SMA ..                                                                       |
| -                                                                                 | -                                                                                 | LT160 PFHN34 ..                                                                   | LT160 EH34 ..                                                                     | LT160 VH34 ..                                                                      | LT160 E ..                                                                          | -                                                                                   |

### Switch program

|                            |              |
|----------------------------|--------------|
| On-Off Switch 3-pole       | ● ● ● ● ● A3 |
| On-Off Switch 4-pole       | ● ● ● ● ● A4 |
| On-Off Switch 6-pole       | ● ● ● ● ● A6 |
| On-Off Switch 8-pole       | ● ● ● ● ● A8 |
| Changeover Switches 3-pole | ● ● ● ● ● U3 |
| Changeover Switches 4-pole | ● ● ● ● ● U4 |

|                      |                |             |
|----------------------|----------------|-------------|
| On-Off Switch 3-pole | ● ● ● ● ● T300 | (for LT160) |
| On-Off Switch 4-pole | ● ● ● ● ● T400 | (for LT160) |

## Panel mounting designs

Switches of the panel mounting designs listed below have protection from front IP40. Where a shaft seal (appendix +WD) is used, the protection is increased to IP54. Use of a moisture proofing cap (appendix +FR) results in an increase in rear protection to IP54. In the standard version, the switches are delivered with a square escutcheon plate and black twist knob. Forward mounting is possible for some of

the design E switches. The position of the terminals of the standard switches is left and right, at switch M10H the terminals are above and below. Where a knob insert is turned by 90° (can easily be performed after delivery), the position of the terminals can be changed.

**Dimensions** see page 75.



### Design

| Description                                                                                                                                                                                                                                                                                                             | Type appendix | Possible switch sizes |     |                 |                   |              |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----|-----------------|-------------------|--------------|------|
|                                                                                                                                                                                                                                                                                                                         |               | M10H                  | M20 | N20<br>N33F     | N40<br>N60<br>N80 | N100<br>N200 | L... |
| <b>Panel mounting</b><br>For installation in control panels, machines and equipment.<br>For panel thickness of over 5mm, an extended switch shaft is required (appendix +VW).<br>Protection from front:<br>M10H, M20 IP65<br>all others IP40                                                                            | E             | X                     | X   | X               | X                 | X            | X    |
| <b>Central fixing 22,5mm</b><br>Switch for mounting with standard 22,5mm mounting holes and 1-4mm panel thickness.<br>Protection from front: IP65<br>Wrench J7049 necessary                                                                                                                                             | Z             | X                     | X   | X <sup>3)</sup> | -                 | -            | -    |
| <b>Central fixing 22,5mm</b><br>Switch <b>without escutcheon plate</b> , for installation with standard 22,5mm mounting holes and 1-4mm panel thickness. Protection from front: IP65<br>Wrench J7049 necessary                                                                                                          | ZO            | X                     | X   | -               | -                 | -            | -    |
| <b>Flush mounting version</b><br>Switch with white instrument knob, cream escutcheon plate with black markings, for installation in 65mm flush mounting boxes and use of Unitas plate. Supplied with flush mounting box: appendix +UP.<br>Maximum number of cells with: M10<br>FM box 45mm deep 2<br>FM box 65mm deep 4 | UP            | X <sup>1)</sup>       | -   | -               | -                 | -            | -    |
| <b>Flush mounting version</b><br>Switch without flush mounting box and special square cover, black markings and white instrument knob. Supplied with flush mounting box: appendix +UP.<br>Max. 4 cells                                                                                                                  | UP            | -                     | -   | X <sup>2)</sup> | -                 | -            | -    |

1) Switches are delivered with switch type M10

2) For switch types N20 only


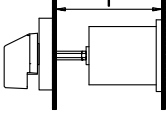

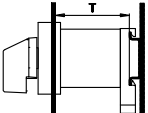

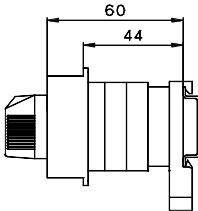
3) For switch types N33F only, max. 3 poles and 3 cells

## Base mounting designs

Switches of the designs listed below have protection from front IP40. When a shaft seal (appendix +WD) is used, the front protection type is increased to IP54. In the standard version, the switches are delivered with a square escutcheon plate and black twist knob (design SMA with grey cover and grey toggle knob). Door couplings are advisable for switchgear cabinets with hinged doors.

The position of the terminals of the standard switches is left and right, at switch M10H the terminals are above and below. Where a knob insert is turned by 90° (can easily be performed after delivery), the position of the terminals can be changed.

**Dimensions** see page 76.

| Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Possible switch sizes |      |     |             |                   |              |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|-----|-------------|-------------------|--------------|------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       | M10H | M20 | N20<br>N33F | N40<br>N60<br>N80 | N100<br>N200 | L... |
|  <p><b>Base mounting</b><br/>For screw mounting to the back wall or floor of distributor boxes, or of appliances with removable lids. Additional it is necessary to state the installation depth - that is the distance between mounting level of the switch and the inside edge of the door (dimension T).</p>  <p>Door couplings see page 62</p>    | <b>V ... +T/...</b>   | X    | X   | X           | X                 | X            | X    |
|  <p><b>Snap-on mounting on DIN-rail</b><br/>Switch with square escutcheon plate, for snap-on mounting on standard DIN EN 50022 rail. Additional it is necessary to state the installation depth - that is the distance between mounting level of the switch and the inside edge of the door (dimension T).</p>  <p>Door couplings see page 62</p> | <b>SM ... +T/...</b>  | X    | X   | X           | -                 | -            | -    |
|  <p><b>Snap-on mounting on DIN-rail</b><br/>with installation cover for standard opening and toggle knob. The lay-out of the terminals of the standard switches is above and below. Dimensions for Switch types<br/>M10H SMA .. with 1-3 cells<br/>M20 SMA .. with 1 or 2 cells</p>  <p>further dimensions see page 76</p>                        | <b>SMA</b>            | X    | X   | -           | -                 | -            | -    |



## Plastic enclosed switches

The switches, which have durable plastic enclosures, are intended for wall mounting or attachment to machines. In the standard version, they are supplied with a light-grey enclosure, square escutcheon plate, black markings on a silver background, and a black twist knob. Other colours and colour combinations are available for most enclosure types. It is not possible to mount an additional rectangular plate. The enclosure base is equipped with 4 entry glands with heavy-gauge conduit threads (see drawings). In all types of plastic enclosures, two terminals that are connected and insulated from switch column can be provided for a PE conductor (appendix +PE). In addition, 1 or 2 pilot lamps (appendix +SL..) with neon lights can be installed.

**Dimensions** see page 77.

## Cast aluminium enclosed switches

The switches with cast aluminium enclosures are intended for wall mounting or attachment to machines, under heavy-duty operating conditions. The switches are delivered with a square escutcheon plate, black markings on a silver background, and a black instrument knob. It is not possible to mount an additional rectangular plate. The enclosure base makes provision for 2 (4) entry glands with heavy-gauge conduit threads. If a switch with an aluminium enclosure is to be mounted directly on the terminal box of a motor, a 35mm or 50mm hole can be made in the floor of the switch enclosure. Design PLF is the replacement for designs G and GF at types N40 to N80.

**Dimensions** see page 78.



### Design

| Description                                                                                                                                                                                                     | Type appendix | Possible switch sizes |     |      |     |     |     |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|-----|------|-----|-----|-----|------|------|
|                                                                                                                                                                                                                 |               | M10H                  | N20 | N33F | N40 | N60 | N80 | N100 | N200 |
| <b>Plastic enclosure</b> light grey<br>Protection class IP40<br>Maximum number of cells                                                                                                                         | <b>P</b>      | X                     | X   | X    | X   | X   | -   | -    | -    |
| <b>Plastic enclosure</b> light grey<br>Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                                  | <b>PF</b>     | 6                     | 6   | 6    | 6   | 2   |     |      |      |
| <b>Plastic enclosure horizontal</b><br>light grey Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                       | <b>PLF</b>    | X                     | X   | X    | X   | X   | X   | X    | X    |
| <b>Plastic enclosure horizontal</b><br>light grey Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                       | <b>PLF</b>    | -                     | -   | -    | X   | X   | X   | -    | -    |
| <b>Cast enclosure</b><br>Protection class IP40<br>Maximum number of cells                                                                                                                                       | <b>G</b>      | -                     | X   | -    | -   | -   | -   | -    | -    |
| <b>Cast enclosure</b><br>Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                                                | <b>GF</b>     | -                     | X   | -    | -   | -   | -   | -    | -    |
| <b>Terminal box mounting</b><br>Protection class IP65<br>These switches are front mounted on a terminal box. The switch cells protrude through a hole into the terminal compartment.<br>Maximum number of cells | <b>KE</b>     | X                     | X   | X    | -   | -   | -   | -    | -    |
| <b>Terminal box mounting</b><br>Protection class IP65<br>These switches are front mounted on a terminal box. The switch cells protrude through a hole into the terminal compartment.<br>Maximum number of cells | <b>KE</b>     | 12                    | 12  | 12   |     |     |     |      |      |
| <b>Plastic motor switch enclosure</b><br>Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                                | <b>PM</b>     | -                     | X   | -    | -   | -   | -   | -    | -    |
| <b>Plastic motor switch enclosure</b><br>Moisture protection<br>Protection class IP65<br>Maximum number of cells                                                                                                | <b>PM</b>     | -                     | 6   | -    | -   | -   | -   | -    | -    |

Switching programs

| Description                  | Wiring diagram          | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|------------------------------|-------------------------|-----------------|-------------------------------------------|----------|-----------------------------------------------|------------------------|---------------------|
| <b>On-Off-switches A</b>     |                         |                 |                                           |          |                                               |                        |                     |
| 1-pole                       |                         | 60°             | 1                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . A1         | . A1                   |                     |
|                              |                         |                 |                                           | 32A      | M20 . x x x x - - . A1                        |                        |                     |
|                              |                         |                 |                                           | 64 □ 32A | N20 . x - x - x x . A1                        |                        |                     |
|                              |                         |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . A1         |                        |                     |
|                              |                         |                 |                                           | 88 □ 63A | N40 . x - x - x - . A1                        |                        |                     |
| 80A                          | N60 . x - x - x - . A1  |                 |                                           |          |                                               |                        |                     |
| 115A                         | N80 . x - x - - - . A1  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                   | N100 . x - x - - - . A1 |                 |                                           |          |                                               |                        |                     |
| 250A                         | N200 . x - x - - - . A1 |                 |                                           |          |                                               |                        |                     |
|                              |                         |                 |                                           |          |                                               |                        | +003                |
|                              |                         |                 |                                           |          |                                               |                        |                     |
| 2-pole                       |                         | 60°             | 1                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . A2         | . A2                   |                     |
|                              |                         |                 |                                           | 32A      | M20 . x x x x - - . A2                        |                        |                     |
|                              |                         |                 |                                           | 64 □ 32A | N20 . x - x - x x . A2                        |                        |                     |
|                              |                         |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . A2         |                        |                     |
|                              |                         |                 |                                           | 88 □ 63A | N40 . x - x - x - . A2                        |                        |                     |
| 80A                          | N60 . x - x - x - . A2  |                 |                                           |          |                                               |                        |                     |
| 115A                         | N80 . x - x - - - . A2  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                   | N100 . x - x - - - . A2 |                 |                                           |          |                                               |                        |                     |
| 250A                         | N200 . x - x - - - . A2 |                 |                                           |          |                                               |                        |                     |
|                              |                         |                 |                                           |          |                                               |                        | +003                |
|                              |                         |                 |                                           |          |                                               |                        |                     |
| 3-pole                       |                         | 60°             | 2                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . A3         | . A3                   |                     |
|                              |                         |                 |                                           | 32A      | M20 . x x x x - - . A3                        |                        |                     |
|                              |                         |                 |                                           | 64 □ 32A | N20 . x - x - x x . A3                        |                        |                     |
|                              |                         |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . A3         |                        |                     |
|                              |                         |                 |                                           | 88 □ 63A | N40 . x - x - x - . A3                        |                        |                     |
| 80A                          | N60 . x - x - x - . A3  |                 |                                           |          |                                               |                        |                     |
| 115A                         | N80 . x - x - - - . A3  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                   | N100 . x - x - - - . A3 |                 |                                           |          |                                               |                        |                     |
| 250A                         | N200 . x - x - - - . A3 |                 |                                           |          |                                               |                        |                     |
|                              |                         |                 |                                           |          |                                               |                        | +003                |
|                              |                         |                 |                                           |          |                                               |                        |                     |
| 4-pole<br>4. pole early make |                         | 60°             | 2                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . A4         | . A4                   |                     |
|                              |                         |                 |                                           | 32A      | M20 . x x x x - - . A4                        |                        |                     |
|                              |                         |                 |                                           | 64 □ 32A | N20 . x - x - x x . A4                        |                        |                     |
|                              |                         |                 |                                           | 50A      | N33F . x - x - x x <sup>2)</sup> . A4         |                        |                     |
|                              |                         |                 |                                           | 88 □ 63A | N40 . x - x - x - . A4                        |                        |                     |
| 80A                          | N60 . x - x - x - . A4  |                 |                                           |          |                                               |                        |                     |
| 115A                         | N80 . x - x - - - . A4  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                   | N100 . x - x - - - . A4 |                 |                                           |          |                                               |                        |                     |
| 250A                         | N200 . x - x - - - . A4 |                 |                                           |          |                                               |                        |                     |
|                              |                         |                 |                                           |          |                                               |                        | +003                |
|                              |                         |                 |                                           |          |                                               |                        |                     |
| 6-pole                       |                         | 60°             | 3                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . A6         | . A6                   |                     |
|                              |                         |                 |                                           | 32A      | M20 . x x x x - - . A6                        |                        |                     |
|                              |                         |                 |                                           | 64 □ 32A | N20 . x - x - x x . A6                        |                        |                     |
|                              |                         |                 |                                           | 50A      | N33F . x - x - x x <sup>2)</sup> . A6         |                        |                     |
|                              |                         |                 |                                           | 88 □ 63A | N40 . x - x - x - . A6                        |                        |                     |
| 80A                          | N60 . x - x - x - . A6  |                 |                                           |          |                                               |                        |                     |
| 115A                         | N80 . x - x - - - . A6  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                   | N100 . x - x - - - . A6 |                 |                                           |          |                                               |                        |                     |
| 250A                         | N200 . x - x - - - . A6 |                 |                                           |          |                                               |                        |                     |
|                              |                         |                 |                                           |          |                                               |                        | +003                |
|                              |                         |                 |                                           |          |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, On-Off-switch 6-pole, Escutcheon plate OFF - ON

N200 E A6+003

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                  | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type          | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch program | Escutcheon plate |
|------------------------------|----------------|-----------------|-------------------------------------------|---------------|-----------------------------------------------|----------------|------------------|
| <b>Changeover switches U</b> |                |                 |                                           |               |                                               |                |                  |
| 1-pole                       |                | 60°             | 1 48 □ 20A                                | <b>M10H .</b> | x x x x x <sup>1)</sup>                       | . U1           |                  |
|                              |                |                 | 32A                                       | <b>M20 .</b>  | x x x x - -                                   | . U1           |                  |
|                              |                |                 | 64 □ 32A                                  | <b>N20 .</b>  | x - x - x x                                   | . U1           |                  |
|                              |                |                 | 50A                                       | <b>N33F .</b> | x x x - x x <sup>2)</sup>                     | . U1           |                  |
|                              |                |                 | 88 □ 63A                                  | <b>N40 .</b>  | x - x - x -                                   | . U1           |                  |
| 80A                          | <b>N60 .</b>   | x - x - x -     | . U1                                      |               |                                               |                |                  |
| 115A                         | <b>N80 .</b>   | x - x - - -     | . U1                                      |               |                                               |                |                  |
| 132 □ 150A                   | <b>N100 .</b>  | x - x - - -     | . U1                                      |               |                                               |                |                  |
| 250A                         | <b>N200 .</b>  | x - x - - -     | . U1                                      |               |                                               |                |                  |
| 2-pole                       |                | 60°             | 2 48 □ 20A                                | <b>M10H .</b> | x x x x x <sup>1)</sup> -                     | . U2           |                  |
|                              |                |                 | 32A                                       | <b>M20 .</b>  | x x x x - -                                   | . U2           |                  |
|                              |                |                 | 64 □ 32A                                  | <b>N20 .</b>  | x - x - x x                                   | . U2           |                  |
|                              |                |                 | 50A                                       | <b>N33F .</b> | x x x - x x <sup>2)</sup>                     | . U2           |                  |
|                              |                |                 | 88 □ 63A                                  | <b>N40 .</b>  | x - x - x -                                   | . U2           |                  |
| 80A                          | <b>N60 .</b>   | x - x - x -     | . U2                                      |               |                                               |                |                  |
| 115A                         | <b>N80 .</b>   | x - x - - -     | . U2                                      |               |                                               |                |                  |
| 132 □ 150A                   | <b>N100 .</b>  | x - x - - -     | . U2                                      |               |                                               |                |                  |
| 250A                         | <b>N200 .</b>  | x - x - - -     | . U2                                      |               |                                               |                |                  |
| 3-pole                       |                | 60°             | 3 48 □ 20A                                | <b>M10H .</b> | x x x x x <sup>1)</sup> -                     | . U3           |                  |
|                              |                |                 | 32A                                       | <b>M20 .</b>  | x x x x - -                                   | . U3           |                  |
|                              |                |                 | 64 □ 32A                                  | <b>N20 .</b>  | x - x - x x                                   | . U3           |                  |
|                              |                |                 | 50A                                       | <b>N33F .</b> | x x x - x x <sup>2)</sup>                     | . U3           |                  |
|                              |                |                 | 88 □ 63A                                  | <b>N40 .</b>  | x - x - x -                                   | . U3           |                  |
| 80A                          | <b>N60 .</b>   | x - x - x -     | . U3                                      |               |                                               |                |                  |
| 115A                         | <b>N80 .</b>   | x - x - - -     | . U3                                      |               |                                               |                |                  |
| 132 □ 150A                   | <b>N100 .</b>  | x - x - - -     | . U3                                      |               |                                               |                |                  |
| 250A                         | <b>N200 .</b>  | x - x - - -     | . U3                                      |               |                                               |                |                  |
| 4-pole<br>4. pole early make |                | 60°             | 4 48 □ 20A                                | <b>M10H .</b> | x x x x x <sup>1)</sup> -                     | . U4           |                  |
|                              |                |                 | 32A                                       | <b>M20 .</b>  | x x x x - -                                   | . U4           |                  |
|                              |                |                 | 64 □ 32A                                  | <b>N20 .</b>  | x - x - x x                                   | . U4           |                  |
|                              |                |                 | 50A                                       | <b>N33F .</b> | x - x - x x <sup>2)</sup>                     | . U4           |                  |
|                              |                |                 | 88 □ 63A                                  | <b>N40 .</b>  | x - x - x -                                   | . U4           |                  |
| 80A                          | <b>N60 .</b>   | x - x - x -     | . U4                                      |               |                                               |                |                  |
| 115A                         | <b>N80 .</b>   | x - x - - -     | . U4                                      |               |                                               |                |                  |
| 132 □ 150A                   | <b>N100 .</b>  | x - x - - -     | . U4                                      |               |                                               |                |                  |
| 250A                         | <b>N200 .</b>  | x - x - - -     | . U4                                      |               |                                               |                |                  |
| 6-pole                       |                | 60°             | 6 48 □ 20A                                | <b>M10H .</b> | x x x - x <sup>1)</sup> -                     | . U6           |                  |
|                              |                |                 | 32A                                       | <b>M20 .</b>  | x x x - - -                                   | . U6           |                  |
|                              |                |                 | 64 □ 32A                                  | <b>N20 .</b>  | x - x - x x                                   | . U6           |                  |
|                              |                |                 | 50A                                       | <b>N33F .</b> | x - x - x -                                   | . U6           |                  |
|                              |                |                 | 88 □ 63A                                  | <b>N40 .</b>  | x - x - x -                                   | . U6           |                  |
| 80A                          | <b>N60 .</b>   | x - x - x -     | . U6                                      |               |                                               |                |                  |
| 115A                         | <b>N80 .</b>   | x - x - - -     | . U6                                      |               |                                               |                |                  |
| 132 □ 150A                   | <b>N100 .</b>  | x - x - - -     | . U6                                      |               |                                               |                |                  |
| 250A                         | <b>N200 .</b>  | x - x - - -     | . U6                                      |               |                                               |                |                  |

**Ordering example:** AC21 250A panel mounting, changeover switch 6-pole, Escutcheon plate 1 - OFF - 2 **N200 E U6+007**

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                              | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                    | Design<br>see page 6-8<br>E. Z. V. SMA. P. G.                                    | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|------------------------------------------|----------------|-----------------|-------------------------------------------|-------------------------|----------------------------------------------------------------------------------|------------------------|---------------------|
| <b>Changeover switches without off W</b> |                |                 |                                           |                         |                                                                                  |                        |                     |
| 1-pole                                   |                | 60°             | 1                                         | 48 □ 20A<br>32A         | <b>M10H</b> . x x x x x <sup>1)</sup> -<br><b>M20</b> . x x x x - -              | . W1<br>. W1           |                     |
|                                          |                |                 |                                           | 64 □ 32A<br>50A         | <b>N20</b> . x - x - x x<br><b>N33F</b> . x x x - x x <sup>2)</sup>              | . W1<br>. W1           |                     |
|                                          |                |                 |                                           | 88 □ 63A<br>80A<br>115A | <b>N40</b> . x - x - x -<br><b>N60</b> . x - x - x -<br><b>N80</b> . x - x - - - | . W1<br>. W1<br>. W1   |                     |
|                                          |                |                 |                                           | 132 □ 150A<br>250A      | <b>N100</b> . x - x - - -<br><b>N200</b> . x - x - - -                           | . W1<br>. W1           |                     |
|                                          |                |                 |                                           |                         |                                                                                  |                        |                     |
| 2-pole                                   |                | 60°             | 2                                         | 48 □ 20A<br>32A         | <b>M10H</b> . x x x x x <sup>1)</sup> -<br><b>M20</b> . x x x x - -              | . W2<br>. W2           |                     |
|                                          |                |                 |                                           | 64 □ 32A<br>50A         | <b>N20</b> . x - x - x x<br><b>N33F</b> . x x x - x x <sup>2)</sup>              | . W2<br>. W2           |                     |
|                                          |                |                 |                                           | 88 □ 63A<br>80A<br>115A | <b>N40</b> . x - x - x -<br><b>N60</b> . x - x - x -<br><b>N80</b> . x - x - - - | . W2<br>. W2<br>. W2   |                     |
|                                          |                |                 |                                           | 132 □ 150A<br>250A      | <b>N100</b> . x - x - - -<br><b>N200</b> . x - x - - -                           | . W2<br>. W2           |                     |
|                                          |                |                 |                                           |                         |                                                                                  |                        |                     |
| 3-pole                                   |                | 60°             | 3                                         | 48 □ 20A<br>32A         | <b>M10H</b> . x x x x x <sup>1)</sup> -<br><b>M20</b> . x x x x - -              | . W3<br>. W3           |                     |
|                                          |                |                 |                                           | 64 □ 32A<br>50A         | <b>N20</b> . x - x - x x<br><b>N33F</b> . x x x - x x <sup>2)</sup>              | . W3<br>. W3           |                     |
|                                          |                |                 |                                           | 88 □ 63A<br>80A<br>115A | <b>N40</b> . x - x - x -<br><b>N60</b> . x - x - x -<br><b>N80</b> . x - x - - - | . W3<br>. W3<br>. W3   |                     |
|                                          |                |                 |                                           | 132 □ 150A<br>250A      | <b>N100</b> . x - x - - -<br><b>N200</b> . x - x - - -                           | . W3<br>. W3           |                     |
|                                          |                |                 |                                           |                         |                                                                                  |                        |                     |
| 4-pole<br>4. pole early make             |                | 60°             | 4                                         | 48 □ 20A<br>32A         | <b>M10H</b> . x x x x x <sup>1)</sup> -<br><b>M20</b> . x x x x - -              | . W4<br>. W4           |                     |
|                                          |                |                 |                                           | 64 □ 32A<br>50A         | <b>N20</b> . x - x - x x<br><b>N33F</b> . x - x - x x <sup>2)</sup>              | . W4<br>. W4           |                     |
|                                          |                |                 |                                           | 88 □ 63A<br>80A<br>115A | <b>N40</b> . x - x - x -<br><b>N60</b> . x - x - x -<br><b>N80</b> . x - x - - - | . W4<br>. W4<br>. W4   |                     |
|                                          |                |                 |                                           | 132 □ 150A<br>250A      | <b>N100</b> . x - x - - -<br><b>N200</b> . x - x - - -                           | . W4<br>. W4           |                     |
|                                          |                |                 |                                           |                         |                                                                                  |                        |                     |
| 6-pole                                   |                | 60°             | 6                                         | 48 □ 20A<br>32A         | <b>M10H</b> . x x x - x <sup>1)</sup> -<br><b>M20</b> . x x x - - -              | . W6<br>. W6           |                     |
|                                          |                |                 |                                           | 64 □ 32A<br>50A         | <b>N20</b> . x - x - x x<br><b>N33F</b> . x - x - x -                            | . W6<br>. W6           |                     |
|                                          |                |                 |                                           | 88 □ 63A<br>80A<br>115A | <b>N40</b> . x - x - x -<br><b>N60</b> . x - x - x -<br><b>N80</b> . x - x - - - | . W6<br>. W6<br>. W6   |                     |
|                                          |                |                 |                                           | 132 □ 150A<br>250A      | <b>N100</b> . x - x - - -<br><b>N200</b> . x - x - - -                           | . W6<br>. W6           |                     |
|                                          |                |                 |                                           |                         |                                                                                  |                        |                     |

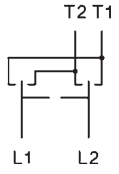
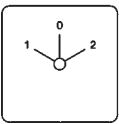
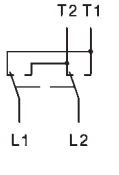
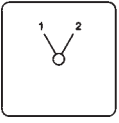
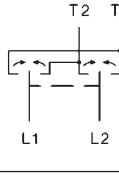
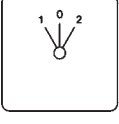
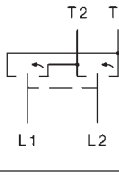
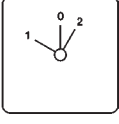
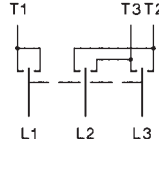
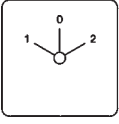
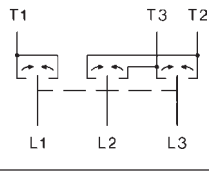
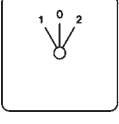
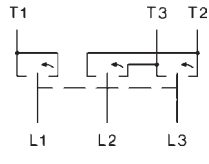
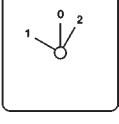
Ordering example: AC21 250A panel mounting, changeover switch without off 6-pole,

N200 E W6

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                                    | Wiring diagram                                                                      | Switching angle           | Number of cells<br>↓ Size<br>↓ AC21 | Type   | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch program | Escutcheon plate                                                                      |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|-------------------------------------|--------|-----------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| <b>Reversing switches WU</b>                                   |                                                                                     |                           |                                     |        |                                               |                |                                                                                       |
| 2-pole                                                         |    | 60°                       | 2 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU2          |    |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU2          |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU2          |                                                                                       |
|                                                                |                                                                                     |                           | 50A                                 | N33F . | x x x - x x <sup>2)</sup>                     | . WU2          |                                                                                       |
|                                                                |                                                                                     |                           | 88 □ 63A                            | N40 .  | x - x - x -                                   | . WU2          |                                                                                       |
| 80A                                                            | N60 .                                                                               | x - x - x -               | . WU2                               |        |                                               |                |                                                                                       |
| 115A                                                           | N80 .                                                                               | x - x - - -               | . WU2                               |        |                                               |                |                                                                                       |
| 132 □ 150A                                                     | N100 .                                                                              | x - x - - -               | . WU2                               |        |                                               |                |                                                                                       |
| 250A                                                           | N200 .                                                                              | x - x - - -               | . WU2                               |        |                                               |                |                                                                                       |
| 2-pole without off cross switch                                |    | 60°                       | 2 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WK2          |    |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WK2          |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WK2          |                                                                                       |
|                                                                |                                                                                     |                           | 50A                                 | N33F . | x x x - x x <sup>2)</sup>                     | . WK2          |                                                                                       |
|                                                                |                                                                                     |                           | 88 □ 63A                            | N40 .  | x x - x -                                     | . WK2          |                                                                                       |
| 80A                                                            | N60 .                                                                               | x - x - x -               | . WK2                               |        |                                               |                |                                                                                       |
| 115A                                                           | N80 .                                                                               | x - x - - -               | . WK2                               |        |                                               |                |                                                                                       |
| 132 □ 150A                                                     | N100 .                                                                              | x - x - - -               | . WK2                               |        |                                               |                |                                                                                       |
| 250A                                                           | N200 .                                                                              | x - x - - -               | . WK2                               |        |                                               |                |                                                                                       |
| 2-pole with spring return from both sides to off               |   | 30°                       | 2 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU2R2        |   |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU2R2        |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU2R2        |                                                                                       |
| 50A                                                            | N33F .                                                                              | x x x - x x <sup>2)</sup> | . WU2R2                             |        |                                               |                |                                                                                       |
| 88 □ 63A                                                       | N40 .                                                                               | x - x - x -               | . WU2R2                             |        |                                               |                |                                                                                       |
| 2-pole position 1 latched position 2 with spring return to off |  | 60°+30°                   | 2 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU2R1        |  |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU2R1        |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU2R1        |                                                                                       |
| 50A                                                            | N33F .                                                                              | x x x - x x <sup>2)</sup> | . WU2R1                             |        |                                               |                |                                                                                       |
| 88 □ 63A                                                       | N40 .                                                                               | x - x - x -               | . WU2R1                             |        |                                               |                |                                                                                       |
| 3-pole                                                         |  | 60°                       | 3 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU3          |  |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU3          |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU3          |                                                                                       |
|                                                                |                                                                                     |                           | 50A                                 | N33F . | x x x - x x <sup>2)</sup>                     | . WU3          |                                                                                       |
|                                                                |                                                                                     |                           | 88 □ 63A                            | N40 .  | x - x - x -                                   | . WU3          |                                                                                       |
| 80A                                                            | N60 .                                                                               | x - x - x -               | . WU3                               |        |                                               |                |                                                                                       |
| 115A                                                           | N80 .                                                                               | x - x - - -               | . WU3                               |        |                                               |                |                                                                                       |
| 132 □ 150A                                                     | N100 .                                                                              | x - x - - -               | . WU3                               |        |                                               |                |                                                                                       |
| 250A                                                           | N200 .                                                                              | x - x - - -               | . WU3                               |        |                                               |                |                                                                                       |
| 3-pole with spring return from both sides to off               |  | 30°                       | 3 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU3R2        |  |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU3R2        |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU3R2        |                                                                                       |
| 50A                                                            | N33F .                                                                              | x x x - x x <sup>2)</sup> | . WU3R2                             |        |                                               |                |                                                                                       |
| 88 □ 63A                                                       | N40 .                                                                               | x - x x -                 | . WU3R2                             |        |                                               |                |                                                                                       |
| 3-pole position 1 latched position 2 with spring return to off |  | 60°+30°                   | 3 48 □ 20A                          | M10H . | x x x x x <sup>1)</sup> -                     | . WU3R1        |  |
|                                                                |                                                                                     |                           | 32A                                 | M20 .  | x x x x - -                                   | . WU3R1        |                                                                                       |
|                                                                |                                                                                     |                           | 64 □ 32A                            | N20 .  | x - x - x x                                   | . WU3R1        |                                                                                       |
| 50A                                                            | N33F .                                                                              | x - x - x x <sup>2)</sup> | . WU3R1                             |        |                                               |                |                                                                                       |
| 88 □ 63A                                                       | N40 .                                                                               | x - x - x -               | . WU3R1                             |        |                                               |                |                                                                                       |

**Ordering example:** AC21 63A base mounting, reversing switch 3-pole, position 2 with spring to off **N40 V WU3R1**

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                                                         | Wiring diagram | Switching angle | Number of cells<br>↓ Size<br>↓ AC21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Type              | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|-------------------------------------------------------------------------------------|----------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------|------------------------|---------------------|-------------------|--------|--|-----|-------|---------|-----|--------|------|-----|-------|---------|-----|--------|--|-----|--------|---------|-------------------|--------|------|-----|-------|---------|-----|--------|--|-----|-------|---------|-----|--------|--|------|-------|---------|-----|--------|-------|------|--------|---------|-----|--------|--|------|--------|---------|-----|--------|--|
| <p>1 rotary direction</p>                                                           | 60°            | 4               | <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td>M10H .</td> <td>x x x x</td> <td>x<sup>1)</sup>-</td> <td>. SD</td> </tr> <tr> <td></td> <td>32A</td> <td>M20 .</td> <td>x x x x</td> <td>- -</td> <td>. SD</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td>N20 .</td> <td>x - x -</td> <td>x x</td> <td>. SD</td> </tr> <tr> <td></td> <td>50A</td> <td>N33F .</td> <td>x - x -</td> <td>x x<sup>2)</sup></td> <td>. SD</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td>N40 .</td> <td>x - x -</td> <td>x -</td> <td>. SD</td> </tr> <tr> <td></td> <td>80A</td> <td>N60 .</td> <td>x - x -</td> <td>x -</td> <td>. SD</td> </tr> <tr> <td></td> <td>115A</td> <td>N80 .</td> <td>x - x -</td> <td>- -</td> <td>. SD</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td>N100 .</td> <td>x - x -</td> <td>- -</td> <td>. SD</td> </tr> <tr> <td></td> <td>250A</td> <td>N200 .</td> <td>x - x -</td> <td>- -</td> <td>. SD</td> </tr> </table>                   | 48 □              | 20A                                           | M10H .                 | x x x x             | x <sup>1)</sup> - | . SD   |  | 32A | M20 . | x x x x | - - | . SD   | 64 □ | 32A | N20 . | x - x - | x x | . SD   |  | 50A | N33F . | x - x - | x x <sup>2)</sup> | . SD   | 88 □ | 63A | N40 . | x - x - | x - | . SD   |  | 80A | N60 . | x - x - | x - | . SD   |  | 115A | N80 . | x - x - | - - | . SD   | 132 □ | 150A | N100 . | x - x - | - - | . SD   |  | 250A | N200 . | x - x - | - - | . SD   |  |
| 48 □                                                                                | 20A            | M10H .          | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x <sup>1)</sup> - | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 32A            | M20 .           | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 64 □                                                                                | 32A            | N20 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 50A            | N33F .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x <sup>2)</sup> | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 88 □                                                                                | 63A            | N40 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 80A            | N60 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 115A           | N80 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 132 □                                                                               | 150A           | N100 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 250A           | N200 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SD                                          |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| <p>both rotary directions</p>                                                       | 45°            | 5               | <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td>M10H .</td> <td>x x x x</td> <td>x<sup>1)</sup>-</td> <td>. SDR</td> </tr> <tr> <td></td> <td>32A</td> <td>M20 .</td> <td>x x x x</td> <td>- -</td> <td>. SDR</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td>N20 .</td> <td>x - x -</td> <td>x x</td> <td>. SDR</td> </tr> <tr> <td></td> <td>50A</td> <td>N33F .</td> <td>x - x -</td> <td>x x<sup>2)</sup></td> <td>. SDR</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td>N40 .</td> <td>x - x -</td> <td>x -</td> <td>. SDR</td> </tr> <tr> <td></td> <td>80A</td> <td>N60 .</td> <td>x - x -</td> <td>x -</td> <td>. SDR</td> </tr> <tr> <td></td> <td>115A</td> <td>N80 .</td> <td>x - x -</td> <td>- -</td> <td>. SDR</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td>N100 .</td> <td>x - x -</td> <td>- -</td> <td>. SDR</td> </tr> <tr> <td></td> <td>250A</td> <td>N200 .</td> <td>x - x -</td> <td>- -</td> <td>. SDR</td> </tr> </table>          | 48 □              | 20A                                           | M10H .                 | x x x x             | x <sup>1)</sup> - | . SDR  |  | 32A | M20 . | x x x x | - - | . SDR  | 64 □ | 32A | N20 . | x - x - | x x | . SDR  |  | 50A | N33F . | x - x - | x x <sup>2)</sup> | . SDR  | 88 □ | 63A | N40 . | x - x - | x - | . SDR  |  | 80A | N60 . | x - x - | x - | . SDR  |  | 115A | N80 . | x - x - | - - | . SDR  | 132 □ | 150A | N100 . | x - x - | - - | . SDR  |  | 250A | N200 . | x - x - | - - | . SDR  |  |
| 48 □                                                                                | 20A            | M10H .          | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x <sup>1)</sup> - | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 32A            | M20 .           | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 64 □                                                                                | 32A            | N20 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 50A            | N33F .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x <sup>2)</sup> | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 88 □                                                                                | 63A            | N40 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 80A            | N60 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 115A           | N80 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 132 □                                                                               | 150A           | N100 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 250A           | N200 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDR                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| <p>1 rotary direction<br/>spring return from Δ to off</p>                           | 60°            | 4               | <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td>M10H .</td> <td>x x x x</td> <td>x<sup>1)</sup>-</td> <td>. SRD</td> </tr> <tr> <td></td> <td>32A</td> <td>M20 .</td> <td>x x x x</td> <td>- -</td> <td>. SRD</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td>N20 .</td> <td>x - x -</td> <td>x x</td> <td>. SRD</td> </tr> <tr> <td></td> <td>50A</td> <td>N33F .</td> <td>x - x -</td> <td>x x<sup>2)</sup></td> <td>. SRD</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td>N40 .</td> <td>x - x -</td> <td>x -</td> <td>. SRD</td> </tr> <tr> <td></td> <td>80A</td> <td>N60 .</td> <td>x - x -</td> <td>x -</td> <td>. SRD</td> </tr> <tr> <td></td> <td>115A</td> <td>N80 .</td> <td>x - x -</td> <td>- -</td> <td>. SRD</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td>N100 .</td> <td>x - x -</td> <td>- -</td> <td>. SRD</td> </tr> <tr> <td></td> <td>250A</td> <td>N200 .</td> <td>x - x -</td> <td>- -</td> <td>. SRD</td> </tr> </table>          | 48 □              | 20A                                           | M10H .                 | x x x x             | x <sup>1)</sup> - | . SRD  |  | 32A | M20 . | x x x x | - - | . SRD  | 64 □ | 32A | N20 . | x - x - | x x | . SRD  |  | 50A | N33F . | x - x - | x x <sup>2)</sup> | . SRD  | 88 □ | 63A | N40 . | x - x - | x - | . SRD  |  | 80A | N60 . | x - x - | x - | . SRD  |  | 115A | N80 . | x - x - | - - | . SRD  | 132 □ | 150A | N100 . | x - x - | - - | . SRD  |  | 250A | N200 . | x - x - | - - | . SRD  |  |
| 48 □                                                                                | 20A            | M10H .          | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x <sup>1)</sup> - | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 32A            | M20 .           | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 64 □                                                                                | 32A            | N20 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 50A            | N33F .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x <sup>2)</sup> | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 88 □                                                                                | 63A            | N40 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 80A            | N60 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 115A           | N80 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 132 □                                                                               | 150A           | N100 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 250A           | N200 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SRD                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| <p>1 rotary direction<br/>with clockwise operation<br/>and backswitch interlock</p> | 60°            | 5               | <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td>M10H .</td> <td>x x x x</td> <td>x<sup>1)</sup>-</td> <td>. SDRU</td> </tr> <tr> <td></td> <td>32A</td> <td>M20 .</td> <td>x x x x</td> <td>- -</td> <td>. SDRU</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td>N20 .</td> <td>x - x -</td> <td>x x</td> <td>. SDRU</td> </tr> <tr> <td></td> <td>50A</td> <td>N33F .</td> <td>x - x -</td> <td>x x<sup>2)</sup></td> <td>. SDRU</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td>N40 .</td> <td>x - x -</td> <td>x -</td> <td>. SDRU</td> </tr> <tr> <td></td> <td>80A</td> <td>N60 .</td> <td>x - x -</td> <td>x -</td> <td>. SDRU</td> </tr> <tr> <td></td> <td>115A</td> <td>N80 .</td> <td>x - x -</td> <td>- -</td> <td>. SDRU</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td>N100 .</td> <td>x - x -</td> <td>- -</td> <td>. SDRU</td> </tr> <tr> <td></td> <td>250A</td> <td>N200 .</td> <td>x - x -</td> <td>- -</td> <td>. SDRU</td> </tr> </table> | 48 □              | 20A                                           | M10H .                 | x x x x             | x <sup>1)</sup> - | . SDRU |  | 32A | M20 . | x x x x | - - | . SDRU | 64 □ | 32A | N20 . | x - x - | x x | . SDRU |  | 50A | N33F . | x - x - | x x <sup>2)</sup> | . SDRU | 88 □ | 63A | N40 . | x - x - | x - | . SDRU |  | 80A | N60 . | x - x - | x - | . SDRU |  | 115A | N80 . | x - x - | - - | . SDRU | 132 □ | 150A | N100 . | x - x - | - - | . SDRU |  | 250A | N200 . | x - x - | - - | . SDRU |  |
| 48 □                                                                                | 20A            | M10H .          | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x <sup>1)</sup> - | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 32A            | M20 .           | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 64 □                                                                                | 32A            | N20 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 50A            | N33F .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x <sup>2)</sup> | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 88 □                                                                                | 63A            | N40 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 80A            | N60 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 115A           | N80 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 132 □                                                                               | 150A           | N100 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 250A           | N200 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDRU                                        |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| <p>Star-Delta selector<br/>switch</p>                                               | 60°            | 4               | <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td>M10H .</td> <td>x x x x</td> <td>x<sup>1)</sup>-</td> <td>. SDU</td> </tr> <tr> <td></td> <td>32A</td> <td>M20 .</td> <td>x x x x</td> <td>- -</td> <td>. SDU</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td>N20 .</td> <td>x - x -</td> <td>x x</td> <td>. SDU</td> </tr> <tr> <td></td> <td>50A</td> <td>N33F .</td> <td>x - x -</td> <td>x x<sup>2)</sup></td> <td>. SDU</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td>N40 .</td> <td>x - x -</td> <td>x -</td> <td>. SDU</td> </tr> <tr> <td></td> <td>80A</td> <td>N60 .</td> <td>x - x -</td> <td>x -</td> <td>. SDU</td> </tr> <tr> <td></td> <td>115A</td> <td>N80 .</td> <td>x - x -</td> <td>- -</td> <td>. SDU</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td>N100 .</td> <td>x - x -</td> <td>- -</td> <td>. SDU</td> </tr> <tr> <td></td> <td>250A</td> <td>N200 .</td> <td>x - x -</td> <td>- -</td> <td>. SDU</td> </tr> </table>          | 48 □              | 20A                                           | M10H .                 | x x x x             | x <sup>1)</sup> - | . SDU  |  | 32A | M20 . | x x x x | - - | . SDU  | 64 □ | 32A | N20 . | x - x - | x x | . SDU  |  | 50A | N33F . | x - x - | x x <sup>2)</sup> | . SDU  | 88 □ | 63A | N40 . | x - x - | x - | . SDU  |  | 80A | N60 . | x - x - | x - | . SDU  |  | 115A | N80 . | x - x - | - - | . SDU  | 132 □ | 150A | N100 . | x - x - | - - | . SDU  |  | 250A | N200 . | x - x - | - - | . SDU  |  |
| 48 □                                                                                | 20A            | M10H .          | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x <sup>1)</sup> - | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 32A            | M20 .           | x x x x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 64 □                                                                                | 32A            | N20 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 50A            | N33F .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x x <sup>2)</sup> | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 88 □                                                                                | 63A            | N40 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 80A            | N60 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | x -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 115A           | N80 .           | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
| 132 □                                                                               | 150A           | N100 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |
|                                                                                     | 250A           | N200 .          | x - x -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - -               | . SDU                                         |                        |                     |                   |        |  |     |       |         |     |        |      |     |       |         |     |        |  |     |        |         |                   |        |      |     |       |         |     |        |  |     |       |         |     |        |  |      |       |         |     |        |       |      |        |         |     |        |  |      |        |         |     |        |  |

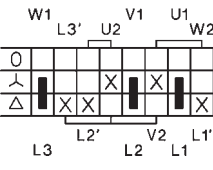
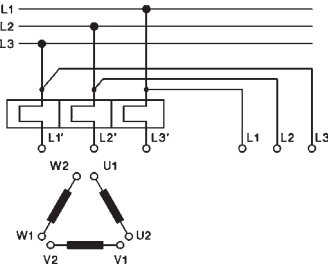
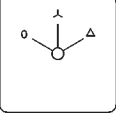
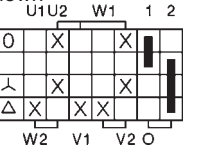
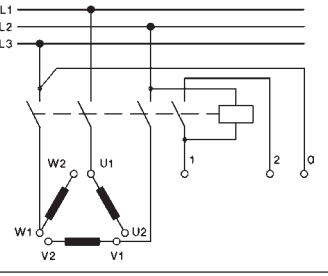
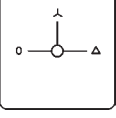
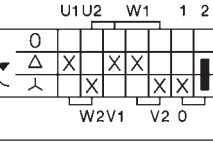
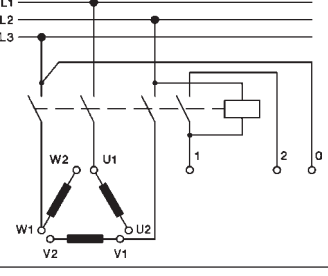
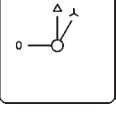
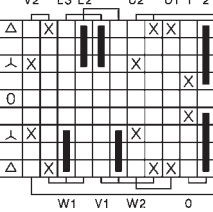
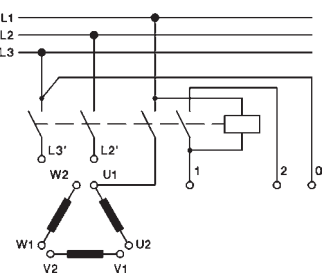
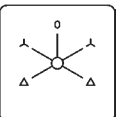
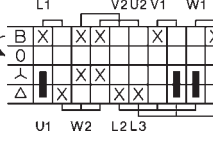
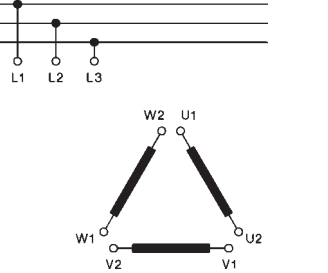
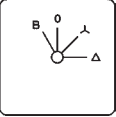
Ordering example: AC21 32A cast enclosed, star-delta selector switch

N20 G SDU

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                                                                                                                                                                                                            | Wiring diagram                                                                      | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type                          | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b> | Switch<br>pro-<br>gram                                         | Escutcheon<br>plate                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|--------------------------------------------------|-------------------------------|------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p>with double outfeed phases for use with manual motor starter</p>                                                                                   |    | 60°             | 4 48 □ 20A<br>64 □ 32A<br>88 □ 63A<br>132 □ 150A | <b>M10H</b> .<br><b>M20</b> . | x x x x x <sup>1)</sup> -<br>x x x x - -             | . SDMO<br>. SDMO<br>. SDMO<br>. SDMO<br>. SDMO<br>. SDMO       |    |
| <p>with auxiliary contacts for contactor control, without main contacts, automatic zero setting in event of mains break-down</p>                      |    | 90°             | 4 48 □ 20A<br>64 □ 32A<br>88 □ 63A<br>132 □ 150A | <b>M10H</b> .<br><b>M20</b> . | x x x x x <sup>1)</sup> -<br>x x x x - -             | . SDJ1<br>. SDJ1<br>. SDJ1<br>. SDJ1<br>. SDJ1<br>. SDJ1       |    |
| <p>with auxiliary contacts for contactor control, without main contacts, automatic zero setting in event of mains break-down, spring return to</p>  |   | 90°+30°         | 4 48 □ 20A<br>64 □ 32A<br>88 □ 63A<br>132 □ 150A | <b>M10H</b> .<br><b>M20</b> . | x x x x x <sup>1)</sup> -<br>x x x x - -             | . SDJ2<br>. SDJ2<br>. SDJ2<br>. SDJ2<br>. SDJ2<br>. SDJ2       |   |
| <p>as type SDJ1 but for both rotary directions</p>                                                                                                  |  | 60°             | 7 48 □ 20A<br>64 □ 32A<br>88 □ 63A<br>132 □ 150A | <b>M10H</b> .<br><b>M20</b> . | x x x - - -<br>x x x - - -                           | . SDRJ1<br>. SDRJ1<br>. SDRJ1<br>. SDRJ1<br>. SDRJ1<br>. SDRJ1 |  |
| <p>with brake position (counter current braking) brake position is a momentary operation</p>                                                        |  | 45°+30°         | 5 48 □ 20A<br>64 □ 32A<br>88 □ 63A<br>132 □ 150A | <b>M10H</b> .<br><b>M20</b> . | x x x x x <sup>1)</sup> -<br>x x x x - -             | . SDB<br>. SDB<br>. SDB<br>. SDB<br>. SDB<br>. SDB             |  |

Ordering example: AC21 250A panel mounting star-delta switch with brake position N200 E SDB

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                                                                  | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type                                                                                                                                                                                                      | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b> | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------------------------------------------------|----------------|-----------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------|---------------------|
| <p>for starting up single-phase motors with split-phase, spring return from START to Off</p> |                | 30°+60°         | 2 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | <b>M10H</b> . x x x x x <sup>1)</sup> - . HP1<br><b>M20</b> . x x x x - - . HP1<br><b>N20</b> . x - x - x x . HP1<br><b>N33F</b> . x - x - x x <sup>2)</sup> . HP1<br><b>N40</b> . x - x - x - . HP1      |                                                      |                        |                     |
| <p>for starting up single-phase motors with split-phase, spring return from START to 1</p>   |                | 90°+30°         | 2 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | <b>M10H</b> . x x x x x <sup>1)</sup> - . HP2<br><b>M20</b> . x x x x - - . HP2<br><b>N20</b> . x - x - x x . HP2<br><b>N33F</b> . x - x - x x <sup>2)</sup> . HP2<br><b>N40</b> . x - x - x - . HP2      |                                                      |                        |                     |
| <p>for starting up single-phase motors with split-phase, both rotary directions</p>          |                | 60°+30°         | 3 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | <b>M10H</b> . x x x x x <sup>1)</sup> - . HPR1<br><b>M20</b> . x x x x - - . HPR1<br><b>N20</b> . x - x - x x . HPR1<br><b>N33F</b> . x - x - x x <sup>2)</sup> . HPR1<br><b>N40</b> . x - x - x - . HPR1 |                                                      |                        |                     |
| <p>as type HPR1 with starting and phase-shifting capacitor</p>                               |                | 60°+30°         | 4 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | <b>M10H</b> . x x x x x <sup>1)</sup> - . HPR2<br><b>M20</b> . x x x x - - . HPR2<br><b>N20</b> . x - x - x x . HPR2<br><b>N33F</b> . x - x - x x <sup>2)</sup> . HPR2<br><b>N40</b> . x - x - x - . HPR2 |                                                      |                        |                     |

Ordering example: AC21 63A panel mounting, split phase switch, both rotary directions **N40 E HPR1**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.



## Switching programs

| Description | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|------------------------|---------------------|
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|------------------------|---------------------|

### Multi speed switches P

|                                                                                                          |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                        |             |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <p>1 Dahlander winding<br/>1 rotary direction</p>                                                        | <p>4 48 □ 20A<br/>32A</p> <p>64 □ 32A<br/>50A</p> <p>88 □ 63A<br/>80A<br/>115A</p> <p>132 □ 150A<br/>250A</p> | <p><b>M10H</b> . x x x x x<sup>1)</sup> - . P61<br/><b>M20</b> . x x x x - - . P61</p> <p><b>N20</b> . x - x - x x . P61<br/><b>N33F</b> . x - x - x x<sup>2)</sup> . P61</p> <p><b>N40</b> . x - x - x - . P61<br/><b>N60</b> . x - x - x - . P61<br/><b>N80</b> . x - x - - - . P61</p> <p><b>N100</b> . x - x - - - . P61<br/><b>N200</b> . x - x - - - . P61</p>                   |             |
| <p>1 Dahlander winding<br/>1 rotary direction</p>                                                        | <p>4 48 □ 20A<br/>32A</p> <p>64 □ 32A<br/>50A</p> <p>88 □ 63A<br/>80A<br/>115A</p> <p>132 □ 150A<br/>250A</p> | <p><b>M10H</b> . x x x x x<sup>1)</sup> - . P62<br/><b>M20</b> . x x x x - - . P62</p> <p><b>N20</b> . x - x - x x . P62<br/><b>N33F</b> . x - x - x x<sup>2)</sup> . P62</p> <p><b>N40</b> . x - x - x - . P62<br/><b>N60</b> . x - x - x - . P62<br/><b>N80</b> . x - x - - - . P62</p> <p><b>N100</b> . x - x - - - . P62<br/><b>N200</b> . x - x - - - . P62</p>                   | <p>+007</p> |
| <p>1 Dahlander winding<br/>both rotary directions</p>                                                    | <p>7 48 □ 20A<br/>32A</p> <p>64 □ 32A<br/>50A</p> <p>88 □ 63A<br/>80A<br/>115A</p> <p>132 □ 150A<br/>250A</p> | <p><b>M10H</b> . x x x - - - . P61R<br/><b>M20</b> . x x x - - - . P61R</p> <p><b>N20</b> . x - x - x - . P61R<br/><b>N33F</b> . x - x - - - . P61R</p> <p><b>N40</b> . x - x - x - . P61R<br/><b>N60</b> . x - x - - - . P61R<br/><b>N80</b> . x - x - - - . P61R</p> <p><b>N100</b> . x - x - - - . P61R<br/><b>N200</b> . x - x - - - . P61R</p>                                    |             |
| <p>1 Dahlander winding<br/>1 rotary direction,<br/>clockwise operation</p>                               | <p>5 48 □ 20A<br/>32A</p> <p>64 □ 32A<br/>50A</p> <p>88 □ 63A<br/>80A<br/>115A</p> <p>132 □ 150A<br/>250A</p> | <p><b>M10H</b> . x x x x x<sup>1)</sup> - . P61RU<br/><b>M20</b> . x x x x - - . P61RU</p> <p><b>N20</b> . x - x - x x . P61RU<br/><b>N33F</b> . x - x - x x<sup>2)</sup> . P61RU</p> <p><b>N40</b> . x - x - x - . P61RU<br/><b>N60</b> . x - x - x - . P61RU<br/><b>N80</b> . x - x - - - . P61RU</p> <p><b>N100</b> . x - x - - - . P61RU<br/><b>N200</b> . x - x - - - . P61RU</p> |             |
| <p>1 Dahlander winding<br/>1 rotary direction,<br/>with auxiliary contacts<br/>for contactor control</p> | <p>5 48 □ 20A<br/>32A</p> <p>64 □ 32A<br/>50A</p> <p>88 □ 63A<br/>80A<br/>115A</p> <p>132 □ 150A<br/>250A</p> | <p><b>M10H</b> . x x x x x<sup>1)</sup> - . P61J<br/><b>M20</b> . x x x x - - . P61J</p> <p><b>N20</b> . x - x - x x . P61J<br/><b>N33F</b> . x - x - x x<sup>2)</sup> . P61J</p> <p><b>N40</b> . x - x - x - . P61J<br/><b>N60</b> . x - x - x - . P61J<br/><b>N80</b> . x - x - - - . P61J</p> <p><b>N100</b> . x - x - - - . P61J<br/><b>N200</b> . x - x - - - . P61J</p>          |             |

**Ordering example:** AC21 32A cast enclosed, multi speed switch, 1 Dahlander winding, 1 rotary direction **N20 G P61**

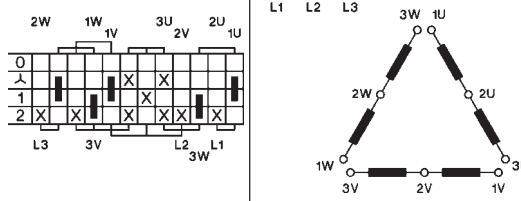
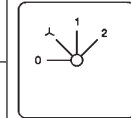
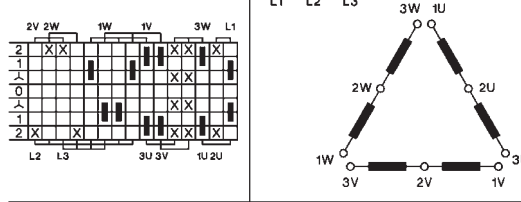
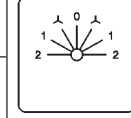
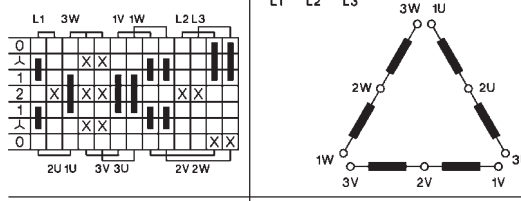
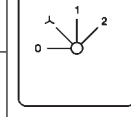
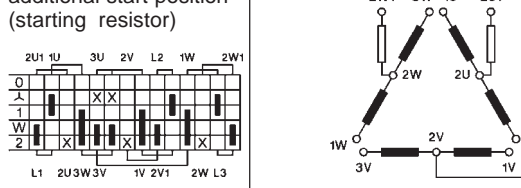
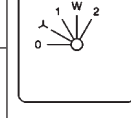
1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description<br>Schaltbild | Wiring diagram | Switching angle | Number of cells<br>↓ Size<br>↓ AC21 | Type | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|---------------------------|----------------|-----------------|-------------------------------------|------|-----------------------------------------------|------------------------|---------------------|
|---------------------------|----------------|-----------------|-------------------------------------|------|-----------------------------------------------|------------------------|---------------------|

Multi speed switches P

|                                                                                                                                                                                                                                               |            |                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |                 |   |        |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|---|--------|---|-----------------|---|--------|-----|---|---|---|---|---|---|--------|-----|---|---|---|---|---|---|--------|------|---|---|---|---|---|---|--------|-----|---|---|---|---|---|---|--------|-----|---|---|---|---|---|---|--------|-----|---|---|---|---|---|---|--------|------|---|---|---|---|---|---|--------|------|---|---|---|---|---|---|--------|---------------------------------------------------------------------------------------|
| <p>open Dahlander winding<br/>1 rotary direction<br/>low speed with<br/>star-delta-start</p>                                                                 | <p>45°</p> | <p>6 48 □ 20A<br/>32A<br/>64 □ 32A<br/>50A<br/>88 □ 63A<br/>80A<br/>115A<br/>132 □ 150A<br/>250A</p>  | <table border="1"> <tr> <td>M10H</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>x<sup>1)</sup></td> <td>-</td> <td>. P91</td> </tr> <tr> <td>M20</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N20</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>x</td> <td>. P91</td> </tr> <tr> <td>N33F</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N40</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N60</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N80</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N100</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91</td> </tr> <tr> <td>N200</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91</td> </tr> </table> | M10H | x               | x | x      | - | x <sup>1)</sup> | - | . P91  | M20 | x | x | x | - | - | - | . P91  | N20 | x | - | x | - | x | x | . P91  | N33F | x | - | x | - | x | - | . P91  | N40 | x | - | x | - | x | - | . P91  | N60 | x | - | x | - | x | - | . P91  | N80 | x | - | x | - | - | - | . P91  | N100 | x | - | x | - | - | - | . P91  | N200 | x | - | x | - | - | - | . P91  |    |
| M10H                                                                                                                                                                                                                                          | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x <sup>1)</sup> | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| M20                                                                                                                                                                                                                                           | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N20                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | x | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N33F                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N40                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N60                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N80                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N100                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N200                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91  |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| <p>open Dahlander winding<br/>both rotary directions<br/>low speed with<br/>star-delta-start</p>                                                             | <p>30°</p> | <p>8 48 □ 20A<br/>32A<br/>64 □ 32A<br/>50A<br/>88 □ 63A<br/>80A<br/>115A<br/>132 □ 150A<br/>250A</p>  | <table border="1"> <tr> <td>M10H</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>M20</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N20</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N33F</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N40</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N60</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N80</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N100</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> <tr> <td>N200</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91R</td> </tr> </table>     | M10H | x               | x | x      | - | -               | - | . P91R | M20 | x | x | x | - | - | - | . P91R | N20 | x | - | x | - | x | - | . P91R | N33F | x | - | x | - | - | - | . P91R | N40 | x | - | x | - | x | - | . P91R | N60 | x | - | x | - | - | - | . P91R | N80 | x | - | x | - | - | - | . P91R | N100 | x | - | x | - | - | - | . P91R | N200 | x | - | x | - | - | - | . P91R |    |
| M10H                                                                                                                                                                                                                                          | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| M20                                                                                                                                                                                                                                           | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N20                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N33F                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N40                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N60                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N80                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N100                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N200                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91R |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| <p>same as type P91<br/>no load return<br/>from 2 to Off</p>                                                                                               | <p>45°</p> | <p>10 48 □ 20A<br/>32A<br/>64 □ 32A<br/>50A<br/>88 □ 63A<br/>80A<br/>115A<br/>132 □ 150A<br/>250A</p> | <table border="1"> <tr> <td>M10H</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>M20</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N20</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N33F</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N40</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N60</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N80</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N100</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> <tr> <td>N200</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91S</td> </tr> </table>     | M10H | -               | - | -      | - | -               | - | . P91S | M20 | - | - | - | - | - | - | . P91S | N20 | x | - | x | - | - | - | . P91S | N33F | x | - | x | - | - | - | . P91S | N40 | x | - | x | - | - | - | . P91S | N60 | x | - | x | - | - | - | . P91S | N80 | x | - | x | - | - | - | . P91S | N100 | - | - | - | - | - | - | . P91S | N200 | - | - | - | - | - | - | . P91S |   |
| M10H                                                                                                                                                                                                                                          | -          | -                                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| M20                                                                                                                                                                                                                                           | -          | -                                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N20                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N33F                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N40                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N60                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N80                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N100                                                                                                                                                                                                                                          | -          | -                                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N200                                                                                                                                                                                                                                          | -          | -                                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91S |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| <p>open Dahlander winding<br/>1 rotary direction,<br/>low speed with<br/>star-delta-start, with<br/>additional start position<br/>(starting resistor)</p>  | <p>30°</p> | <p>7 48 □ 20A<br/>32A<br/>64 □ 32A<br/>50A<br/>88 □ 63A<br/>80A<br/>115A<br/>132 □ 150A<br/>250A</p>  | <table border="1"> <tr> <td>M10H</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>M20</td> <td>x</td> <td>x</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N20</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N33F</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N40</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N60</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N80</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N100</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> <tr> <td>N200</td> <td>x</td> <td>-</td> <td>x</td> <td>-</td> <td>-</td> <td>-</td> <td>. P91W</td> </tr> </table>     | M10H | x               | x | x      | - | -               | - | . P91W | M20 | x | x | x | - | - | - | . P91W | N20 | x | - | x | - | x | - | . P91W | N33F | x | - | x | - | - | - | . P91W | N40 | x | - | x | - | x | - | . P91W | N60 | x | - | x | - | - | - | . P91W | N80 | x | - | x | - | - | - | . P91W | N100 | x | - | x | - | - | - | . P91W | N200 | x | - | x | - | - | - | . P91W |  |
| M10H                                                                                                                                                                                                                                          | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| M20                                                                                                                                                                                                                                           | x          | x                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N20                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N33F                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N40                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | x               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N60                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N80                                                                                                                                                                                                                                           | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N100                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |
| N200                                                                                                                                                                                                                                          | x          | -                                                                                                     | x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -    | -               | - | . P91W |   |                 |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |     |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |      |   |   |   |   |   |   |        |                                                                                       |

Ordering example: AC21 250A panel mounting, multi speed switch, 1 rotary direction, low speed with star-delta-start N200 E P91

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                                                     | Wiring diagram | Switching angle | Number of cells<br>↓ Size<br>↓ AC21 | Type                                                                          | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch program | Escutcheon plate |
|---------------------------------------------------------------------------------|----------------|-----------------|-------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------|----------------|------------------|
| <b>Multi speed switches P</b><br>2 separate windings<br>1 rotary direction      |                | 60°             | 3 48 □ 20A                          | M10H . x x x x x <sup>1)</sup> - . P63<br>M20 . x x x x - - . P63             |                                               |                |                  |
|                                                                                 |                |                 | 64 □ 32A                            | N20 . x - x - x x . P63<br>N33F . x - x - x x <sup>2)</sup> . P63             |                                               |                |                  |
|                                                                                 |                |                 | 88 □ 63A                            | N40 . x - x - x - . P63<br>N60 . x - x - x - . P63<br>N80 . x - x - - - . P63 |                                               |                |                  |
|                                                                                 |                |                 | 132 □ 150A                          | N100 . x - x - - - . P63<br>N200 . x - x - - - . P63                          |                                               |                |                  |
|                                                                                 |                |                 | 250A                                |                                                                               |                                               |                |                  |
| 2 separate windings<br>1 rotary direction                                       |                | 60°             | 3 48 □ 20A                          | M10H . x x x x x <sup>1)</sup> - . P64<br>M20 . x x x x - - . P64             |                                               |                |                  |
|                                                                                 |                |                 | 64 □ 32A                            | N20 . x - x - x x . P64<br>N33F . x - x - x x <sup>2)</sup> . P64             |                                               |                |                  |
|                                                                                 |                |                 | 88 □ 63A                            | N40 . x - x - x - . P64<br>N60 . x - x - x - . P64<br>N80 . x - x - - - . P64 |                                               |                |                  |
|                                                                                 |                |                 | 132 □ 150A                          | N100 . x - x - - - . P64<br>N200 . x - x - - - . P64                          |                                               |                |                  |
|                                                                                 |                |                 | 250A                                |                                                                               |                                               |                |                  |
| 2 separate windings<br>both rotary directions                                   |                | 60°             | 5 48 □ 20A                          | M10H . x x x x x <sup>1)</sup> - . P66<br>M20 . x x x x - - . P66             |                                               |                |                  |
|                                                                                 |                |                 | 64 □ 32A                            | N20 . x - x - x x . P66<br>N33F . x - x - x x <sup>2)</sup> . P66             |                                               |                |                  |
|                                                                                 |                |                 | 88 □ 63A                            | N40 . x - x - x - . P66<br>N60 . x - x - x - . P66<br>N80 . x - x - - - . P66 |                                               |                |                  |
|                                                                                 |                |                 | 132 □ 150A                          | N100 . x - x - - - . P66<br>N200 . x - x - - - . P66                          |                                               |                |                  |
|                                                                                 |                |                 | 250A                                |                                                                               |                                               |                |                  |
| 2 separate windings<br>1 opened<br>1 rotary direction                           |                | 60°             | 4 48 □ 20A                          | M10H . x x x x x <sup>1)</sup> - . P71<br>M20 . x x x x - - . P71             |                                               |                |                  |
|                                                                                 |                |                 | 64 □ 32A                            | N20 . x - x - x x . P71<br>N33F . x - x - x x <sup>2)</sup> . P71             |                                               |                |                  |
|                                                                                 |                |                 | 88 □ 63A                            | N40 . x - x - x - . P71<br>N60 . x - x - x - . P71<br>N80 . x - x - - - . P71 |                                               |                |                  |
|                                                                                 |                |                 | 132 □ 150A                          | N100 . x - x - - - . P71<br>N200 . x - x - - - . P71                          |                                               |                |                  |
|                                                                                 |                |                 | 250A                                |                                                                               |                                               |                |                  |
| 2 separate windings<br>1 rotary direction<br>low speed with<br>star-delta-start |                | 45°             | 6 48 □ 20A                          | M10H . x x x - x <sup>1)</sup> - . P96<br>M20 . x x x - - - . P96             |                                               |                |                  |
|                                                                                 |                |                 | 64 □ 32A                            | N20 . x - x - x x . P96<br>N33F . x - x - x - . P96                           |                                               |                |                  |
|                                                                                 |                |                 | 88 □ 63A                            | N40 . x - x - x - . P96<br>N60 . x - x - x - . P96<br>N80 . x - x - - - . P96 |                                               |                |                  |
|                                                                                 |                |                 | 132 □ 150A                          | N100 . x - x - - - . P96<br>N200 . x - x - - - . P96                          |                                               |                |                  |
|                                                                                 |                |                 | 250A                                |                                                                               |                                               |                |                  |

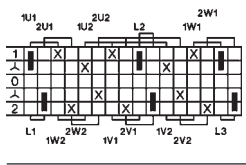
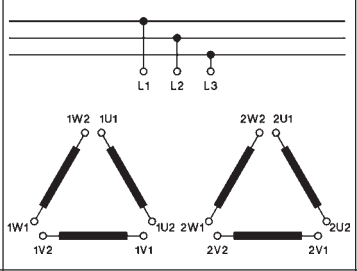
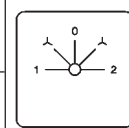
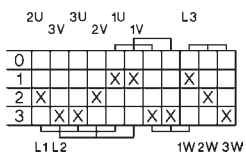
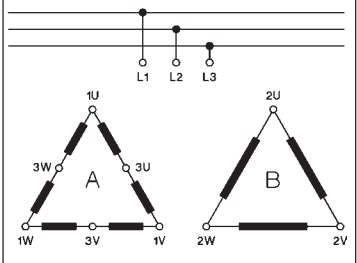
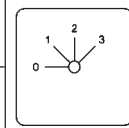
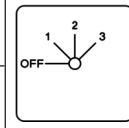
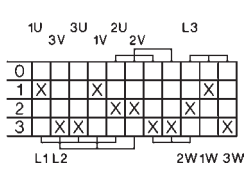
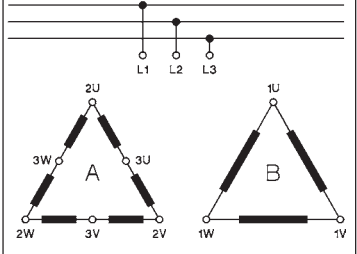
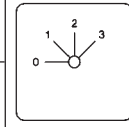
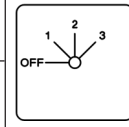
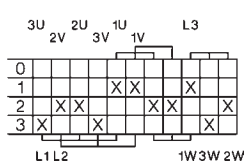
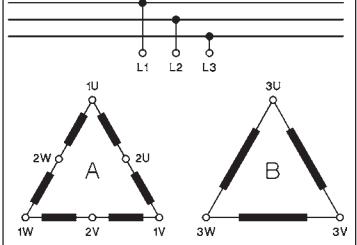
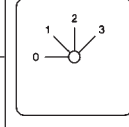
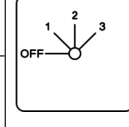
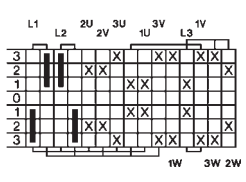
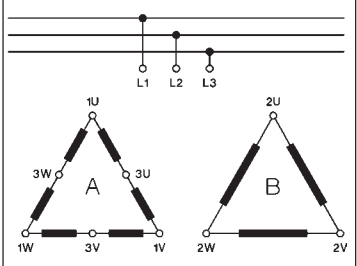
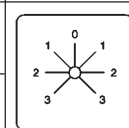
Ordering example: AC21 250A panel mounting, multi speed switch, 2 separate windings, low speed with star-delta-start **N200 E P96**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b> | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|-------------|----------------|-----------------|--------------------------------------------------|------|------------------------------------------------------|------------------------|---------------------|
|-------------|----------------|-----------------|--------------------------------------------------|------|------------------------------------------------------|------------------------|---------------------|

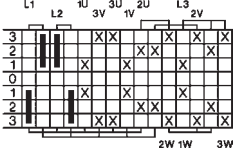
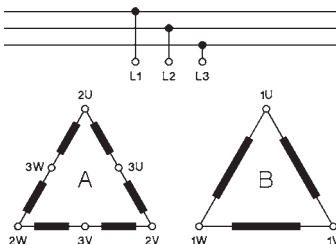
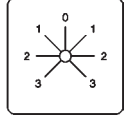
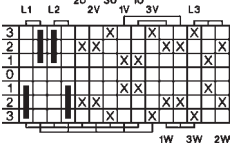
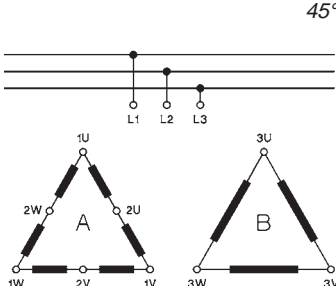
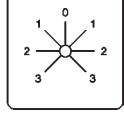
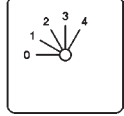
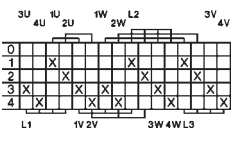
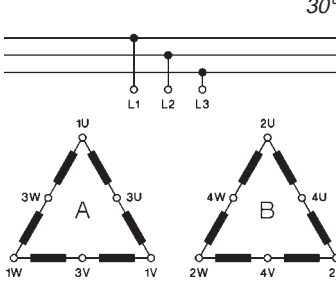
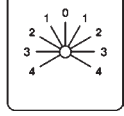
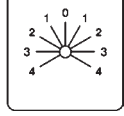
Multi speed switches P

|                                                                                                                                                                                                    |                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |        |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------|-------------|---------------------------|--------|--|-----|------------|-------------|--------|------|-----|------------|-------------|--------|--|-----|-------------|-------------|--------|------|-----|------------|-------------|--------|--|-----|------------|-------------|--------|--|------|------------|-------------|--------|-------|------|-------------|-------------|--------|--|------|-------------|-------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2 separate windings<br/>1 rotary direction<br/>both speeds with<br/>star-delta-start</p>                       | <p>45°</p>    | <p>8</p> <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td><b>M10H</b></td> <td>x x x - - -</td> <td>. P122</td> </tr> <tr> <td></td> <td>32A</td> <td><b>M20</b></td> <td>x x x - - -</td> <td>. P122</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td><b>N20</b></td> <td>x - x - x -</td> <td>. P122</td> </tr> <tr> <td></td> <td>50A</td> <td><b>N33F</b></td> <td>x - x - - -</td> <td>. P122</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td><b>N40</b></td> <td>x - x - x -</td> <td>. P122</td> </tr> <tr> <td></td> <td>80A</td> <td><b>N60</b></td> <td>x - x - - -</td> <td>. P122</td> </tr> <tr> <td></td> <td>115A</td> <td><b>N80</b></td> <td>x - x - - -</td> <td>. P122</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td><b>N100</b></td> <td>x - x - - -</td> <td>. P122</td> </tr> <tr> <td></td> <td>250A</td> <td><b>N200</b></td> <td>x - x - - -</td> <td>. P122</td> </tr> </table>     | 48 □                      | 20A    | <b>M10H</b> | x x x - - -               | . P122 |  | 32A | <b>M20</b> | x x x - - - | . P122 | 64 □ | 32A | <b>N20</b> | x - x - x - | . P122 |  | 50A | <b>N33F</b> | x - x - - - | . P122 | 88 □ | 63A | <b>N40</b> | x - x - x - | . P122 |  | 80A | <b>N60</b> | x - x - - - | . P122 |  | 115A | <b>N80</b> | x - x - - - | . P122 | 132 □ | 150A | <b>N100</b> | x - x - - - | . P122 |  | 250A | <b>N200</b> | x - x - - - | . P122 |                                                                                                         |
| 48 □                                                                                                                                                                                               | 20A                                                                                            | <b>M10H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x x x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 32A                                                                                            | <b>M20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x x x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 64 □                                                                                                                                                                                               | 32A                                                                                            | <b>N20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 50A                                                                                            | <b>N33F</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 88 □                                                                                                                                                                                               | 63A                                                                                            | <b>N40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 80A                                                                                            | <b>N60</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 115A                                                                                           | <b>N80</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 132 □                                                                                                                                                                                              | 150A                                                                                           | <b>N100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 250A                                                                                           | <b>N200</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P122 |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| <p>1 Dahlander winding A<br/>1 normal winding B<br/>3 speeds<br/>1 rotary direction<br/>0-A Δ-B Δ or Δ-A Δ</p>    | <p>45°</p>    | <p>6</p> <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td><b>M10H</b></td> <td>x x x - x<sup>1)</sup> -</td> <td>. P93</td> </tr> <tr> <td></td> <td>32A</td> <td><b>M20</b></td> <td>x x x - - -</td> <td>. P93</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td><b>N20</b></td> <td>x - x - x x</td> <td>. P93</td> </tr> <tr> <td></td> <td>50A</td> <td><b>N33F</b></td> <td>x - x - x -</td> <td>. P93</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td><b>N40</b></td> <td>x - x - x -</td> <td>. P93</td> </tr> <tr> <td></td> <td>80A</td> <td><b>N60</b></td> <td>x - x - x -</td> <td>. P93</td> </tr> <tr> <td></td> <td>115A</td> <td><b>N80</b></td> <td>x - x - - -</td> <td>. P93</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td><b>N100</b></td> <td>x - x - - -</td> <td>. P93</td> </tr> <tr> <td></td> <td>250A</td> <td><b>N200</b></td> <td>x - x - - -</td> <td>. P93</td> </tr> </table> | 48 □                      | 20A    | <b>M10H</b> | x x x - x <sup>1)</sup> - | . P93  |  | 32A | <b>M20</b> | x x x - - - | . P93  | 64 □ | 32A | <b>N20</b> | x - x - x x | . P93  |  | 50A | <b>N33F</b> | x - x - x - | . P93  | 88 □ | 63A | <b>N40</b> | x - x - x - | . P93  |  | 80A | <b>N60</b> | x - x - x - | . P93  |  | 115A | <b>N80</b> | x - x - - - | . P93  | 132 □ | 150A | <b>N100</b> | x - x - - - | . P93  |  | 250A | <b>N200</b> | x - x - - - | . P93  | <br><p>+127</p>      |
| 48 □                                                                                                                                                                                               | 20A                                                                                            | <b>M10H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x x x - x <sup>1)</sup> - | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 32A                                                                                            | <b>M20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x x x - - -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 64 □                                                                                                                                                                                               | 32A                                                                                            | <b>N20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x x               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 50A                                                                                            | <b>N33F</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - x -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 88 □                                                                                                                                                                                               | 63A                                                                                            | <b>N40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 80A                                                                                            | <b>N60</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 115A                                                                                           | <b>N80</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 132 □                                                                                                                                                                                              | 150A                                                                                           | <b>N100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 250A                                                                                           | <b>N200</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P93  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| <p>1 Dahlander winding A<br/>1 normal winding B<br/>3 speeds<br/>1 rotary direction<br/>0-B Δ or Δ-A Δ-A Δ</p>  | <p>45°</p>   | <p>6</p> <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td><b>M10H</b></td> <td>x x x - x<sup>1)</sup> -</td> <td>. P94</td> </tr> <tr> <td></td> <td>32A</td> <td><b>M20</b></td> <td>x x x - - -</td> <td>. P94</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td><b>N20</b></td> <td>x - x - x -</td> <td>. P94</td> </tr> <tr> <td></td> <td>50A</td> <td><b>N33F</b></td> <td>x - x - x -</td> <td>. P94</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td><b>N40</b></td> <td>x - x - x -</td> <td>. P94</td> </tr> <tr> <td></td> <td>80A</td> <td><b>N60</b></td> <td>x - x - x -</td> <td>. P94</td> </tr> <tr> <td></td> <td>115A</td> <td><b>N80</b></td> <td>x - x - - -</td> <td>. P94</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td><b>N100</b></td> <td>x - x - - -</td> <td>. P94</td> </tr> <tr> <td></td> <td>250A</td> <td><b>N200</b></td> <td>x - x - - -</td> <td>. P94</td> </tr> </table> | 48 □                      | 20A    | <b>M10H</b> | x x x - x <sup>1)</sup> - | . P94  |  | 32A | <b>M20</b> | x x x - - - | . P94  | 64 □ | 32A | <b>N20</b> | x - x - x - | . P94  |  | 50A | <b>N33F</b> | x - x - x - | . P94  | 88 □ | 63A | <b>N40</b> | x - x - x - | . P94  |  | 80A | <b>N60</b> | x - x - x - | . P94  |  | 115A | <b>N80</b> | x - x - - - | . P94  | 132 □ | 150A | <b>N100</b> | x - x - - - | . P94  |  | 250A | <b>N200</b> | x - x - - - | . P94  | <br><p>+127</p>   |
| 48 □                                                                                                                                                                                               | 20A                                                                                            | <b>M10H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x x x - x <sup>1)</sup> - | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 32A                                                                                            | <b>M20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x x x - - -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 64 □                                                                                                                                                                                               | 32A                                                                                            | <b>N20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 50A                                                                                            | <b>N33F</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - x -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 88 □                                                                                                                                                                                               | 63A                                                                                            | <b>N40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 80A                                                                                            | <b>N60</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 115A                                                                                           | <b>N80</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 132 □                                                                                                                                                                                              | 150A                                                                                           | <b>N100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 250A                                                                                           | <b>N200</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P94  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| <p>1 Dahlander winding A<br/>1 normal winding B<br/>3 speeds<br/>1 rotary direction<br/>0-A Δ-A Δ-B Δ or Δ</p>  | <p>45°</p>  | <p>6</p> <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td><b>M10H</b></td> <td>x x x - x<sup>1)</sup> -</td> <td>. P95</td> </tr> <tr> <td></td> <td>32A</td> <td><b>M20</b></td> <td>x x x - - -</td> <td>. P95</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td><b>N20</b></td> <td>x - x - x x</td> <td>. P95</td> </tr> <tr> <td></td> <td>50A</td> <td><b>N33F</b></td> <td>x - x - x -</td> <td>. P95</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td><b>N40</b></td> <td>x - x - x -</td> <td>. P95</td> </tr> <tr> <td></td> <td>80A</td> <td><b>N60</b></td> <td>x - x - x -</td> <td>. P95</td> </tr> <tr> <td></td> <td>115A</td> <td><b>N80</b></td> <td>x - x - - -</td> <td>. P95</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td><b>N100</b></td> <td>x - x - - -</td> <td>. P95</td> </tr> <tr> <td></td> <td>250A</td> <td><b>N200</b></td> <td>x - x - - -</td> <td>. P95</td> </tr> </table> | 48 □                      | 20A    | <b>M10H</b> | x x x - x <sup>1)</sup> - | . P95  |  | 32A | <b>M20</b> | x x x - - - | . P95  | 64 □ | 32A | <b>N20</b> | x - x - x x | . P95  |  | 50A | <b>N33F</b> | x - x - x - | . P95  | 88 □ | 63A | <b>N40</b> | x - x - x - | . P95  |  | 80A | <b>N60</b> | x - x - x - | . P95  |  | 115A | <b>N80</b> | x - x - - - | . P95  | 132 □ | 150A | <b>N100</b> | x - x - - - | . P95  |  | 250A | <b>N200</b> | x - x - - - | . P95  | <br><p>+127</p>  |
| 48 □                                                                                                                                                                                               | 20A                                                                                            | <b>M10H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x x x - x <sup>1)</sup> - | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 32A                                                                                            | <b>M20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x x x - - -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 64 □                                                                                                                                                                                               | 32A                                                                                            | <b>N20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x x               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 50A                                                                                            | <b>N33F</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - x -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 88 □                                                                                                                                                                                               | 63A                                                                                            | <b>N40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 80A                                                                                            | <b>N60</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - x -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 115A                                                                                           | <b>N80</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 132 □                                                                                                                                                                                              | 150A                                                                                           | <b>N100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 250A                                                                                           | <b>N200</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P95  |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| <p>1 Dahlander winding A<br/>1 normal winding B<br/>3 speeds<br/>both rotary directions</p>                     | <p>45°</p>  | <p>9</p> <table border="1"> <tr> <td>48 □</td> <td>20A</td> <td><b>M10H</b></td> <td>x x x - - -</td> <td>. P93R</td> </tr> <tr> <td></td> <td>32A</td> <td><b>M20</b></td> <td>x x x - - -</td> <td>. P93R</td> </tr> <tr> <td>64 □</td> <td>32A</td> <td><b>N20</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td></td> <td>50A</td> <td><b>N33F</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td>88 □</td> <td>63A</td> <td><b>N40</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td></td> <td>80A</td> <td><b>N60</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td></td> <td>115A</td> <td><b>N80</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td>132 □</td> <td>150A</td> <td><b>N100</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> <tr> <td></td> <td>250A</td> <td><b>N200</b></td> <td>x - x - - -</td> <td>. P93R</td> </tr> </table>     | 48 □                      | 20A    | <b>M10H</b> | x x x - - -               | . P93R |  | 32A | <b>M20</b> | x x x - - - | . P93R | 64 □ | 32A | <b>N20</b> | x - x - - - | . P93R |  | 50A | <b>N33F</b> | x - x - - - | . P93R | 88 □ | 63A | <b>N40</b> | x - x - - - | . P93R |  | 80A | <b>N60</b> | x - x - - - | . P93R |  | 115A | <b>N80</b> | x - x - - - | . P93R | 132 □ | 150A | <b>N100</b> | x - x - - - | . P93R |  | 250A | <b>N200</b> | x - x - - - | . P93R |                                                                                                       |
| 48 □                                                                                                                                                                                               | 20A                                                                                            | <b>M10H</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x x x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 32A                                                                                            | <b>M20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x x x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 64 □                                                                                                                                                                                               | 32A                                                                                            | <b>N20</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 50A                                                                                            | <b>N33F</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 88 □                                                                                                                                                                                               | 63A                                                                                            | <b>N40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 80A                                                                                            | <b>N60</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 115A                                                                                           | <b>N80</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
| 132 □                                                                                                                                                                                              | 150A                                                                                           | <b>N100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |
|                                                                                                                                                                                                    | 250A                                                                                           | <b>N200</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | x - x - - -               | . P93R |             |                           |        |  |     |            |             |        |      |     |            |             |        |  |     |             |             |        |      |     |            |             |        |  |     |            |             |        |  |      |            |             |        |       |      |             |             |        |  |      |             |             |        |                                                                                                                                                                                            |

Ordering example: AC21 250A panel mounting, multi speed switch, 1 Dahlander winding A, 1 normal winding B, 3 speeds, both rotary directions **N200 E P93R**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                                                                                                                                                | Wiring diagram                                                                     | Switching angle                                                                     | Number of cells<br>↓ Size<br>↓ AC21 | Type               | Design<br>see page 6-8<br>E. Z. V. SMA. P. G.                                       | Switch program                                                                        | Escutcheon plate                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|--------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Multi speed switches P</b>                                                                                                                                              |                                                                                    |                                                                                     |                                     |                    |                                                                                     |                                                                                       |                                                                                       |
| 1 Dahlander winding A<br>1 normal winding B<br>3 speeds<br>both rotary directions<br><br> |   | 45°                                                                                 | 9                                   | 48 □ 20A<br>32A    | M10H . x x x - - - . P94R<br>M20 . x x x - - - . P94R                               |    |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 64 □                                | 32A<br>50A         | N20 . x - x - - - . P94R<br>N33F . x - x - - - . P94R                               |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 88 □                                | 63A<br>80A<br>115A | N40 . x - x - - - . P94R<br>N60 . x - x - - - . P94R<br>N80 . x - x - - - . P94R    |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 132 □                               | 150A<br>250A       | N100 . x - x - - - . P94R<br>N200 . x - x - - - . P94R                              |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 8                                   | 48 □ 20A<br>32A    | M10H . x x x - - - . P95R<br>M20 . x x x - - - . P95R                               |                                                                                       |                                                                                       |
| 1 Dahlander winding A<br>1 normal winding B<br>3 speeds<br>both rotary directions<br><br> |   | 45°                                                                                 | 64 □                                | 32A<br>50A         | N20 . x - x - x - . P95R<br>N33F . x - x - - - . P95R                               |    |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 88 □                                | 63A<br>80A<br>115A | N40 . x - x - x - . P95R<br>N60 . x - x - - - . P95R<br>N80 . x - x - - - . P95R    |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 132 □                               | 150A<br>250A       | N100 . x - x - - - . P95R<br>N200 . x - x - - - . P95R                              |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 8                                   | 48 □ 20A<br>32A    | M10H . x x x - - - . P124<br>M20 . x x x - - - . P124                               |                                                                                       |   |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 64 □                                | 32A<br>50A         | N20 . x - x - x - . P124<br>N33F . x - x - - - . P124                               |                                                                                       |                                                                                       |
| 88 □                                                                                                                                                                       | 63A<br>80A<br>115A                                                                 | N40 . x - x - x - . P124<br>N60 . x - x - - - . P124<br>N80 . x - x - - - . P124    |                                     |                    |                                                                                     |                                                                                       |                                                                                       |
| 132 □                                                                                                                                                                      | 150A<br>250A                                                                       | N100 . x - x - - - . P124<br>N200 . x - x - - - . P124                              |                                     |                    |                                                                                     |                                                                                       |                                                                                       |
| 2 Dahlander windings<br>4 speeds<br>1 rotary direction<br>0-AΔ-BΔ-AΔ-BΔ<br><br>         |  | 30°                                                                                 | 12                                  | 48 □ 20A<br>32A    | M10H . x x x - - - . P124R<br>M20 . x x x - - - . P124R                             |  |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 64 □                                | 32A<br>50A         | N20 . x - x - - - . P124R<br>N33F . x - x - - - . P124R                             |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 88 □                                | 63A<br>80A<br>115A | N40 . x - x - - - . P124R<br>N60 . x - x - - - . P124R<br>N80 . x - x - - - . P124R |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 132 □                               | 150A<br>250A       | N100 . x - x - - - . P124R<br>N200 . x - x - - - . P124R                            |                                                                                       |                                                                                       |
|                                                                                                                                                                            |                                                                                    |                                                                                     | 12                                  | 48 □ 20A<br>32A    | M10H . x x x - - - . P124R<br>M20 . x x x - - - . P124R                             |                                                                                       |  |
| 64 □                                                                                                                                                                       | 32A<br>50A                                                                         | N20 . x - x - - - . P124R<br>N33F . x - x - - - . P124R                             |                                     |                    |                                                                                     |                                                                                       |                                                                                       |
| 88 □                                                                                                                                                                       | 63A<br>80A<br>115A                                                                 | N40 . x - x - - - . P124R<br>N60 . x - x - - - . P124R<br>N80 . x - x - - - . P124R |                                     |                    |                                                                                     |                                                                                       |                                                                                       |
| 132 □                                                                                                                                                                      | 150A<br>250A                                                                       | N100 . x - x - - - . P124R<br>N200 . x - x - - - . P124R                            |                                     |                    |                                                                                     |                                                                                       |                                                                                       |

Ordering example: AC21 250A Base mounting, multi speed switch, 2 Dahlander windings, 4 speeds, 1 rotary direction **N200 V P124**

Switching programs

| Description                                             | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                                   | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|---------------------------------------------------------|----------------|-----------------|-------------------------------------------|----------------------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Changeover switches with spring return to off UR</b> |                |                 |                                           |                                        |                                               |                        |                     |
| 1-pole                                                  |                | 30°             | 1 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . UR1 |                                               |                        |                     |
|                                                         |                |                 | 32A                                       | M20 . x x x x - - . UR1                |                                               |                        |                     |
|                                                         |                |                 | 64 □ 32A                                  | N20 . x - x - x x . UR1                |                                               |                        |                     |
|                                                         |                |                 | 50A                                       | N33F . x - x - x x <sup>2)</sup> . UR1 |                                               |                        |                     |
|                                                         |                |                 | 88 □ 63A                                  | N40 . x - x - x - . UR1                |                                               |                        | +264<br>            |
| 2-pole                                                  |                | 30°             | 2 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . UR2 |                                               |                        |                     |
|                                                         |                |                 | 32A                                       | M20 . x x x x - - . UR2                |                                               |                        |                     |
|                                                         |                |                 | 64 □ 32A                                  | N20 . x - x - x x . UR2                |                                               |                        |                     |
|                                                         |                |                 | 50A                                       | N33F . x - x - x x <sup>2)</sup> . UR2 |                                               |                        |                     |
|                                                         |                |                 | 88 □ 63A                                  | N40 . x - x - x - . UR2                |                                               |                        | +264<br>            |
| 3-pole                                                  |                | 30°             | 3 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . UR3 |                                               |                        |                     |
|                                                         |                |                 | 32A                                       | M20 . x x x x - - . UR3                |                                               |                        |                     |
|                                                         |                |                 | 64 □ 32A                                  | N20 . x - x - x x . UR3                |                                               |                        |                     |
|                                                         |                |                 | 50A                                       | N33F . x - x - x x <sup>2)</sup> . UR3 |                                               |                        |                     |
|                                                         |                |                 | 88 □ 63A                                  | N40 . x - x - x - . UR3                |                                               |                        | +264<br>            |

Changeover switches with 1 latched and 1 momentary position UK

|                                                                  |  |         |            |                                        |  |  |  |
|------------------------------------------------------------------|--|---------|------------|----------------------------------------|--|--|--|
| 1-pole<br>position 1 latched<br>position 2 with spring<br>return |  | 60°+30° | 1 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . UK1 |  |  |  |
|                                                                  |  |         | 32A        | M20 . x x x x - - . UK1                |  |  |  |
|                                                                  |  |         | 64 □ 32A   | N20 . x - x - x x . UK1                |  |  |  |
|                                                                  |  |         | 50A        | N33F . x - x - x x <sup>2)</sup> . UK1 |  |  |  |
|                                                                  |  |         | 88 □ 63A   | N40 . x - x - x - . UK1                |  |  |  |
| 2-pole<br>position 1 latched<br>position 2 with spring<br>return |  | 60°+30° | 2 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . UK2 |  |  |  |
|                                                                  |  |         | 32A        | M20 . x x x x - - . UK2                |  |  |  |
|                                                                  |  |         | 64 □ 32A   | N20 . x - x - x x . UK2                |  |  |  |
|                                                                  |  |         | 50A        | N33F . x - x - x x <sup>2)</sup> . UK2 |  |  |  |
|                                                                  |  |         | 88 □ 63A   | N40 . x - x - x - . UK2                |  |  |  |
| 3-pole<br>position 1 latched<br>position 2 with spring<br>return |  | 60°+30° | 3 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . UK3 |  |  |  |
|                                                                  |  |         | 32A        | M20 . x x x x - - . UK3                |  |  |  |
|                                                                  |  |         | 64 □ 32A   | N20 . x - x - x x . UK3                |  |  |  |
|                                                                  |  |         | 50A        | N33F . x - x - x x <sup>2)</sup> . UK3 |  |  |  |
|                                                                  |  |         | 88 □ 63A   | N40 . x - x - x - . UK3                |  |  |  |

Ordering example: AC21 63A panel mounting, changeover switch, position 1 latched, position 2 with spring return, 3-pole: **N40 E UK3**

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch program | Escutcheon plate |
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|----------------|------------------|
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|----------------|------------------|

### Double throw switches with spring return to off WR

|          |                                |     |                 |                                                                                 |  |
|----------|--------------------------------|-----|-----------------|---------------------------------------------------------------------------------|--|
| 1-pole   |                                | 30° | 1 48 □ 20A      | <b>M10H</b> . x x x x x <sup>1)</sup> - . W1R                                   |  |
|          |                                |     | 32A             | <b>M20</b> . x x x x - - . W1R                                                  |  |
|          |                                |     | 64 □ 32A<br>50A | <b>N20</b> . x - x - x x . W1R<br><b>N33F</b> . x - x - x x <sup>2)</sup> . W1R |  |
| 88 □ 63A | <b>N40</b> . x - x - x - . W1R |     |                 |                                                                                 |  |
| 2-pole   |                                | 30° | 2 48 □ 20A      | <b>M10H</b> . x x x x x <sup>1)</sup> - . W2R                                   |  |
|          |                                |     | 32A             | <b>M20</b> . x x x x - - . W2R                                                  |  |
|          |                                |     | 64 □ 32A<br>50A | <b>N20</b> . x - x - x x . W2R<br><b>N33F</b> . x - x - x x <sup>2)</sup> . W2R |  |
| 88 □ 63A | <b>N40</b> . x - x - x - . W2R |     |                 |                                                                                 |  |
| 3-pole   |                                | 30° | 3 48 □ 20A      | <b>M10H</b> . x x x x x <sup>1)</sup> - . W3R                                   |  |
|          |                                |     | 32A             | <b>M20</b> . x x x x - - . W3R                                                  |  |
|          |                                |     | 64 □ 32A<br>50A | <b>N20</b> . x - x - x x . W3R<br><b>N33F</b> . x - x - x x <sup>2)</sup> . W3R |  |
| 88 □ 63A | <b>N40</b> . x - x - x - . W3R |     |                 |                                                                                 |  |

### Start-Stop switches S

|                      |  |     |                                              |                                                                                 |  |
|----------------------|--|-----|----------------------------------------------|---------------------------------------------------------------------------------|--|
| Start-switch, 1-pole |  | 30° | 1 48 □ 20A                                   | <b>M10H</b> . x x x x x <sup>1)</sup> - . SE                                    |  |
|                      |  |     | 32A                                          | <b>M20</b> . x x x x - - . SE                                                   |  |
| 64 □ 32A<br>50A      |  |     | <b>N20</b> . x - x - x x . SE                |                                                                                 |  |
|                      |  |     | <b>N33F</b> . x - x - x x <sup>2)</sup> . SE |                                                                                 |  |
| Start-switch, 2-pole |  | 30° | 1 48 □ 20A                                   | <b>M10H</b> . x x x x x <sup>1)</sup> - . S2E                                   |  |
|                      |  |     | 32A                                          | <b>M20</b> . x x x x - - . S2E                                                  |  |
|                      |  |     | 64 □ 32A<br>50A                              | <b>N20</b> . x - x - x x . S2E<br><b>N33F</b> . x - x - x x <sup>2)</sup> . S2E |  |
| Start-switch, 3-pole |  | 30° | 2 48 □ 20A                                   | <b>M10H</b> . x x x x x <sup>1)</sup> - . S3E                                   |  |
|                      |  |     | 32A                                          | <b>M20</b> . x x x x - - . S3E                                                  |  |
|                      |  |     | 64 □ 32A<br>50A                              | <b>N20</b> . x - x - x x . S3E<br><b>N33F</b> . x - x - x x <sup>2)</sup> . S3E |  |

Bestellbeispiel: AC21 50A base mounting, Start-switch, 3-pole

N33F V S3E

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                                                   | Wiring diagram | Switching angle | Number of cells<br>↓ Size<br>↓ AC21              | Type            | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|-------------------------------------------------------------------------------|----------------|-----------------|--------------------------------------------------|-----------------|-----------------------------------------------|------------------------|---------------------|
| <b>Stop-switch, 1-pole</b>                                                    |                | 30°             | 1 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . SA<br>. SA           |                     |
| <b>Stop-switch, 2-pole</b>                                                    |                | 30°             | 1 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . S2A<br>. S2A         |                     |
| <b>Stop-switch, 3-pole</b>                                                    |                | 30°             | 2 48 □ 20A<br>32A<br>64 □ 32A<br>50A<br>88 □ 63A | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . S3A<br>. S3A         |                     |
| <b>Start-Stop-switch, 1-pole</b>                                              |                | 30°             | 1 48 □ 20A<br>32A<br>64 □ 32A<br>50A             | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . SEA<br>. SEA         |                     |
| <b>Start-Stop-switch, 1-pole position START with spring return to 1</b>       |                | 90°+30°         | 1 48 □ 20A<br>32A<br>64 □ 32A<br>50A             | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . S392<br>. S392       |                     |
| <b>Start-Stop-switch, 1-pole for reversing contactors</b>                     |                | 60°+30°         | 2 48 □ 20A<br>32A<br>64 □ 32A<br>50A             | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . S2EA<br>. S2EA       |                     |
| <b>Start-Stop-switch, 1-pole for reversing contactors with limit switches</b> |                | 30°             | 2 48 □ 20A<br>32A<br>64 □ 32A<br>50A             | M10H .<br>M20 . | x x x x x <sup>1)</sup> -<br>x x x x - -      | . S22<br>. S22         |                     |

Ordering example: AC21 50A panel mounting, Start-Stop-switch, 1-pole for reversing contactors

N33F E S2EA

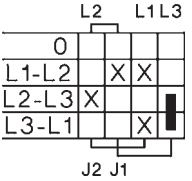
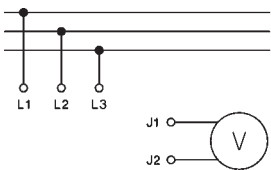
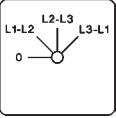
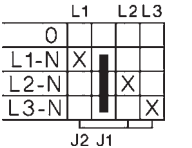
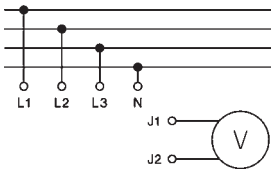
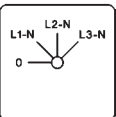
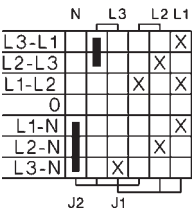
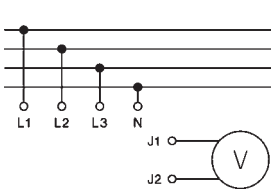
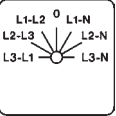
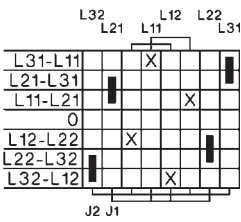
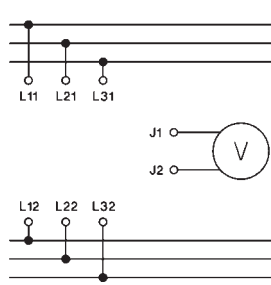
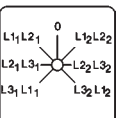
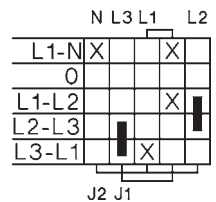
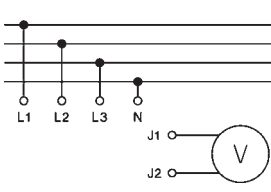
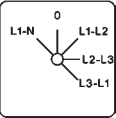
- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.



## Switching programs

| Description | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b> | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|-------------|----------------|-----------------|--------------------------------------------------|------|------------------------------------------------------|------------------------|---------------------|
|-------------|----------------|-----------------|--------------------------------------------------|------|------------------------------------------------------|------------------------|---------------------|

### Voltmeter selector switches V

|                                                                                                                                             |                                                                                     |     |                                          |                                                                                                                                                                                                    |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>3 line voltages</b><br><br>                             |    | 45° | 2 48 □ 20A<br>32A<br><br>64 □ 32A<br>50A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>V3</b><br><b>M20</b> . x x x x - - . <b>V3</b><br><br><b>N20</b> . x - x - x x . <b>V3</b><br><b>N33F</b> . x x x - x x <sup>2)</sup> . <b>V3</b>     |    |
| <b>3 phase voltages</b><br><br>                            |    | 45° | 2 48 □ 20A<br>32A<br><br>64 □ 32A<br>50A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>V0</b><br><b>M20</b> . x x x x - - . <b>V0</b><br><br><b>N20</b> . x - x - x x . <b>V0</b><br><b>N33F</b> . x x x - x x <sup>2)</sup> . <b>V0</b>     |    |
| <b>3 line voltages and<br/>3 phase voltages</b><br><br>   |   | 30° | 3 48 □ 20A<br>32A<br><br>64 □ 32A<br>50A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>V1</b><br><b>M20</b> . x x x x - - . <b>V1</b><br><br><b>N20</b> . x - x - x x . <b>V1</b><br><b>N33F</b> . x x x - x x <sup>2)</sup> . <b>V1</b>     |   |
| <b>2 3-phase systems<br/>2 x 3 line voltages</b><br><br> |  | 45° | 4 48 □ 20A<br>32A<br><br>64 □ 32A<br>50A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>V32</b><br><b>M20</b> . x x x x - - . <b>V32</b><br><br><b>N20</b> . x - x - x x . <b>V32</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>V32</b> |  |
| <b>3 line voltages and<br/>1 phase voltage</b><br><br>   |  | 45° | 3 48 □ 20A<br>32A<br><br>64 □ 32A<br>50A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>V13</b><br><b>M20</b> . x x x x - - . <b>V13</b><br><br><b>N20</b> . x - x - x x . <b>V13</b><br><b>N33F</b> . x x x - x x <sup>2)</sup> . <b>V13</b> |  |

**Ordering example:** AC21 50A panel mounting, Voltmeter selector switch, 3 line voltages and 1 phase voltage

**N33F E V13**

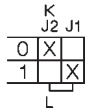
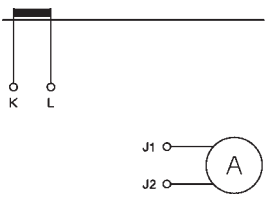
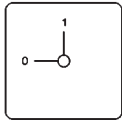
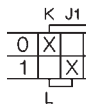
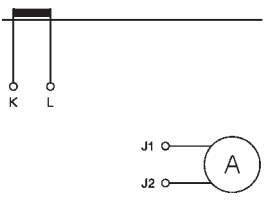
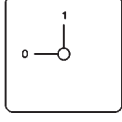
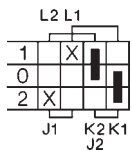
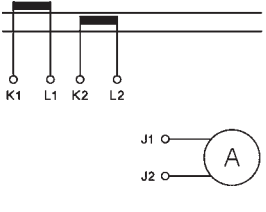
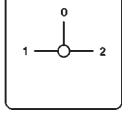
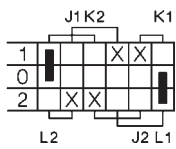
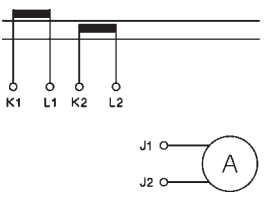
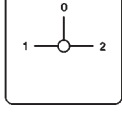
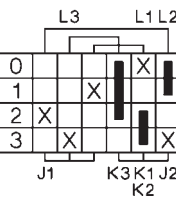
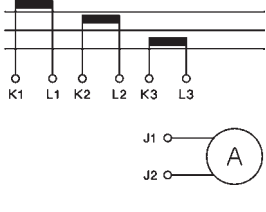
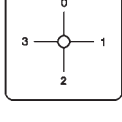
1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|------------------------|---------------------|
|-------------|----------------|-----------------|-------------------------------------------|------|-----------------------------------------------|------------------------|---------------------|

Ammeter selector switches M

|                                                                                                                                                                                                |                                                                                     |     |   |                         |                                                                               |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|---|-------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>1-pole, for<br/>current transformer</b><br><br>                                                            |    | 90° | 1 | 48 □ 20A<br>32A         | M10H . x x x x x <sup>1)</sup> - . M11<br>M20 . x x x x - - . M11             |    |
|                                                                                                                                                                                                |                                                                                     |     |   | 64 □ 32A<br>50A         | N20 . x - x - x x . M11<br>N33F . x x x - x x <sup>2)</sup> . M11             |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 88 □ 63A                | N40 . x - x - x - . M11                                                       |                                                                                       |
| <b>2-pole, for<br/>1 current transformer<br/>or direct current<br/>measurement</b><br><br>                    |    | 90° | 2 | 48 □ 20A<br>32A         | M10H . x x x x x <sup>1)</sup> - . M12<br>M20 . x x x x - - . M12             |    |
|                                                                                                                                                                                                |                                                                                     |     |   | 64 □ 32A<br>50A         | N20 . x - x - x x . M12<br>N33F . x x x - x x <sup>2)</sup> . M12             |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 88 □ 63A<br>80A<br>115A | N40 . x - x - x - . M12<br>N60 . x - x - x - . M12<br>N80 . x - x - - - . M12 |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 132 □ 150A<br>250A      | N100 . x - x - - - . M12<br>N200 . x - x - - - . M12                          |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   |                         |                                                                               |                                                                                       |
| <b>1-pole, for<br/>2 current transformers</b><br><br>                                                       |   | 90° | 2 | 48 □ 20A<br>32A         | M10H . x x x x x <sup>1)</sup> - . M21<br>M20 . x x x x - - . M21             |   |
|                                                                                                                                                                                                |                                                                                     |     |   | 64 □ 32A<br>50A         | N20 . x - x - x x . M21<br>N33F . x x x - x x <sup>2)</sup> . M21             |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 88 □ 63A                | N40 . x - x - x - . M21                                                       |                                                                                       |
| <b>2-pole, for<br/>2 current transformers<br/>or direct current<br/>measurement<br/>in 2 phases</b><br><br> |  | 90° | 3 | 48 □ 20A<br>32A         | M10H . x x x x x <sup>1)</sup> - . M22<br>M20 . x x x x - - . M22             |  |
|                                                                                                                                                                                                |                                                                                     |     |   | 64 □ 32A<br>50A         | N20 . x - x - x x . M22<br>N33F . x x x - x x <sup>2)</sup> . M22             |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 88 □ 63A<br>80A<br>115A | N40 . x - x - x - . M22<br>N60 . x - x - x - . M22<br>N80 . x - x - - - . M22 |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 132 □ 150A<br>250A      | N100 . x - x - - - . M22<br>N200 . x - x - - - . M22                          |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   |                         |                                                                               |                                                                                       |
| <b>1-pole, for<br/>3 current transformers</b><br><br>                                                       |  | 90° | 3 | 48 □ 20A<br>32A         | M10H . x x x x x <sup>1)</sup> - . M31<br>M20 . x x x x - - . M31             |  |
|                                                                                                                                                                                                |                                                                                     |     | 4 | 64 □ 32A<br>50A         | N20 . x - x - x x . M31<br>N33F . x - x - x x <sup>2)</sup> . M31             |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   | 88 □ 63A                | N40 . x - x - x - . M31                                                       |                                                                                       |
|                                                                                                                                                                                                |                                                                                     |     |   |                         |                                                                               |                                                                                       |

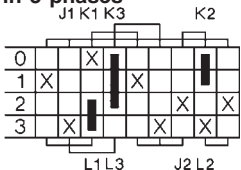
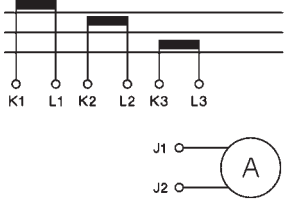
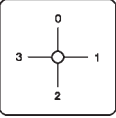
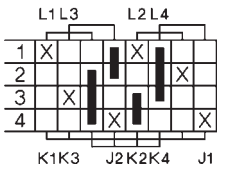
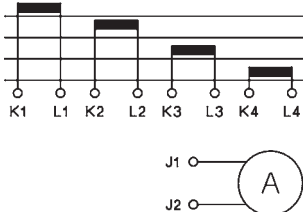
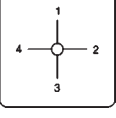
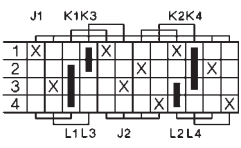
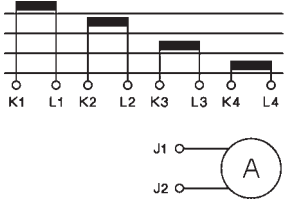
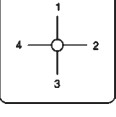
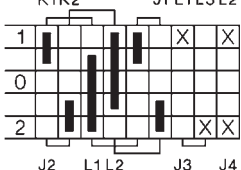
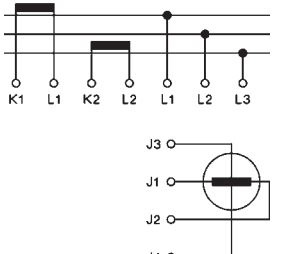
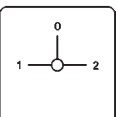
Ordering example: AC21 63A panel mounting, ammeter selector switch, for 3 current transformers 1-pole

N40 V M31

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

**Switching programs**

| Description                                                                                                                                                                                | Wiring diagram                                                                      | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type               | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b>                                                                    | Switch<br>pro-<br>gram                                                                | Escutcheon<br>plate |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|--------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------|
| <b>Ammeter selector switches M</b>                                                                                                                                                         |                                                                                     |                 |                                                  |                    |                                                                                                                         |                                                                                       |                     |
| <b>2-pole, for<br/>3 current transformers<br/>or direct current<br/>measurement<br/>in 3 phases</b><br>   |    | 90°             | 6                                                | 48 □ 20A<br>32A    | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>M32</b><br><b>M20</b> . x x x - - - . <b>M32</b>                           |    |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 64 □                                             | 32A<br>50A         | <b>N20</b> . x - x - x x . <b>M32</b><br><b>N33F</b> . x - x - x - . <b>M32</b>                                         |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 88 □                                             | 63A<br>80A<br>115A | <b>N40</b> . x - x - x - . <b>M32</b><br><b>N60</b> . x - x - x - . <b>M32</b><br><b>N80</b> . x - x - - - . <b>M32</b> |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 132 □                                            | 150A<br>250A       | <b>N100</b> . x - x - - - . <b>M32</b><br><b>N200</b> . x - x - - - . <b>M32</b>                                        |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 |                                                  |                    |                                                                                                                         |                                                                                       |                     |
| <b>1-pole, for<br/>4 current transformers</b><br>                                                         |    | 90°             | 4                                                | 48 □ 20A<br>32A    | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>M41</b><br><b>M20</b> . x x x x - - . <b>M41</b>                           |    |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 64 □                                             | 32A<br>50A         | <b>N20</b> . x - x - x x . <b>M41</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>M41</b>                           |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 88 □                                             | 63A                | <b>N40</b> . x - x - x - . <b>M41</b>                                                                                   |                                                                                       |                     |
| <b>2-pole, for<br/>4 current transformers<br/>or direct current<br/>measurement<br/>in 4 phases</b><br> |   | 90°             | 6                                                | 48 □ 20A<br>32A    | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>M42</b><br><b>M20</b> . x x x - - - . <b>M42</b>                           |   |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 64 □                                             | 32A<br>50A         | <b>N20</b> . x - x - x x . <b>M42</b><br><b>N33F</b> . x - x - x - . <b>M42</b>                                         |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 88 □                                             | 63A<br>80A<br>115A | <b>N40</b> . x - x - x - . <b>M42</b><br><b>N60</b> . x - x - x - . <b>M42</b><br><b>N80</b> . x - x - - - . <b>M42</b> |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 132 □                                            | 150A<br>250A       | <b>N100</b> . x - x - - - . <b>M42</b><br><b>N200</b> . x - x - - - . <b>M42</b>                                        |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 |                                                  |                    |                                                                                                                         |                                                                                       |                     |
| <b>f. output measurement<br/>in 3-phase systems by<br/>2-wattmeter method</b><br>                       |  | 90°             | 5                                                | 48 □ 20A<br>32A    | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>M2W</b><br><b>M20</b> . x x x x - - . <b>M2W</b>                           |  |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 64 □                                             | 32A<br>50A         | <b>N20</b> . x - x - x x . <b>M2W</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>M2W</b>                           |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 88 □                                             | 63A<br>80A<br>115A | <b>N40</b> . x - x - x - . <b>M2W</b><br><b>N60</b> . x - x - x - . <b>M2W</b><br><b>N80</b> . x - x - - - . <b>M2W</b> |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 | 132 □                                            | 150A<br>250A       | <b>N100</b> . x - x - - - . <b>M2W</b><br><b>N200</b> . x - x - - - . <b>M2W</b>                                        |                                                                                       |                     |
|                                                                                                                                                                                            |                                                                                     |                 |                                                  |                    |                                                                                                                         |                                                                                       |                     |

Ordering example: AC21 63A panel mounting, ammeter selector switch, for 4 current transformers 1-pole

**N40 V M41**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

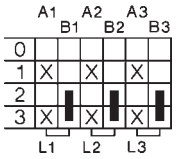
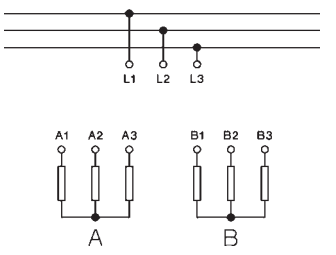
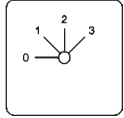
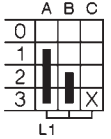
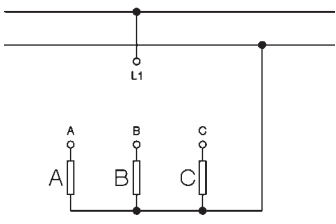
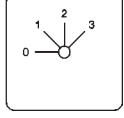
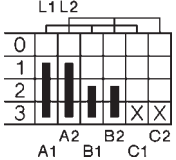
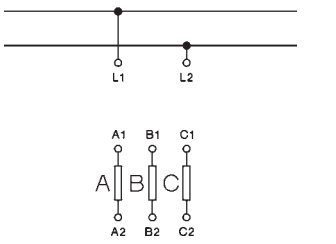
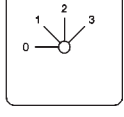
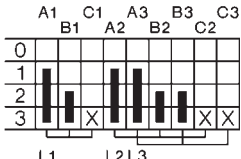
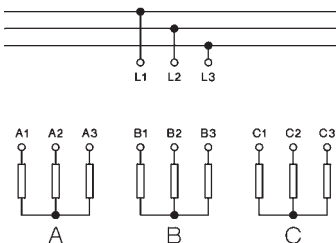
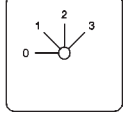
Switching programs

| Description                                                          | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                                                                                      | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------------------------|----------------|-----------------|-------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>2 circuits A and B</b><br><b>1-pole</b><br><b>0 - A - A+B</b>     |                | 45°             | 1 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . GR11<br>M20 . x x x x - - . GR11                       |                                               | +126                   |                     |
|                                                                      |                |                 | 64 □ 32A                                  | N20 . x - x - x x . GR11<br>N33F . x x x - x x <sup>2)</sup> . GR11                       |                                               |                        |                     |
|                                                                      |                |                 | 88 □ 63A                                  | N40 . x - x - x - . GR11<br>80A N60 . x - x - x - . GR11<br>115A N80 . x - x - - - . GR11 |                                               |                        |                     |
|                                                                      |                |                 | 132 □ 150A                                | N100 . x - x - - - . GR11<br>250A N200 . x - x - - - . GR11                               |                                               |                        |                     |
|                                                                      |                |                 |                                           |                                                                                           |                                               |                        |                     |
| <b>2 circuits A and B</b><br><b>1-pole</b><br><b>0 - A - B - A+B</b> |                | 45°             | 1 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . GR12<br>M20 . x x x x - - . GR12                       |                                               | +127                   |                     |
|                                                                      |                |                 | 64 □ 32A                                  | N20 . x - x - x x . GR12<br>N33F . x x x - x x <sup>2)</sup> . GR12                       |                                               |                        |                     |
|                                                                      |                |                 | 88 □ 63A                                  | N40 . x - x - x - . GR12<br>80A N60 . x - x - x - . GR12<br>115A N80 . x - x - - - . GR12 |                                               |                        |                     |
|                                                                      |                |                 | 132 □ 150A                                | N100 . x - x - - - . GR12<br>250A N200 . x - x - - - . GR12                               |                                               |                        |                     |
|                                                                      |                |                 |                                           |                                                                                           |                                               |                        |                     |
| <b>2 circuits A and B</b><br><b>2-pole</b><br><b>0 - A - A+B</b>     |                | 45°             | 2 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . GR21<br>M20 . x x x x - - . GR21                       |                                               | +126                   |                     |
|                                                                      |                |                 | 64 □ 32A                                  | N20 . x - x - x x . GR21<br>N33F . x x x - x x <sup>2)</sup> . GR21                       |                                               |                        |                     |
|                                                                      |                |                 | 88 □ 63A                                  | N40 . x - x - x - . GR21<br>80A N60 . x - x - x - . GR21<br>115A N80 . x - x - - - . GR21 |                                               |                        |                     |
|                                                                      |                |                 | 132 □ 150A                                | N100 . x - x - - - . GR21<br>250A N200 . x - x - - - . GR21                               |                                               |                        |                     |
|                                                                      |                |                 |                                           |                                                                                           |                                               |                        |                     |
| <b>2 circuits A and B</b><br><b>2-pole</b><br><b>0 - A - B - A+B</b> |                | 45°             | 2 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . GR22<br>M20 . x x x x - - . GR22                       |                                               | +127                   |                     |
|                                                                      |                |                 | 64 □ 32A                                  | N20 . x - x - x x . GR22<br>N33F . x x x - x x <sup>2)</sup> . GR22                       |                                               |                        |                     |
|                                                                      |                |                 | 88 □ 63A                                  | N40 . x - x - x - . GR22<br>80A N60 . x - x - x - . GR22<br>115A N80 . x - x - - - . GR22 |                                               |                        |                     |
|                                                                      |                |                 | 132 □ 150A                                | N100 . x - x - - - . GR22<br>250A N200 . x - x - - - . GR22                               |                                               |                        |                     |
|                                                                      |                |                 |                                           |                                                                                           |                                               |                        |                     |
| <b>2 circuits A and B</b><br><b>3-pole</b><br><b>0 - A - A+B</b>     |                | 45°             | 3 48 □ 20A                                | M10H . x x x x x <sup>1)</sup> - . GR31<br>M20 . x x x x - - . GR31                       |                                               | +126                   |                     |
|                                                                      |                |                 | 64 □ 32A                                  | N20 . x - x - x x . GR31<br>N33F . x - x - x x <sup>2)</sup> . GR31                       |                                               |                        |                     |
|                                                                      |                |                 | 88 □ 63A                                  | N40 . x - x - x x . GR31<br>80A N60 . x - x - x - . GR31<br>115A N80 . x - x - - - . GR31 |                                               |                        |                     |
|                                                                      |                |                 | 132 □ 150A                                | N100 . x - x - - - . GR31<br>250A N200 . x - x - - - . GR31                               |                                               |                        |                     |
|                                                                      |                |                 |                                           |                                                                                           |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, gang switch, 2 circuits A and B, 3-pole N200 E GR31

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                                                                                                                                            | Wiring diagram                                                                      | Switching angle | Number of cells<br>↓ Size<br>↓ AC21 | Type                                                                             | Design<br>see page 6-8<br>E. Z. V. SMA. P. G.                       | Switch program                                                                        | Escutcheon plate |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|-------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------|
| <b>Gang switches GR</b>                                                                                                                                                |                                                                                     |                 |                                     |                                                                                  |                                                                     |                                                                                       |                  |
| <b>2 circuits A and B</b><br><b>3-pole</b><br><b>0 - A - B - A+B</b><br><br>          |    | 45°             | 3                                   | 48 □ 20A<br>32A                                                                  | M10H . x x x x x <sup>1)</sup> - . GR32<br>M20 . x x x x - - . GR32 |    |                  |
|                                                                                                                                                                        |                                                                                     |                 | 64 □ 32A<br>50A                     | N20 . x - x - x x . GR32<br>N33F . x - x - x x <sup>2)</sup> . GR32              |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 88 □ 63A<br>80A<br>115A             | N40 . x - x - x - . GR32<br>N60 . x - x - x - . GR32<br>N80 . x - x - - - . GR32 |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 132 □ 150A<br>250A                  | N100 . x - x - - - . GR32<br>N200 . x - x - - - . GR32                           |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | <b>+127</b>                         |                                                                                  |                                                                     |                                                                                       |                  |
| <b>3 circuits A, B and C</b><br><b>1-pole</b><br><b>0 - A - A+B - A+B+C</b><br><br>   |    | 45°             | 2                                   | 48 □ 20A<br>32A                                                                  | M10H . x x x x x <sup>1)</sup> - . GR14<br>M20 . x x x x - - . GR14 |    |                  |
|                                                                                                                                                                        |                                                                                     |                 | 64 □ 32A<br>50A                     | N20 . x - x - x x . GR14<br>N33F . x - x - x x <sup>2)</sup> . GR14              |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 88 □ 63A<br>80A<br>115A             | N40 . x - x - x - . GR14<br>N60 . x - x - x - . GR14<br>N80 . x - x - - - . GR14 |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 132 □ 150A<br>250A                  | N100 . x - x - - - . GR14<br>N200 . x - x - - - . GR14                           |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | <b>+127</b>                         |                                                                                  |                                                                     |                                                                                       |                  |
| <b>3 circuits A, B and C</b><br><b>2-pole</b><br><b>0 - A - A+B - A+B+C</b><br><br> |   | 45°             | 3                                   | 48 □ 20A<br>32A                                                                  | M10H . x x x x x <sup>1)</sup> - . GR23<br>M20 . x x x x - - . GR23 |   |                  |
|                                                                                                                                                                        |                                                                                     |                 | 64 □ 32A<br>50A                     | N20 . x - x - x x . GR23<br>N33F . x - x - x x <sup>2)</sup> . GR23              |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 88 □ 63A<br>80A<br>115A             | N40 . x - x - x - . GR23<br>N60 . x - x - x - . GR23<br>N80 . x - x - - - . GR23 |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 132 □ 150A<br>250A                  | N100 . x - x - - - . GR23<br>N200 . x - x - - - . GR23                           |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | <b>+127</b>                         |                                                                                  |                                                                     |                                                                                       |                  |
| <b>3 circuits A, B and C</b><br><b>3-pole</b><br><b>0 - A - A+B - A+B+C</b><br><br> |  | 45°             | 5                                   | 48 □ 20A<br>32A                                                                  | M10H . x x x x x <sup>1)</sup> - . GR33<br>M20 . x x x x - - . GR33 |  |                  |
|                                                                                                                                                                        |                                                                                     |                 | 64 □ 32A<br>50A                     | N20 . x - x - x x . GR33<br>N33F . x - x - x x <sup>2)</sup> . GR33              |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 88 □ 63A<br>80A<br>115A             | N40 . x - x - x - . GR33<br>N60 . x - x - x - . GR33<br>N80 . x - x - - - . GR33 |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | 132 □ 150A<br>250A                  | N100 . x - x - - - . GR33<br>N200 . x - x - - - . GR33                           |                                                                     |                                                                                       |                  |
|                                                                                                                                                                        |                                                                                     |                 | <b>+127</b>                         |                                                                                  |                                                                     |                                                                                       |                  |

**Ordering example:** AC21 250A panel mounting, gang switch, 3 circuits A, B and C, 3-pole **N200 E GR33**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description<br>Schaltbild                                                                | Wiring diagram           | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type     | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b> | Switch<br>pro-<br>gram | Escutcheon<br>plate |      |
|------------------------------------------------------------------------------------------|--------------------------|-----------------|--------------------------------------------------|----------|------------------------------------------------------|------------------------|---------------------|------|
| <b>Series-Parallel switches SP</b>                                                       |                          |                 |                                                  |          |                                                      |                        |                     |      |
| <b>2 circuits A and B</b><br><b>2-pole</b><br>0 - A + B - A,B (parallel)<br><br>         |                          | 45°             | 2                                                | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . SP1               | . SP1                  |                     |      |
|                                                                                          |                          |                 |                                                  | 32A      | M20 . x x x x - - . SP1                              |                        |                     | +126 |
|                                                                                          |                          |                 |                                                  | 64 □ 32A | N20 . x - x - x x . SP1                              |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 50A      | N33F . x x x - x x <sup>2)</sup> . SP1               |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 88 □ 63A | N40 . x - x - x - . SP1                              |                        |                     |      |
| 80A                                                                                      | N60 . x - x - x - . SP1  | . SP1           |                                                  |          |                                                      |                        |                     |      |
| 115A                                                                                     | N80 . x - x - - - . SP1  |                 |                                                  |          |                                                      |                        |                     |      |
| 132 □ 150A                                                                               | N100 . x - x - - - . SP1 | . SP1           |                                                  |          |                                                      |                        |                     |      |
| 250A                                                                                     | N200 . x - x - - - . SP1 |                 |                                                  |          |                                                      |                        |                     |      |
| <b>2 circuits A and B</b><br><b>2-pole</b><br>0 - A, B (parall.) - A - A+B<br><br>       |                          | 90°             | 3                                                | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . SP4               | . SP4                  |                     |      |
|                                                                                          |                          |                 |                                                  | 32A      | M20 . x x x x - - . SP4                              |                        |                     | +270 |
|                                                                                          |                          |                 |                                                  | 64 □ 32A | N20 . x - x - x x . SP4                              |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 50A      | N33F . x x x - x x <sup>2)</sup> . SP4               |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 88 □ 63A | N40 . x - x - x - . SP4                              |                        |                     |      |
| 80A                                                                                      | N60 . x - x - x - . SP4  | . SP4           |                                                  |          |                                                      |                        |                     |      |
| 115A                                                                                     | N80 . x - x - - - . SP4  |                 |                                                  |          |                                                      |                        |                     |      |
| 132 □ 150A                                                                               | N100 . x - x - - - . SP4 | . SP4           |                                                  |          |                                                      |                        |                     |      |
| 250A                                                                                     | N200 . x - x - - - . SP4 |                 |                                                  |          |                                                      |                        |                     |      |
| <b>2 circuits A and B</b><br><b>for 3-phase systems</b><br>0 - A+B - A - B - A,B<br><br> |                          | 30°             | 2                                                | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . SP3               | . SP3                  |                     |      |
|                                                                                          |                          |                 |                                                  | 32A      | M20 . x x x x - - . SP3                              |                        |                     | +112 |
|                                                                                          |                          |                 |                                                  | 64 □ 32A | N20 . x - x - x x . SP3                              |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 50A      | N33F . x x x - x x <sup>2)</sup> . SP3               |                        |                     |      |
|                                                                                          |                          |                 |                                                  | 88 □ 63A | N40 . x - x - x - . SP3                              |                        |                     |      |
| 80A                                                                                      | N60 . x - x - x - . SP3  | . SP3           |                                                  |          |                                                      |                        |                     |      |
| 115A                                                                                     | N80 . x - x - - - . SP3  |                 |                                                  |          |                                                      |                        |                     |      |
| 132 □ 150A                                                                               | N100 . x - x - - - . SP3 | . SP3           |                                                  |          |                                                      |                        |                     |      |
| 250A                                                                                     | N200 . x - x - - - . SP3 |                 |                                                  |          |                                                      |                        |                     |      |

Ordering example: AC21 250A panel mounting, series-parallel switch, 2 circuits for 3-phase systems

N200 E SP3

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                        | Wiring diagram                          | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G.         | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------|-----------------------------------------|-----------------|-------------------------------------------|----------|-------------------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 1-pole without Off ST.1</b> |                                         |                 |                                           |          |                                                       |                        |                     |
| <b>3 steps</b>                                     |                                         | 60°             | 2                                         | 48 □ 20A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST31</b> | . <b>ST31</b>          |                     |
|                                                    |                                         |                 |                                           | 32A      | <b>M20</b> . x x x x - - . <b>ST31</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 64 □ 32A | <b>N20</b> . x - x - x x . <b>ST31</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 50A      | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST31</b> |                        |                     |
|                                                    |                                         |                 |                                           | 88 □ 63A | <b>N40</b> . x - x - x - . <b>ST31</b>                |                        |                     |
| 80A                                                | <b>N60</b> . x - x - x - . <b>ST31</b>  |                 |                                           |          |                                                       |                        |                     |
| 115A                                               | <b>N80</b> . x - x - - - . <b>ST31</b>  |                 |                                           |          |                                                       |                        |                     |
| 132 □ 150A                                         | <b>N100</b> . x - x - - - . <b>ST31</b> |                 |                                           |          |                                                       |                        |                     |
| 250A                                               | <b>N200</b> . x - x - - - . <b>ST31</b> |                 |                                           |          |                                                       |                        |                     |
| <b>4 steps</b>                                     |                                         | 60°             | 2                                         | 48 □ 20A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST41</b> | . <b>ST41</b>          |                     |
|                                                    |                                         |                 |                                           | 32A      | <b>M20</b> . x x x x - - . <b>ST41</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 64 □ 32A | <b>N20</b> . x - x - x x . <b>ST41</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 50A      | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST41</b> |                        |                     |
|                                                    |                                         |                 |                                           | 88 □ 63A | <b>N40</b> . x - x - x - . <b>ST41</b>                |                        |                     |
| 80A                                                | <b>N60</b> . x - x - x - . <b>ST41</b>  |                 |                                           |          |                                                       |                        |                     |
| 115A                                               | <b>N80</b> . x - x - - - . <b>ST41</b>  |                 |                                           |          |                                                       |                        |                     |
| 132 □ 150A                                         | <b>N100</b> . x - x - - - . <b>ST41</b> |                 |                                           |          |                                                       |                        |                     |
| 250A                                               | <b>N200</b> . x - x - - - . <b>ST41</b> |                 |                                           |          |                                                       |                        |                     |
| <b>5 steps</b>                                     |                                         | 60°             | 3                                         | 48 □ 20A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST51</b> | . <b>ST51</b>          |                     |
|                                                    |                                         |                 |                                           | 32A      | <b>M20</b> . x x x x - - . <b>ST51</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 64 □ 32A | <b>N20</b> . x - x - x x . <b>ST51</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 50A      | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST51</b> |                        |                     |
|                                                    |                                         |                 |                                           | 88 □ 63A | <b>N40</b> . x - x - x - . <b>ST51</b>                |                        |                     |
| 80A                                                | <b>N60</b> . x - x - x - . <b>ST51</b>  |                 |                                           |          |                                                       |                        |                     |
| 115A                                               | <b>N80</b> . x - x - - - . <b>ST51</b>  |                 |                                           |          |                                                       |                        |                     |
| 132 □ 150A                                         | <b>N100</b> . x - x - - - . <b>ST51</b> |                 |                                           |          |                                                       |                        |                     |
| 250A                                               | <b>N200</b> . x - x - - - . <b>ST51</b> |                 |                                           |          |                                                       |                        |                     |
| <b>6 steps</b>                                     |                                         | 60°             | 3                                         | 48 □ 20A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST61</b> | . <b>ST61</b>          |                     |
|                                                    |                                         |                 |                                           | 32A      | <b>M20</b> . x x x x - - . <b>ST61</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 64 □ 32A | <b>N20</b> . x - x - x x . <b>ST61</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 50A      | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST61</b> |                        |                     |
|                                                    |                                         |                 |                                           | 88 □ 63A | <b>N40</b> . x - x - x - . <b>ST61</b>                |                        |                     |
| 80A                                                | <b>N60</b> . x - x - x - . <b>ST61</b>  |                 |                                           |          |                                                       |                        |                     |
| 115A                                               | <b>N80</b> . x - x - - - . <b>ST61</b>  |                 |                                           |          |                                                       |                        |                     |
| 132 □ 150A                                         | <b>N100</b> . x - x - - - . <b>ST61</b> |                 |                                           |          |                                                       |                        |                     |
| 250A                                               | <b>N200</b> . x - x - - - . <b>ST61</b> |                 |                                           |          |                                                       |                        |                     |
| <b>7 steps</b>                                     |                                         | 45°             | 4                                         | 48 □ 20A | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST71</b> | . <b>ST71</b>          |                     |
|                                                    |                                         |                 |                                           | 32A      | <b>M20</b> . x x x x - - . <b>ST71</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 64 □ 32A | <b>N20</b> . x - x - x x . <b>ST71</b>                |                        |                     |
|                                                    |                                         |                 |                                           | 50A      | <b>N33F</b> . x - x - x x <sup>2)</sup> . <b>ST71</b> |                        |                     |
|                                                    |                                         |                 |                                           | 88 □ 63A | <b>N40</b> . x - x - x - . <b>ST71</b>                |                        |                     |
| 80A                                                | <b>N60</b> . x - x - x - . <b>ST71</b>  |                 |                                           |          |                                                       |                        |                     |
| 115A                                               | <b>N80</b> . x - x - - - . <b>ST71</b>  |                 |                                           |          |                                                       |                        |                     |
| 132 □ 150A                                         | <b>N100</b> . x - x - - - . <b>ST71</b> |                 |                                           |          |                                                       |                        |                     |
| 250A                                               | <b>N200</b> . x - x - - - . <b>ST71</b> |                 |                                           |          |                                                       |                        |                     |

**Ordering example:** AC21 250A panel mounting, multi step switch 1-pole without off, 7 steps **N200 E ST71**

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

**Switching programs**

| Description                                        | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type                                                                                                                          | Design<br>see page 6-8<br><b>E. Z. V. SMA. P. G.</b>                                              | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------|----------------|-----------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 1-pole without Off ST.1</b> |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |
| <b>8 steps</b>                                     |                | 45°             | 4                                                | 48 □ 20A<br>32A                                                                                                               | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST81</b><br><b>M20</b> . x x x x - - . <b>ST81</b>   |                        |                     |
|                                                    |                |                 | 64 □ 32A<br>50A                                  | <b>N20</b> . x - x - x x . <b>ST81</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>ST81</b>                               |                                                                                                   |                        |                     |
|                                                    |                |                 | 88 □ 63A<br>80A<br>115A                          | <b>N40</b> . x - x - x - . <b>ST81</b><br><b>N60</b> . x - x - x - . <b>ST81</b><br><b>N80</b> . x - x - - - . <b>ST81</b>    |                                                                                                   |                        |                     |
|                                                    |                |                 | 132 □ 150A<br>250A                               | <b>N100</b> . x - x - - - . <b>ST81</b><br><b>N200</b> . x - x - - - . <b>ST81</b>                                            |                                                                                                   |                        |                     |
|                                                    |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |
| <b>9 steps</b>                                     |                | 30°             | 5                                                | 48 □ 20A<br>32A                                                                                                               | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST91</b><br><b>M20</b> . x x x x - - . <b>ST91</b>   |                        |                     |
|                                                    |                |                 | 64 □ 32A<br>50A                                  | <b>N20</b> . x - x - x x . <b>ST91</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>ST91</b>                               |                                                                                                   |                        |                     |
|                                                    |                |                 | 88 □ 63A<br>80A<br>115A                          | <b>N40</b> . x - x - x - . <b>ST91</b><br><b>N60</b> . x - x - x - . <b>ST91</b><br><b>N80</b> . x - x - - - . <b>ST91</b>    |                                                                                                   |                        |                     |
|                                                    |                |                 | 132 □ 150A<br>250A                               | <b>N100</b> . x - x - - - . <b>ST91</b><br><b>N200</b> . x - x - - - . <b>ST91</b>                                            |                                                                                                   |                        |                     |
|                                                    |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |
| <b>10 steps</b>                                    |                | 30°             | 5                                                | 48 □ 20A<br>32A                                                                                                               | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST101</b><br><b>M20</b> . x x x x - - . <b>ST101</b> |                        |                     |
|                                                    |                |                 | 64 □ 32A<br>50A                                  | <b>N20</b> . x - x - x x . <b>ST101</b><br><b>N33F</b> . x - x - x x <sup>2)</sup> . <b>ST101</b>                             |                                                                                                   |                        |                     |
|                                                    |                |                 | 88 □ 63A<br>80A<br>115A                          | <b>N40</b> . x - x - x - . <b>ST101</b><br><b>N60</b> . x - x - x - . <b>ST101</b><br><b>N80</b> . x - x - - - . <b>ST101</b> |                                                                                                   |                        |                     |
|                                                    |                |                 | 132 □ 150A<br>250A                               | <b>N100</b> . x - x - - - . <b>ST101</b><br><b>N200</b> . x - x - - - . <b>ST101</b>                                          |                                                                                                   |                        |                     |
|                                                    |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |
| <b>11 steps</b>                                    |                | 30°             | 6                                                | 48 □ 20A<br>32A                                                                                                               | <b>M10H</b> . x x x - x <sup>1)</sup> - . <b>ST111</b><br><b>M20</b> . x x x - - - . <b>ST111</b> |                        |                     |
|                                                    |                |                 | 64 □ 32A<br>50A                                  | <b>N20</b> . x - x - x x . <b>ST111</b><br><b>N33F</b> . x - x - x - . <b>ST111</b>                                           |                                                                                                   |                        |                     |
|                                                    |                |                 | 88 □ 63A<br>80A<br>115A                          | <b>N40</b> . x - x - x - . <b>ST111</b><br><b>N60</b> . x - x - x - . <b>ST111</b><br><b>N80</b> . x - x - - - . <b>ST111</b> |                                                                                                   |                        |                     |
|                                                    |                |                 | 132 □ 150A<br>250A                               | <b>N100</b> . x - x - - - . <b>ST111</b><br><b>N200</b> . x - x - - - . <b>ST111</b>                                          |                                                                                                   |                        |                     |
|                                                    |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |
| <b>12 steps</b>                                    |                | 30°             | 6                                                | 48 □ 20A<br>32A                                                                                                               | <b>M10H</b> . x x x - x <sup>1)</sup> - . <b>ST121</b><br><b>M20</b> . x x x - - - . <b>ST121</b> |                        |                     |
|                                                    |                |                 | 64 □ 32A<br>50A                                  | <b>N20</b> . x - x - x x . <b>ST121</b><br><b>N33F</b> . x - x - x - . <b>ST121</b>                                           |                                                                                                   |                        |                     |
|                                                    |                |                 | 88 □ 63A<br>80A<br>115A                          | <b>N40</b> . x - x - x - . <b>ST121</b><br><b>N60</b> . x - x - x - . <b>ST121</b><br><b>N80</b> . x - x - - - . <b>ST121</b> |                                                                                                   |                        |                     |
|                                                    |                |                 | 132 □ 150A<br>250A                               | <b>N100</b> . x - x - - - . <b>ST121</b><br><b>N200</b> . x - x - - - . <b>ST121</b>                                          |                                                                                                   |                        |                     |
|                                                    |                |                 |                                                  |                                                                                                                               |                                                                                                   |                        |                     |

**Ordering example:** AC21 250A panel mounting, multi step switch 1-pole without off, 12 steps

**N200 E ST121**

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.



## Switching programs

| Description                                      | Wiring diagram             | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|--------------------------------------------------|----------------------------|-----------------|-------------------------------------------|----------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 1-pole with Off ST0.1</b> |                            |                 |                                           |          |                                               |                        |                     |
| <b>2 steps</b>                                   |                            | 60°             | 1                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST021      | . ST021                |                     |
|                                                  |                            |                 |                                           | 32A      | M20 . x x x x - - . ST021                     |                        |                     |
|                                                  |                            |                 |                                           | 64 □ 32A | N20 . x - x - x x . ST021                     |                        |                     |
|                                                  |                            |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . ST021      |                        |                     |
|                                                  |                            |                 |                                           | 88 □ 63A | N40 . x - x - x - . ST021                     |                        |                     |
| 80A                                              | N60 . x - x - x - . ST021  |                 |                                           |          |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST021  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST021 |                 |                                           |          |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST021 |                 |                                           |          |                                               |                        |                     |
| <b>3 steps</b>                                   |                            | 45°             | 2                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST031      | . ST031                |                     |
|                                                  |                            |                 |                                           | 32A      | M20 . x x x x - - . ST031                     |                        |                     |
|                                                  |                            |                 |                                           | 64 □ 32A | N20 . x - x - x x . ST031                     |                        |                     |
|                                                  |                            |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . ST031      |                        |                     |
|                                                  |                            |                 |                                           | 88 □ 63A | N40 . x - x - x - . ST031                     |                        |                     |
| 80A                                              | N60 . x - x - x - . ST031  |                 |                                           |          |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST031  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST031 |                 |                                           |          |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST031 |                 |                                           |          |                                               |                        |                     |
| <b>4 steps</b>                                   |                            | 30°             | 2                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST041      | . ST041                |                     |
|                                                  |                            |                 |                                           | 32A      | M20 . x x x x - - . ST041                     |                        |                     |
|                                                  |                            |                 |                                           | 64 □ 32A | N20 . x - x - x x . ST041                     |                        |                     |
|                                                  |                            |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . ST041      |                        |                     |
|                                                  |                            |                 |                                           | 88 □ 63A | N40 . x - x - x - . ST041                     |                        |                     |
| 80A                                              | N60 . x - x - x - . ST041  |                 |                                           |          |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST041  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST041 |                 |                                           |          |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST041 |                 |                                           |          |                                               |                        |                     |
| <b>5 steps</b>                                   |                            | 45°             | 3                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST051      | . ST051                |                     |
|                                                  |                            |                 |                                           | 32A      | M20 . x x x x - - . ST051                     |                        |                     |
|                                                  |                            |                 |                                           | 64 □ 32A | N20 . x - x - x x . ST051                     |                        |                     |
|                                                  |                            |                 |                                           | 50A      | N33F . x x x - x x <sup>2)</sup> . ST051      |                        |                     |
|                                                  |                            |                 |                                           | 88 □ 63A | N40 . x - x - x - . ST051                     |                        |                     |
| 80A                                              | N60 . x - x - x - . ST051  |                 |                                           |          |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST051  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST051 |                 |                                           |          |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST051 |                 |                                           |          |                                               |                        |                     |
| <b>6 steps</b>                                   |                            | 45°             | 4                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST061      | . ST061                |                     |
|                                                  |                            |                 |                                           | 32A      | M20 . x x x x - - . ST061                     |                        |                     |
|                                                  |                            |                 |                                           | 64 □ 32A | N20 . x - x - x x . ST061                     |                        |                     |
|                                                  |                            |                 |                                           | 50A      | N33F . x - x - x x <sup>2)</sup> . ST061      |                        |                     |
|                                                  |                            |                 |                                           | 88 □ 63A | N40 . x - x - x - . ST061                     |                        |                     |
| 80A                                              | N60 . x - x - x - . ST061  |                 |                                           |          |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST061  |                 |                                           |          |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST061 |                 |                                           |          |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST061 |                 |                                           |          |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 1-pole with off, 6 steps

N200 E ST061

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                      | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                                                        | Design<br>see page 6-8<br>E. Z. V. SMA. P. G.         | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|--------------------------------------------------|----------------|-----------------|-------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 1-pole with Off ST0.1</b> |                |                 |                                           |                                                             |                                                       |                        |                     |
| 7 steps                                          |                | 45°             | 4                                         | 48 □ 20A<br>32A                                             | M10H . x x x x x <sup>1)</sup> -<br>M20 . x x x x - - | . ST071<br>. ST071     |                     |
|                                                  |                |                 | 64 □ 32A<br>50A                           | N20 . x - x - x x<br>N33F . x - x - x x <sup>2)</sup>       | . ST071<br>. ST071                                    |                        |                     |
|                                                  |                |                 | 88 □ 63A<br>80A<br>115A                   | N40 . x - x - x -<br>N60 . x - x - x -<br>N80 . x - x - - - | . ST071<br>. ST071<br>. ST071                         |                        |                     |
|                                                  |                |                 | 132 □ 150A<br>250A                        | N100 . x - x - - -<br>N200 . x - x - - -                    | . ST071<br>. ST071                                    |                        |                     |
|                                                  |                |                 |                                           |                                                             |                                                       |                        |                     |
| 8 steps                                          |                | 30°             | 5                                         | 48 □ 20A<br>32A                                             | M10H . x x x x x <sup>1)</sup> -<br>M20 . x x x x - - | . ST081<br>. ST081     |                     |
|                                                  |                |                 | 64 □ 32A<br>50A                           | N20 . x - x - x x<br>N33F . x - x - x x <sup>2)</sup>       | . ST081<br>. ST081                                    |                        |                     |
|                                                  |                |                 | 88 □ 63A<br>80A<br>115A                   | N40 . x - x - x -<br>N60 . x - x - x -<br>N80 . x - x - - - | . ST081<br>. ST081<br>. ST081                         |                        |                     |
|                                                  |                |                 | 132 □ 150A<br>250A                        | N100 . x - x - - -<br>N200 . x - x - - -                    | . ST081<br>. ST081                                    |                        |                     |
|                                                  |                |                 |                                           |                                                             |                                                       |                        |                     |
| 9 steps                                          |                | 30°             | 5                                         | 48 □ 20A<br>32A                                             | M10H . x x x x x <sup>1)</sup> -<br>M20 . x x x x - - | . ST091<br>. ST091     |                     |
|                                                  |                |                 | 64 □ 32A<br>50A                           | N20 . x - x - x x<br>N33F . x - x - x x <sup>2)</sup>       | . ST091<br>. ST091                                    |                        |                     |
|                                                  |                |                 | 88 □ 63A<br>80A<br>115A                   | N40 . x - x - x -<br>N60 . x - x - x -<br>N80 . x - x - - - | . ST091<br>. ST091<br>. ST091                         |                        |                     |
|                                                  |                |                 | 132 □ 150A<br>250A                        | N100 . x - x - - -<br>N200 . x - x - - -                    | . ST091<br>. ST091                                    |                        |                     |
|                                                  |                |                 |                                           |                                                             |                                                       |                        |                     |
| 10 steps                                         |                | 30°             | 6                                         | 48 □ 20A<br>32A                                             | M10H . x x x - x <sup>1)</sup> -<br>M20 . x x x - - - | . ST0101<br>. ST0101   |                     |
|                                                  |                |                 | 64 □ 32A<br>50A                           | N20 . x - x - x x<br>N33F . x - x - x -                     | . ST0101<br>. ST0101                                  |                        |                     |
|                                                  |                |                 | 88 □ 63A<br>80A<br>115A                   | N40 . x - x - x -<br>N60 . x - x - x -<br>N80 . x - x - - - | . ST0101<br>. ST0101<br>. ST0101                      |                        |                     |
|                                                  |                |                 | 132 □ 150A<br>250A                        | N100 . x - x - - -<br>N200 . x - x - - -                    | . ST0101<br>. ST0101                                  |                        |                     |
|                                                  |                |                 |                                           |                                                             |                                                       |                        |                     |
| 11 steps                                         |                | 30°             | 6                                         | 48 □ 20A<br>32A                                             | M10H . x x x - x <sup>1)</sup> -<br>M20 . x x x - - - | . ST0111<br>. ST0111   |                     |
|                                                  |                |                 | 64 □ 32A<br>50A                           | N20 . x - x - x x<br>N33F . x - x - x -                     | . ST0111<br>. ST0111                                  |                        |                     |
|                                                  |                |                 | 88 □ 63A<br>80A<br>115A                   | N40 . x - x - x -<br>N60 . x - x - x -<br>N80 . x - x - - - | . ST0111<br>. ST0111<br>. ST0111                      |                        |                     |
|                                                  |                |                 | 132 □ 150A<br>250A                        | N100 . x - x - - -<br>N200 . x - x - - -                    | . ST0111<br>. ST0111                                  |                        |                     |
|                                                  |                |                 |                                           |                                                             |                                                       |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 1-pole with off, 11 steps N200 E ST0111

- 1) Plastic enclosed switches are delivered with switch type M10.
- 2) Cast enclosed switches are delivered with switch type N32.

## Switching programs

| Description                                        | Wiring diagram            | Switching angle           | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram                  | Escutcheon<br>plate |
|----------------------------------------------------|---------------------------|---------------------------|-------------------------------------------|----------|-----------------------------------------------|-----------------------------------------|---------------------|
| <b>Multi step switches 2-pole without Off ST.2</b> |                           |                           |                                           |          |                                               |                                         |                     |
| <b>3 steps</b>                                     |                           | 60°                       | 3                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST32       | M20 . x x x x - - . ST32                |                     |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST32                      | N33F . x x x - x x <sup>2)</sup> . ST32 |                     |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST32                      | N60 . x - x - x - . ST32                |                     |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST32                      |                                         |                     |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST32 | N200 . x - x - - - . ST32 |                                           |          |                                               |                                         |                     |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                     |
| <b>4 steps</b>                                     |                           | 60°                       | 4                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST42       | M20 . x x x x - - . ST42                |                     |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST42                      | N33F . x - x - x x <sup>2)</sup> . ST42 |                     |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST42                      | N60 . x - x - x - . ST42                |                     |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST42                      |                                         |                     |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST42 | N200 . x - x - - - . ST42 |                                           |          |                                               |                                         |                     |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                     |
| <b>5 steps</b>                                     |                           | 60°                       | 5                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST52       | M20 . x x x x - - . ST52                |                     |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST52                      | N33F . x - x - x x <sup>2)</sup> . ST52 |                     |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST52                      | N60 . x - x - x - . ST52                |                     |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST52                      |                                         |                     |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST52 | N200 . x - x - - - . ST52 |                                           |          |                                               |                                         |                     |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                     |
| <b>6 steps</b>                                     |                           | 60°                       | 6                                         | 48 □ 20A | M10H . x x x - x <sup>1)</sup> - . ST62       | M20 . x x x - - - . ST62                |                     |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST62                      | N33F . x - x - x - . ST62               |                     |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST62                      | N60 . x - x - x - . ST62                |                     |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST62                      |                                         |                     |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST62 | N200 . x - x - - - . ST62 |                                           |          |                                               |                                         |                     |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                     |
| <b>7 steps</b>                                     |                           | 45°                       | 7                                         | 48 □ 20A | M10H . x x x - - - . ST72                     | M20 . x x x - - - . ST72                |                     |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x - . ST72                      | N33F . x - x - - - . ST72               |                     |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST72                      | N60 . x - x - - - . ST72                |                     |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST72                      |                                         |                     |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST72 | N200 . x - x - - - . ST72 |                                           |          |                                               |                                         |                     |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                     |

**Ordering example:** AC21 250A panel mounting, multi step switch 2-pole without off, 7 steps N200 E ST72

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                        | Wiring diagram             | Switching angle     | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                       | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------|----------------------------|---------------------|-------------------------------------------|----------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 2-pole without Off ST.2</b> |                            |                     |                                           |                            |                                               |                        |                     |
| <b>8 steps</b>                                     |                            | 45°                 | 8 48 □ 20A                                | M10H . x x x - - - . ST82  | x x x - - - . ST82                            |                        |                     |
|                                                    |                            |                     | 32A                                       | M20 . x x x - - - . ST82   | x x x - - - . ST82                            |                        |                     |
|                                                    |                            |                     | 64 □ 32A                                  | N20 . x - x - x - . ST82   | x - x - x - . ST82                            |                        |                     |
|                                                    |                            |                     | 50A                                       | N33F . x - x - - - . ST82  | x - x - - - . ST82                            |                        |                     |
|                                                    |                            |                     | 88 □ 63A                                  | N40 . x - x - x - . ST82   | x - x - x - . ST82                            |                        |                     |
| 80A                                                | N60 . x - x - - - . ST82   | x - x - - - . ST82  |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST82   | x - x - - - . ST82  |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST82  | x - x - - - . ST82  |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST82  | x - x - - - . ST82  |                                           |                            |                                               |                        |                     |
| <b>9 steps</b>                                     |                            | 30°                 | 9 48 □ 20A                                | M10H . x x x - - - . ST92  | x x x - - - . ST92                            |                        |                     |
|                                                    |                            |                     | 32A                                       | M20 . x x x - - - . ST92   | x x x - - - . ST92                            |                        |                     |
|                                                    |                            |                     | 64 □ 32A                                  | N20 . x - x - - - . ST92   | x - x - - - . ST92                            |                        |                     |
|                                                    |                            |                     | 50A                                       | N33F . x - x - - - . ST92  | x - x - - - . ST92                            |                        |                     |
|                                                    |                            |                     | 88 □ 63A                                  | N40 . x - x - - - . ST92   | x - x - - - . ST92                            |                        |                     |
| 80A                                                | N60 . x - x - - - . ST92   | x - x - - - . ST92  |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST92   | x - x - - - . ST92  |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST92  | x - x - - - . ST92  |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST92  | x - x - - - . ST92  |                                           |                            |                                               |                        |                     |
| <b>10 steps</b>                                    |                            | 30°                 | 10 48 □ 20A                               | M10H . x x x - - - . ST102 | x x x - - - . ST102                           |                        |                     |
|                                                    |                            |                     | 32A                                       | M20 . x x x - - - . ST102  | x x x - - - . ST102                           |                        |                     |
|                                                    |                            |                     | 64 □ 32A                                  | N20 . x - x - - - . ST102  | x - x - - - . ST102                           |                        |                     |
|                                                    |                            |                     | 50A                                       | N33F . x - x - - - . ST102 | x - x - - - . ST102                           |                        |                     |
|                                                    |                            |                     | 88 □ 63A                                  | N40 . x - x - - - . ST102  | x - x - - - . ST102                           |                        |                     |
| 80A                                                | N60 . x - x - - - . ST102  | x - x - - - . ST102 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST102  | x - x - - - . ST102 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST102 | x - x - - - . ST102 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST102 | x - x - - - . ST102 |                                           |                            |                                               |                        |                     |
| <b>11 steps</b>                                    |                            | 30°                 | 11 48 □ 20A                               | M10H . x x x - - - . ST112 | x x x - - - . ST112                           |                        |                     |
|                                                    |                            |                     | 32A                                       | M20 . x x x - - - . ST112  | x x x - - - . ST112                           |                        |                     |
|                                                    |                            |                     | 64 □ 32A                                  | N20 . x - x - - - . ST112  | x - x - - - . ST112                           |                        |                     |
|                                                    |                            |                     | 50A                                       | N33F . x - x - - - . ST112 | x - x - - - . ST112                           |                        |                     |
|                                                    |                            |                     | 88 □ 63A                                  | N40 . x - x - - - . ST112  | x - x - - - . ST112                           |                        |                     |
| 80A                                                | N60 . x - x - - - . ST112  | x - x - - - . ST112 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST112  | x - x - - - . ST112 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST112 | x - x - - - . ST112 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST112 | x - x - - - . ST112 |                                           |                            |                                               |                        |                     |
| <b>12 steps</b>                                    |                            | 30°                 | 12 48 □ 20A                               | M10H . x x x - - - . ST122 | x x x - - - . ST122                           |                        |                     |
|                                                    |                            |                     | 32A                                       | M20 . x x x - - - . ST122  | x x x - - - . ST122                           |                        |                     |
|                                                    |                            |                     | 64 □ 32A                                  | N20 . x - x - - - . ST122  | x - x - - - . ST122                           |                        |                     |
|                                                    |                            |                     | 50A                                       | N33F . x - x - - - . ST122 | x - x - - - . ST122                           |                        |                     |
|                                                    |                            |                     | 88 □ 63A                                  | N40 . x - x - - - . ST122  | x - x - - - . ST122                           |                        |                     |
| 80A                                                | N60 . x - x - - - . ST122  | x - x - - - . ST122 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST122  | x - x - - - . ST122 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST122 | x - x - - - . ST122 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST122 | x - x - - - . ST122 |                                           |                            |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 2-pole without off, 12 steps

N200 E ST122

## Switching programs

| Description                                      | Wiring diagram                           | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                                                   | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|--------------------------------------------------|------------------------------------------|-----------------|-------------------------------------------|--------------------------------------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 2-pole with Off ST0.2</b> |                                          |                 |                                           |                                                        |                                               |                        |                     |
| <b>2 steps</b>                                   |                                          | 60°             | 2 48 □ 20A                                | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST022</b> |                                               |                        |                     |
|                                                  |                                          |                 | 32A                                       | <b>M20</b> . x x x x - - . <b>ST022</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 64 □ 32A                                  | <b>N20</b> . x - x - x x . <b>ST022</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 50A                                       | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST022</b> |                                               |                        |                     |
|                                                  |                                          |                 | 88 □ 63A                                  | <b>N40</b> . x - x - x - . <b>ST022</b>                |                                               |                        |                     |
| 80A                                              | <b>N60</b> . x - x - x - . <b>ST022</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 115A                                             | <b>N80</b> . x - x - - - . <b>ST022</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 132 □ 150A                                       | <b>N100</b> . x - x - - - . <b>ST022</b> |                 |                                           |                                                        |                                               |                        |                     |
| 250A                                             | <b>N200</b> . x - x - - - . <b>ST022</b> |                 |                                           |                                                        |                                               |                        |                     |
| <b>+422</b>                                      |                                          |                 |                                           |                                                        |                                               |                        |                     |
| <b>3 steps</b>                                   |                                          | 45°             | 3 48 □ 20A                                | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST032</b> |                                               |                        |                     |
|                                                  |                                          |                 | 32A                                       | <b>M20</b> . x x x x - - . <b>ST032</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 64 □ 32A                                  | <b>N20</b> . x - x - x x . <b>ST032</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 50A                                       | <b>N33F</b> . x x x - x x <sup>2)</sup> . <b>ST032</b> |                                               |                        |                     |
|                                                  |                                          |                 | 88 □ 63A                                  | <b>N40</b> . x - x - x - . <b>ST032</b>                |                                               |                        |                     |
| 80A                                              | <b>N60</b> . x - x - x - . <b>ST032</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 115A                                             | <b>N80</b> . x - x - - - . <b>ST032</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 132 □ 150A                                       | <b>N100</b> . x - x - - - . <b>ST032</b> |                 |                                           |                                                        |                                               |                        |                     |
| 250A                                             | <b>N200</b> . x - x - - - . <b>ST032</b> |                 |                                           |                                                        |                                               |                        |                     |
| <b>+127</b>                                      |                                          |                 |                                           |                                                        |                                               |                        |                     |
| <b>4 steps</b>                                   |                                          | 30°             | 4 48 □ 20A                                | <b>M10H</b> . x x x x x <sup>1)</sup> - . <b>ST042</b> |                                               |                        |                     |
|                                                  |                                          |                 | 32A                                       | <b>M20</b> . x x x x - - . <b>ST042</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 64 □ 32A                                  | <b>N20</b> . x - x - x x . <b>ST042</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 50A                                       | <b>N33F</b> . x - x - x x <sup>2)</sup> . <b>ST042</b> |                                               |                        |                     |
|                                                  |                                          |                 | 88 □ 63A                                  | <b>N40</b> . x - x - x - . <b>ST042</b>                |                                               |                        |                     |
| 80A                                              | <b>N60</b> . x - x - x - . <b>ST042</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 115A                                             | <b>N80</b> . x - x - - - . <b>ST042</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 132 □ 150A                                       | <b>N100</b> . x - x - - - . <b>ST042</b> |                 |                                           |                                                        |                                               |                        |                     |
| 250A                                             | <b>N200</b> . x - x - - - . <b>ST042</b> |                 |                                           |                                                        |                                               |                        |                     |
| <b>+112</b>                                      |                                          |                 |                                           |                                                        |                                               |                        |                     |
| <b>5 steps</b>                                   |                                          | 45°             | 6 48 □ 20A                                | <b>M10H</b> . x x x - x <sup>1)</sup> - . <b>ST052</b> |                                               |                        |                     |
|                                                  |                                          |                 | 32A                                       | <b>M20</b> . x x x - - - . <b>ST052</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 64 □ 32A                                  | <b>N20</b> . x - x - x x . <b>ST052</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 50A                                       | <b>N33F</b> . x - x - x - . <b>ST052</b>               |                                               |                        |                     |
|                                                  |                                          |                 | 88 □ 63A                                  | <b>N40</b> . x - x - x - . <b>ST052</b>                |                                               |                        |                     |
| 80A                                              | <b>N60</b> . x - x - x - . <b>ST052</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 115A                                             | <b>N80</b> . x - x - - - . <b>ST052</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 132 □ 150A                                       | <b>N100</b> . x - x - - - . <b>ST052</b> |                 |                                           |                                                        |                                               |                        |                     |
| 250A                                             | <b>N200</b> . x - x - - - . <b>ST052</b> |                 |                                           |                                                        |                                               |                        |                     |
| <b>+423</b>                                      |                                          |                 |                                           |                                                        |                                               |                        |                     |
| <b>6 steps</b>                                   |                                          | 45°             | 7 48 □ 20A                                | <b>M10H</b> . x x x - x <sup>1)</sup> - . <b>ST062</b> |                                               |                        |                     |
|                                                  |                                          |                 | 32A                                       | <b>M20</b> . x x x - - - . <b>ST062</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 64 □ 32A                                  | <b>N20</b> . x - x - x - . <b>ST062</b>                |                                               |                        |                     |
|                                                  |                                          |                 | 50A                                       | <b>N33F</b> . x - x - - - . <b>ST062</b>               |                                               |                        |                     |
|                                                  |                                          |                 | 88 □ 63A                                  | <b>N40</b> . x - x - x - . <b>ST062</b>                |                                               |                        |                     |
| 80A                                              | <b>N60</b> . x - x - - - . <b>ST062</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 115A                                             | <b>N80</b> . x - x - - - . <b>ST062</b>  |                 |                                           |                                                        |                                               |                        |                     |
| 132 □ 150A                                       | <b>N100</b> . x - x - - - . <b>ST062</b> |                 |                                           |                                                        |                                               |                        |                     |
| 250A                                             | <b>N200</b> . x - x - - - . <b>ST062</b> |                 |                                           |                                                        |                                               |                        |                     |
| <b>+128</b>                                      |                                          |                 |                                           |                                                        |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 2-pole with off, 6 steps

N200 E ST062

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                      | Wiring diagram              | Switching angle      | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                        | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|--------------------------------------------------|-----------------------------|----------------------|-------------------------------------------|-----------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 2-pole with Off ST0.2</b> |                             |                      |                                           |                             |                                               |                        |                     |
| <b>7 steps</b>                                   |                             | 45°                  | 8 48 □ 20A                                | M10H . x x x - - - . ST072  | x x x - - - . ST072                           |                        |                     |
|                                                  |                             |                      | 32A                                       | M20 . x x x - - - . ST072   | x x x - - - . ST072                           |                        |                     |
|                                                  |                             |                      | 64 □ 32A                                  | N20 . x - x - x - . ST072   | x - x - x - . ST072                           |                        |                     |
|                                                  |                             |                      | 50A                                       | N33F . x - x - - - . ST072  | x - x - - - . ST072                           |                        |                     |
|                                                  |                             |                      | 88 □ 63A                                  | N40 . x - x - x - . ST072   | x - x - x - . ST072                           |                        |                     |
| 80A                                              | N60 . x - x - - - . ST072   | x - x - - - . ST072  |                                           |                             |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST072   | x - x - - - . ST072  |                                           |                             |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST072  | x - x - - - . ST072  | +129<br>                                  |                             |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST072  | x - x - - - . ST072  |                                           |                             |                                               |                        |                     |
| <b>8 steps</b>                                   |                             | 30°                  |                                           | 9 48 □ 20A                  | M10H . x x x - - - . ST082                    | x x x - - - . ST082    |                     |
|                                                  |                             |                      |                                           | 32A                         | M20 . x x x - - - . ST082                     | x x x - - - . ST082    |                     |
|                                                  |                             |                      |                                           | 64 □ 32A                    | N20 . x - x - - - . ST082                     | x - x - - - . ST082    |                     |
|                                                  |                             |                      | 50A                                       | N33F . x - x - - - . ST082  | x - x - - - . ST082                           |                        |                     |
|                                                  |                             |                      | 88 □ 63A                                  | N40 . x - x - - - . ST082   | x - x - - - . ST082                           |                        |                     |
| 80A                                              | N60 . x - x - - - . ST082   | x - x - - - . ST082  |                                           |                             |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST082   | x - x - - - . ST082  |                                           |                             |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST082  | x - x - - - . ST082  | +114<br>                                  |                             |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST082  | x - x - - - . ST082  |                                           |                             |                                               |                        |                     |
| <b>9 steps</b>                                   |                             | 30°                  |                                           | 10 48 □ 20A                 | M10H . x x x - - - . ST092                    | x x x - - - . ST092    |                     |
|                                                  |                             |                      |                                           | 32A                         | M20 . x x x - - - . ST092                     | x x x - - - . ST092    |                     |
|                                                  |                             |                      |                                           | 64 □ 32A                    | N20 . x - x - - - . ST092                     | x - x - - - . ST092    |                     |
|                                                  |                             |                      | 50A                                       | N33F . x - x - - - . ST092  | x - x - - - . ST092                           |                        |                     |
|                                                  |                             |                      | 88 □ 63A                                  | N40 . x - x - - - . ST092   | x - x - - - . ST092                           |                        |                     |
| 80A                                              | N60 . x - x - - - . ST092   | x - x - - - . ST092  |                                           |                             |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST092   | x - x - - - . ST092  |                                           |                             |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST092  | x - x - - - . ST092  | +115<br>                                  |                             |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST092  | x - x - - - . ST092  |                                           |                             |                                               |                        |                     |
| <b>10 steps</b>                                  |                             | 30°                  |                                           | 11 48 □ 20A                 | M10H . x x x - - - . ST0102                   | x x x - - - . ST0102   |                     |
|                                                  |                             |                      |                                           | 32A                         | M20 . x x x - - - . ST0102                    | x x x - - - . ST0102   |                     |
|                                                  |                             |                      |                                           | 64 □ 32A                    | N20 . x - x - - - . ST0102                    | x - x - - - . ST0102   |                     |
|                                                  |                             |                      | 50A                                       | N33F . x - x - - - . ST0102 | x - x - - - . ST0102                          |                        |                     |
|                                                  |                             |                      | 88 □ 63A                                  | N40 . x - x - - - . ST0102  | x - x - - - . ST0102                          |                        |                     |
| 80A                                              | N60 . x - x - - - . ST0102  | x - x - - - . ST0102 |                                           |                             |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST0102  | x - x - - - . ST0102 |                                           |                             |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST0102 | x - x - - - . ST0102 | +116<br>                                  |                             |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST0102 | x - x - - - . ST0102 |                                           |                             |                                               |                        |                     |
| <b>11 steps</b>                                  |                             | 30°                  |                                           | 12 48 □ 20A                 | M10H . x x x - - - . ST0112                   | x x x - - - . ST0112   |                     |
|                                                  |                             |                      |                                           | 32A                         | M20 . x x x - - - . ST0112                    | x x x - - - . ST0112   |                     |
|                                                  |                             |                      |                                           | 64 □ 32A                    | N20 . x - x - - - . ST0112                    | x - x - - - . ST0112   |                     |
|                                                  |                             |                      | 50A                                       | N33F . x - x - - - . ST0112 | x - x - - - . ST0112                          |                        |                     |
|                                                  |                             |                      | 88 □ 63A                                  | N40 . x - x - - - . ST0112  | x - x - - - . ST0112                          |                        |                     |
| 80A                                              | N60 . x - x - - - . ST0112  | x - x - - - . ST0112 |                                           |                             |                                               |                        |                     |
| 115A                                             | N80 . x - x - - - . ST0112  | x - x - - - . ST0112 |                                           |                             |                                               |                        |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST0112 | x - x - - - . ST0112 | +117<br>                                  |                             |                                               |                        |                     |
| 250A                                             | N200 . x - x - - - . ST0112 | x - x - - - . ST0112 |                                           |                             |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 2-pole with off, 11 steps N200 E ST0112

## Switching programs

| Description                                        | Wiring diagram            | Switching angle           | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch program                          | Escutcheon plate |
|----------------------------------------------------|---------------------------|---------------------------|-------------------------------------------|----------|-----------------------------------------------|-----------------------------------------|------------------|
| <b>Multi step switches 3-pole without Off ST.3</b> |                           |                           |                                           |          |                                               |                                         |                  |
| 3 steps                                            |                           | 60°                       | 5                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST33       | M20 . x x x x - - . ST33                |                  |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST33                      | N33F . x - x - x x <sup>2)</sup> . ST33 |                  |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST33                      | N60 . x - x - x - . ST33                |                  |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST33                      |                                         |                  |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                  |
| 132 □ 150A                                         | N100 . x - x - - - . ST33 | N200 . x - x - - - . ST33 |                                           |          |                                               |                                         |                  |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                  |
| 4 steps                                            |                           | 60°                       | 6                                         | 48 □ 20A | M10H . x x x - x <sup>1)</sup> - . ST43       | M20 . x x x - - - . ST43                |                  |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x x . ST43                      | N33F . x - x - x - . ST43               |                  |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST43                      | N60 . x - x - x - . ST43                |                  |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST43                      |                                         |                  |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                  |
| 132 □ 150A                                         | N100 . x - x - - - . ST43 | N200 . x - x - - - . ST43 |                                           |          |                                               |                                         |                  |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                  |
| 5 steps                                            |                           | 60°                       | 8                                         | 48 □ 20A | M10H . x x x - - - . ST53                     | M20 . x x x - - - . ST53                |                  |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - x - . ST53                      | N33F . x - x - - - . ST53               |                  |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - x - . ST53                      | N60 . x - x - - - . ST53                |                  |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST53                      |                                         |                  |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                  |
| 132 □ 150A                                         | N100 . x - x - - - . ST53 | N200 . x - x - - - . ST53 |                                           |          |                                               |                                         |                  |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                  |
| 6 steps                                            |                           | 60°                       | 9                                         | 48 □ 20A | M10H . x x x - - - . ST63                     | M20 . x x x - - - . ST63                |                  |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - - - . ST63                      | N33F . x - x - - - . ST63               |                  |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - - - . ST63                      | N60 . x - x - - - . ST63                |                  |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST63                      |                                         |                  |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                  |
| 132 □ 150A                                         | N100 . x - x - - - . ST63 | N200 . x - x - - - . ST63 |                                           |          |                                               |                                         |                  |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                  |
| 7 steps                                            |                           | 45°                       | 11                                        | 48 □ 20A | M10H . x x x - - - . ST73                     | M20 . x x x - - - . ST73                |                  |
|                                                    |                           |                           |                                           | 64 □ 32A | N20 . x - x - - - . ST73                      | N33F . x - x - - - . ST73               |                  |
|                                                    |                           |                           |                                           | 88 □ 63A | N40 . x - x - - - . ST73                      | N60 . x - x - - - . ST73                |                  |
|                                                    |                           |                           |                                           | 80A      | N80 . x - x - - - . ST73                      |                                         |                  |
|                                                    |                           |                           |                                           | 115A     |                                               |                                         |                  |
| 132 □ 150A                                         | N100 . x - x - - - . ST73 | N200 . x - x - - - . ST73 |                                           |          |                                               |                                         |                  |
| 250A                                               |                           |                           |                                           |          |                                               |                                         |                  |

Ordering example: AC21 250A panel mounting, multi step switch 3-pole without off, 7 steps N200 E ST73

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                        | Wiring diagram             | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                       | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|----------------------------------------------------|----------------------------|-----------------|-------------------------------------------|----------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 3-pole without Off ST.3</b> |                            |                 |                                           |                            |                                               |                        |                     |
| 8 steps                                            |                            | 45°             | 12 48 □ 20A                               | M10H . x x x - - - . ST83  | x x x - - - . ST83                            | . ST83                 |                     |
|                                                    |                            |                 | 32A                                       | M20 . x x x - - - . ST83   |                                               |                        |                     |
|                                                    |                            |                 | 64 □ 32A                                  | N20 . x - x - - - . ST83   |                                               |                        |                     |
|                                                    |                            |                 | 50A                                       | N33F . x - x - - - . ST83  |                                               |                        |                     |
|                                                    |                            |                 | 88 □ 63A                                  | N40 . x - x - - - . ST83   |                                               |                        |                     |
| 80A                                                | N60 . x - x - - - . ST83   |                 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST83   |                 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST83  |                 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST83  |                 |                                           |                            |                                               |                        |                     |
| 9 steps                                            |                            | 30°             | 14 48 □ 20A                               | M10H . x - x - - - . ST93  | x - x - - - . ST93                            | . ST93                 |                     |
|                                                    |                            |                 | 32A                                       | M20 . x - x - - - . ST93   |                                               |                        |                     |
|                                                    |                            |                 | 64 □ 32A                                  | N20 . x - x - - - . ST93   |                                               |                        |                     |
|                                                    |                            |                 | 50A                                       | N33F . x - x - - - . ST93  |                                               |                        |                     |
|                                                    |                            |                 | 88 □ 63A                                  | N40 . x - x - - - . ST93   |                                               |                        |                     |
| 80A                                                | N60 . x - x - - - . ST93   |                 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST93   |                 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST93  |                 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST93  |                 |                                           |                            |                                               |                        |                     |
| 10 steps                                           |                            | 30°             | 15 48 □ 20A                               | M10H . x - x - - - . ST103 | x - x - - - . ST103                           | . ST103                |                     |
|                                                    |                            |                 | 32A                                       | M20 . x - x - - - . ST103  |                                               |                        |                     |
|                                                    |                            |                 | 64 □ 32A                                  | N20 . x - x - - - . ST103  |                                               |                        |                     |
|                                                    |                            |                 | 50A                                       | N33F . x - x - - - . ST103 |                                               |                        |                     |
|                                                    |                            |                 | 88 □ 63A                                  | N40 . x - x - - - . ST103  |                                               |                        |                     |
| 80A                                                | N60 . x - x - - - . ST103  |                 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST103  |                 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST103 |                 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST103 |                 |                                           |                            |                                               |                        |                     |
| 11 steps                                           |                            | 30°             | 17 48 □ 20A                               | M10H . x - x - - - . ST113 | x - x - - - . ST113                           | . ST113                |                     |
|                                                    |                            |                 | 32A                                       | M20 . x - x - - - . ST113  |                                               |                        |                     |
|                                                    |                            |                 | 64 □ 32A                                  | N20 . x - x - - - . ST113  |                                               |                        |                     |
|                                                    |                            |                 | 50A                                       | N33F . x - x - - - . ST113 |                                               |                        |                     |
|                                                    |                            |                 | 88 □ 63A                                  | N40 . x - x - - - . ST113  |                                               |                        |                     |
| 80A                                                | N60 . x - x - - - . ST113  |                 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST113  |                 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST113 |                 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST113 |                 |                                           |                            |                                               |                        |                     |
| 12 steps                                           |                            | 30°             | 18 48 □ 20A                               | M10H . x - x - - - . ST123 | x - x - - - . ST123                           | . ST123                |                     |
|                                                    |                            |                 | 32A                                       | M20 . x - x - - - . ST123  |                                               |                        |                     |
|                                                    |                            |                 | 64 □ 32A                                  | N20 . x - x - - - . ST123  |                                               |                        |                     |
|                                                    |                            |                 | 50A                                       | N33F . x - x - - - . ST123 |                                               |                        |                     |
|                                                    |                            |                 | 88 □ 63A                                  | N40 . x - x - - - . ST123  |                                               |                        |                     |
| 80A                                                | N60 . x - x - - - . ST123  |                 |                                           |                            |                                               |                        |                     |
| 115A                                               | N80 . x - x - - - . ST123  |                 |                                           |                            |                                               |                        |                     |
| 132 □ 150A                                         | N100 . x - x - - - . ST123 |                 |                                           |                            |                                               |                        |                     |
| 250A                                               | N200 . x - x - - - . ST123 |                 |                                           |                            |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 3-pole without off, 12 steps

N200 E ST123



## Switching programs

| Description                                      | Wiring diagram             | Switching angle            | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type     | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram                   | Escutcheon<br>plate |
|--------------------------------------------------|----------------------------|----------------------------|-------------------------------------------|----------|-----------------------------------------------|------------------------------------------|---------------------|
| <b>Multi step switches 3-pole with Off ST0.3</b> |                            |                            |                                           |          |                                               |                                          |                     |
| 2 steps                                          |                            | 60°                        | 3                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST023      | M20 . x x x x - - . ST023                |                     |
|                                                  |                            |                            |                                           | 64 □ 32A | N20 . x - x - x x . ST023                     | N33F . x x x - x x <sup>2)</sup> . ST023 |                     |
|                                                  |                            |                            |                                           | 88 □ 63A | N40 . x - x - x - . ST023                     | N60 . x - x - x - . ST023                |                     |
|                                                  |                            |                            |                                           | 80A      | N80 . x - x - - - . ST023                     |                                          |                     |
|                                                  |                            |                            |                                           | 115A     |                                               |                                          |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST023 | N200 . x - x - - - . ST023 |                                           |          |                                               |                                          |                     |
| 250A                                             |                            |                            |                                           |          |                                               |                                          |                     |
| 3 steps                                          |                            | 45°                        | 5                                         | 48 □ 20A | M10H . x x x x x <sup>1)</sup> - . ST033      | M20 . x x x x - - . ST033                |                     |
|                                                  |                            |                            |                                           | 64 □ 32A | N20 . x - x - x x . ST033                     | N33F . x - x - x x <sup>2)</sup> . ST033 |                     |
|                                                  |                            |                            |                                           | 88 □ 63A | N40 . x - x - x - . ST033                     | N60 . x - x - x - . ST033                |                     |
|                                                  |                            |                            |                                           | 80A      | N80 . x - x - - - . ST033                     |                                          |                     |
|                                                  |                            |                            |                                           | 115A     |                                               |                                          |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST033 | N200 . x - x - - - . ST033 |                                           |          |                                               |                                          |                     |
| 250A                                             |                            |                            |                                           |          |                                               |                                          |                     |
| 4 steps                                          |                            | 30°                        | 6                                         | 48 □ 20A | M10H . x x x - x <sup>1)</sup> - . ST043      | M20 . x x x - - - . ST043                |                     |
|                                                  |                            |                            |                                           | 64 □ 32A | N20 . x - x - x x . ST043                     | N33F . x - x - x - . ST043               |                     |
|                                                  |                            |                            |                                           | 88 □ 63A | N40 . x - x - x - . ST043                     | N60 . x - x - x - . ST043                |                     |
|                                                  |                            |                            |                                           | 80A      | N80 . x - x - - - . ST043                     |                                          |                     |
|                                                  |                            |                            |                                           | 115A     |                                               |                                          |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST043 | N200 . x - x - - - . ST043 |                                           |          |                                               |                                          |                     |
| 250A                                             |                            |                            |                                           |          |                                               |                                          |                     |
| 5 steps                                          |                            | 45°                        | 9                                         | 48 □ 20A | M10H . x x x - - - . ST053                    | M20 . x x x - - - . ST053                |                     |
|                                                  |                            |                            |                                           | 64 □ 32A | N20 . x - x - - - . ST053                     | N33F . x - x - - - . ST053               |                     |
|                                                  |                            |                            |                                           | 88 □ 63A | N40 . x - x - - - . ST053                     | N60 . x - x - - - . ST053                |                     |
|                                                  |                            |                            |                                           | 80A      | N80 . x - x - - - . ST053                     |                                          |                     |
|                                                  |                            |                            |                                           | 115A     |                                               |                                          |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST053 | N200 . x - x - - - . ST053 |                                           |          |                                               |                                          |                     |
| 250A                                             |                            |                            |                                           |          |                                               |                                          |                     |
| 6 steps                                          |                            | 45°                        | 11                                        | 48 □ 20A | M10H . x x x - - - . ST063                    | M20 . x x x - - - . ST063                |                     |
|                                                  |                            |                            |                                           | 64 □ 32A | N20 . x - x - - - . ST063                     | N33F . x - x - - - . ST063               |                     |
|                                                  |                            |                            |                                           | 88 □ 63A | N40 . x - x - - - . ST063                     | N60 . x - x - - - . ST063                |                     |
|                                                  |                            |                            |                                           | 80A      | N80 . x - x - - - . ST063                     |                                          |                     |
|                                                  |                            |                            |                                           | 115A     |                                               |                                          |                     |
| 132 □ 150A                                       | N100 . x - x - - - . ST063 | N200 . x - x - - - . ST063 |                                           |          |                                               |                                          |                     |
| 250A                                             |                            |                            |                                           |          |                                               |                                          |                     |

Ordering example: AC21 250A panel mounting, multi step switch 3-pole with off, 6 steps **N200 E ST063**

1) Plastic enclosed switches are delivered with switch type M10.

2) Cast enclosed switches are delivered with switch type N32.

Switching programs

| Description                                      | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type                                                                                   | Design<br>see page 6-8<br>E. Z. V. SMA. P. G. | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|--------------------------------------------------|----------------|-----------------|-------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------|------------------------|---------------------|
| <b>Multi step switches 3-pole with Off ST0.3</b> |                |                 |                                           |                                                                                        |                                               |                        |                     |
| 7 steps                                          |                | 45°             | 12 48 □ 20A                               | M10H . x x x - - - . ST073<br>M20 . x x x - - - . ST073                                |                                               |                        |                     |
|                                                  |                |                 | 64 □ 32A                                  | N20 . x - x - - - . ST073<br>N33F . x - x - - - . ST073                                |                                               |                        |                     |
|                                                  |                |                 | 88 □ 63A                                  | N40 . x - x - - - . ST073<br>N60 . x - x - - - . ST073<br>N80 . x - x - - - . ST073    |                                               |                        |                     |
|                                                  |                |                 | 132 □ 150A                                | N100 . x - x - - - . ST073<br>N200 . x - x - - - . ST073                               |                                               |                        |                     |
| 8 steps                                          |                | 30°             | 14 48 □ 20A                               | M10H . x - x - - - . ST083<br>M20 . x - x - - - . ST083                                |                                               |                        |                     |
|                                                  |                |                 | 64 □ 32A                                  | N20 . x - x - - - . ST083<br>N33F . x - x - - - . ST083                                |                                               |                        |                     |
|                                                  |                |                 | 88 □ 63A                                  | N40 . x - x - - - . ST083<br>N60 . x - x - - - . ST083<br>N80 . x - x - - - . ST083    |                                               |                        |                     |
|                                                  |                |                 | 132 □ 150A                                | N100 . x - x - - - . ST083<br>N200 . x - x - - - . ST083                               |                                               |                        |                     |
| 9 steps                                          |                | 30°             | 15 48 □ 20A                               | M10H . x - x - - - . ST093<br>M20 . x - x - - - . ST093                                |                                               |                        |                     |
|                                                  |                |                 | 64 □ 32A                                  | N20 . x - x - - - . ST093<br>N33F . x - x - - - . ST093                                |                                               |                        |                     |
|                                                  |                |                 | 88 □ 63A                                  | N40 . x - x - - - . ST093<br>N60 . x - x - - - . ST093<br>N80 . x - x - - - . ST093    |                                               |                        |                     |
|                                                  |                |                 | 132 □ 150A                                | N100 . x - x - - - . ST093<br>N200 . x - x - - - . ST093                               |                                               |                        |                     |
| 10 steps                                         |                | 30°             | 17 48 □ 20A                               | M10H . x - x - - - . ST0103<br>M20 . x - x - - - . ST0103                              |                                               |                        |                     |
|                                                  |                |                 | 64 □ 32A                                  | N20 . x - x - - - . ST0103<br>N33F . x - x - - - . ST0103                              |                                               |                        |                     |
|                                                  |                |                 | 88 □ 63A                                  | N40 . x - x - - - . ST0103<br>N60 . x - x - - - . ST0103<br>N80 . x - x - - - . ST0103 |                                               |                        |                     |
|                                                  |                |                 | 132 □ 150A                                | N100 . x - x - - - . ST0103<br>N200 . x - x - - - . ST0103                             |                                               |                        |                     |
| 11 steps                                         |                | 30°             | 18 48 □ 20A                               | M10H . x - x - - - . ST0113<br>M20 . x - x - - - . ST0113                              |                                               |                        |                     |
|                                                  |                |                 | 64 □ 32A                                  | N20 . x - x - - - . ST0113<br>N33F . x - x - - - . ST0113                              |                                               |                        |                     |
|                                                  |                |                 | 88 □ 63A                                  | N40 . x - x - - - . ST0113<br>N60 . x - x - - - . ST0113<br>N80 . x - x - - - . ST0113 |                                               |                        |                     |
|                                                  |                |                 | 132 □ 150A                                | N100 . x - x - - - . ST0113<br>N200 . x - x - - - . ST0113                             |                                               |                        |                     |

Ordering example: AC21 250A panel mounting, multi step switch 3-pole with off, 11 steps N200 E ST0113

# Mini-Cam Switches M4H

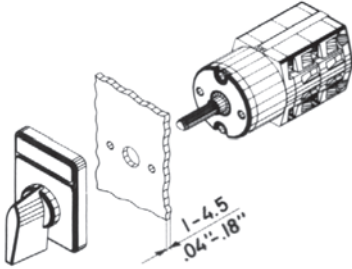
## Panel mounting E, IP40



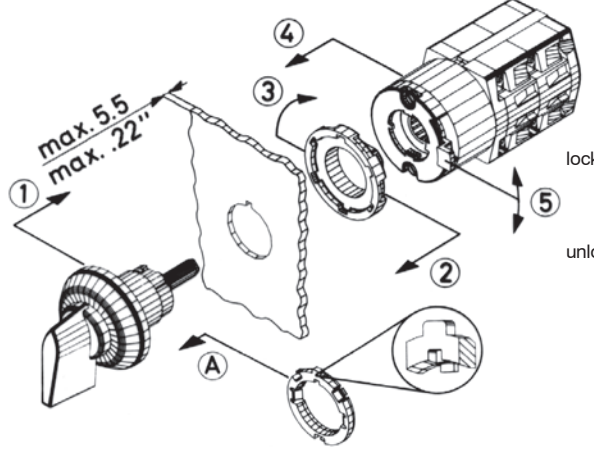
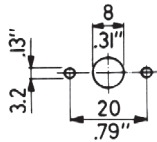
## Central fixing Z



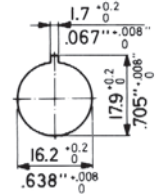
## Central fixing without escutcheon plate ZO



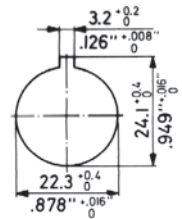
### Mounting holes



### Central fixing 16mm



### unlock Central fixing 22mm

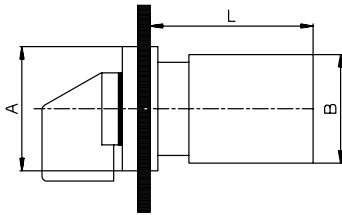


Single hole mountings are generally delivered for a 16mm (.64") mounting. Using the forwarded adapter ring, it is possible to alter the single hole mountings from 22mm (.88"). For that purpose the adapter ring has to be attached onto the threaded part of the body in such a manner, that  
 1. the flat side of the adapter ring shows towards the front seal and  
 2. the inner nose fits into the notch of the body.  
 The adapter ring has to be pushed towards the front seal.

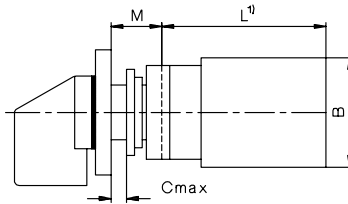
| Optional extras                                    | ordering code | for design     | M4H Z ... +SRE | M4H Z ... +SA. | M4H ZO ... +SA. | M4H Z ... +SRE+SA. |
|----------------------------------------------------|---------------|----------------|----------------|----------------|-----------------|--------------------|
| Additional escutcheon plate                        | +SRE          | E, Z, ZO       |                |                |                 |                    |
| Additional escutcheon plate                        | +SRE2         | E, Z, ZO       |                |                |                 |                    |
| Key operated switch with lock KABA with lock Ronis | +SA1<br>+SA2  | Z, ZO<br>Z, ZO |                |                |                 |                    |

**Wrench J7400**  
for switches M4H with central fixing is necessary

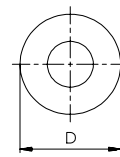
## Panel mounting E



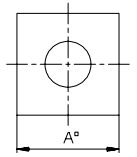
## Central fixing Z, ZO



## ZO



## Z



| Type | A  | B  | D  | M    | Dimension L for ... cells |      |      |      |      |      |      |       |       |
|------|----|----|----|------|---------------------------|------|------|------|------|------|------|-------|-------|
|      |    |    |    |      | 1                         | 2    | 3    | 4    | 5    | 6    | 7    | 8     |       |
| M4H  | mm | 30 | 28 | 29,5 | 12,5                      | 38,5 | 50,5 | 62,5 | 74,5 | 86,5 | 98,5 | 110,5 | 122,5 |

## Technical data

| Type | according to specifications  | AC21A                               | AC15                                 |                                      | Volt     | Motor rating AC3 |          |          |                |              |              |            |            |
|------|------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|----------|------------------|----------|----------|----------------|--------------|--------------|------------|------------|
|      |                              |                                     | 110V 380V<br>240V 440V<br>Pilot Duty | 110V 380V<br>240V 440V<br>Pilot Duty |          | 3 phase 3-pole   |          |          | 1 phase 2-pole |              |              |            |            |
| M4H  | IEC, VDE, BS, SEV<br>UL, CSA | General use<br>10A/500V<br>10A/300V | 2,5A<br>A300                         | 1,5A<br>A300                         | kW<br>HP | 0,65<br>0,75     | 1,5<br>1 | 2,2<br>- | 0,3<br>0,33    | 0,55<br>0,75 | 0,75<br>0,75 | 380<br>440 | 380<br>440 |

| Type | according to specifications  | Volt     | Motor rating AC23 |          |        | additional data for wiring according to UL and CSA |                      |                                         |     |         |                    |
|------|------------------------------|----------|-------------------|----------|--------|----------------------------------------------------|----------------------|-----------------------------------------|-----|---------|--------------------|
|      |                              |          | 3-pole            | 3-pole   | 2-pole | Type                                               | temp. rating of wire | torque value for field wiring terminals |     |         |                    |
| M4H  | IEC, VDE, BS, SEV<br>UL, CSA | kW<br>HP | 0,75<br>-         | 1,8<br>- | 3<br>- | 110<br>120                                         | 220<br>240           | 380<br>440                              | M4H | 60/75°C | 0,6Nm / 5lb - inch |

## Switch programs

| Description                             | Wiring diagram | AC21 500V 10A<br>AC15 230V 2,5A<br>AC3 4x400V 2,2kW | escutch.<br>30 x 30 | numb.<br>of<br>cells | Type  | Design   |          |           | Switch<br>pro-<br>gram |
|-----------------------------------------|----------------|-----------------------------------------------------|---------------------|----------------------|-------|----------|----------|-----------|------------------------|
|                                         |                |                                                     |                     |                      |       | .E.<br>↓ | .Z.<br>↓ | .ZO.<br>↓ |                        |
| <b>On-Off-switch A</b>                  |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . A1                   |
| 2-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . A2                   |
| 3-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . A3                   |
| 4-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . A4                   |
| 6-pole                                  |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . A6                   |
| <b>Changeover switch U</b>              |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . U1                   |
| 2-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . U2                   |
| 3-pole                                  |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . U3                   |
| 4-pole                                  |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . U4                   |
| <b>Changeover switch without off W</b>  |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . W1                   |
| 2-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . W2                   |
| 3-pole                                  |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . W3                   |
| 4-pole                                  |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . W4                   |
| 6-pole                                  |                |                                                     |                     | 6                    | M4H . | x        | x        | x         | . W6                   |
| <b>Reversing switch WU</b>              |                |                                                     |                     |                      |       |          |          |           |                        |
| 2-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . WU2                  |
| 3-pole                                  |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . WU3                  |
| 3-pole<br>with spring return to 0       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . WU3R2                |
| <b>Star-delta switch SD</b>             |                |                                                     |                     |                      |       |          |          |           |                        |
| 1 rotary direction                      |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . SD                   |
| both<br>rotary directions               |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . SDR                  |
| <b>Changeover with spring return UR</b> |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . UR1                  |
| 2-pole                                  |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . UR2                  |
| 3-pole                                  |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . UR3                  |
| <b>Start switch</b>                     |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . SE                   |
| <b>Stop switch</b>                      |                |                                                     |                     |                      |       |          |          |           |                        |
| 1-pole                                  |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . SA                   |

Ordering example: Stop switch, 1-pole, Central fixing: **M4H Z SA**

# Mini-Cam Switches M4H

## Switch programs

| Description                                                   | Wiring diagram | AC21 500V 10A<br>AC15 230V 2,5A<br>AC3 4x400V 2,2kW | escutch.<br>30 x 30 | numb.<br>of<br>cells | Type | Design   |          |           | Switch<br>pro-<br>gram |
|---------------------------------------------------------------|----------------|-----------------------------------------------------|---------------------|----------------------|------|----------|----------|-----------|------------------------|
|                                                               |                |                                                     |                     |                      |      | .E.<br>↓ | .Z.<br>↓ | .ZO.<br>↓ |                        |
| Start-Stop switch                                             |                |                                                     |                     | 1                    | M4H  | x        | x        | x         | . SEA                  |
| Start-Stop switch position START with spring return to 1      |                |                                                     |                     | 1                    | M4H  | x        | x        | x         | . S392                 |
| Start-Stop switch for reversing contactors                    |                |                                                     |                     | 2                    | M4H  | x        | x        | x         | . S2EA                 |
| Voltmeter selector switch V<br>3 line voltages                |                |                                                     |                     | 2                    | M4H  | x        | x        | x         | . V3                   |
| 3 phase voltages                                              |                |                                                     |                     | 2                    | M4H  | x        | x        | x         | . V0                   |
| 3 line voltages<br>3 phase voltages                           |                |                                                     |                     | 3                    | M4H  | x        | x        | x         | . V1                   |
| Ammeter selector switch A<br>1-pole, 3 current transformer    |                |                                                     |                     | 4                    | M4H  | x        | x        | x         | . M31                  |
| Gang switch GR<br>2 circuits A and B<br>1-pole<br>0 - A - A+B |                |                                                     |                     | 1                    | M4H  | x        | x        | x         | . GR11                 |
| 2 circuits A and B<br>1-pole<br>0 - A - B - A+B               |                |                                                     |                     | 1                    | M4H  | x        | x        | x         | . GR12                 |
| 3 circuits A, B and C<br>1-pole                               |                |                                                     |                     | 2                    | M4H  | x        | x        | x         | . GR14                 |
| Multi step switch without 0 ST<br>3 steps, 1-pole             |                |                                                     |                     | 2                    | M4H  | x        | x        | x         | . ST31                 |
| 3 steps, 2-pole                                               |                |                                                     |                     | 3                    | M4H  | x        | x        | x         | . ST32                 |
| 3 steps, 3-pole                                               |                |                                                     |                     | 5                    | M4H  | x        | x        | x         | . ST33                 |





Ordering example: Multi step switch without 0, 3 steps, 3-pole, panel mounting: **M4H E ST33**

## Switch programs



| Description                           | Wiring diagram | AC21 500V 10A<br>AC15 230V 2,5A<br>AC3 4x400V 2,2kW | escutch.<br>30 x 30 | numb.<br>of<br>cells | Type  | Design   |          |           | Switch<br>pro-<br>gram |
|---------------------------------------|----------------|-----------------------------------------------------|---------------------|----------------------|-------|----------|----------|-----------|------------------------|
|                                       |                |                                                     |                     |                      |       | .E.<br>↓ | .Z.<br>↓ | .ZO.<br>↓ |                        |
| <b>Multi step switch without 0 ST</b> |                |                                                     |                     |                      |       |          |          |           |                        |
| 4 steps, 1-pole                       |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . ST41                 |
| 4 steps, 2-pole                       |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . ST42                 |
| 4 steps, 3-pole                       |                |                                                     |                     | 6                    | M4H . | x        | x        | x         | . ST43                 |
| 5 steps, 1-pole                       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . ST51                 |
| 5 steps, 2-pole                       |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . ST52                 |
| 6 steps, 1-pole                       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . ST61                 |
| 6 steps, 2-pole                       |                |                                                     |                     | 6                    | M4H . | x        | x        | x         | . ST62                 |
| <b>Multi step switch with 0 ST0.</b>  |                |                                                     |                     |                      |       |          |          |           |                        |
| 2 steps, 1-pole                       |                |                                                     |                     | 1                    | M4H . | x        | x        | x         | . ST021                |
| 2 steps, 2-pole                       |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . ST022                |
| 2 steps, 3-pole                       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . ST023                |
| 3 steps, 1-pole                       |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . ST031                |
| 3 steps, 2-pole                       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . ST032                |
| 3 steps, 3-pole                       |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . ST033                |
| 4 steps, 1-pole                       |                |                                                     |                     | 2                    | M4H . | x        | x        | x         | . ST041                |
| 4 steps, 2-pole                       |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . ST042                |
| 4 steps, 3-pole                       |                |                                                     |                     | 6                    | M4H . | x        | x        | x         | . ST043                |
| 5 steps, 1-pole                       |                |                                                     |                     | 3                    | M4H . | x        | x        | x         | . ST051                |
| 5 steps, 2-pole                       |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . ST052                |
| 6 steps, 1-pole                       |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . ST061                |
| 7 steps, 1-pole                       |                |                                                     |                     | 4                    | M4H . | x        | x        | x         | . ST071                |
| 8 steps, 1-pole                       |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . ST081                |
| 9 steps, 1-pole                       |                |                                                     |                     | 5                    | M4H . | x        | x        | x         | . ST091                |
| 10 steps, 1-pole                      |                |                                                     |                     | 6                    | M4H . | x        | x        | x         | . ST0101               |

**Ordering example:** Multi step switch with 0, 10 steps, 1-pole, Central fixing without escutcheon plate: **M4H ZO ST0101**

## Emergency-Stop-Main Switches for Panel Mounting, lockable, IP66

|                                                                                                                           | max. padlocks | AC21 690V | AC23 3x400V | plate IP65 | Type             | Pack pcs. | Weight kg/pcs. |
|---------------------------------------------------------------------------------------------------------------------------|---------------|-----------|-------------|------------|------------------|-----------|----------------|
| <b>3-pole, padlock device SV1</b>        |               |           |             |            |                  |           |                |
|                                                                                                                           |               | 20A       | 7,5kW       | 48 □ 1)    | LTS20 EHN1 A3    | 1         | 0,15           |
|                                                                                                                           |               | 25A       | 10kW        | 48 □ 1)    | LTS25 EHN1 A3    | 1         | 0,15           |
|                                                                                                                           |               | 32A       | 12,5kW      | 48 □ 1)    | LTS32 EHN1 A3    | 1         | 0,15           |
|                                                                                                                           |               | 40A       | 16kW        | 48 □ 1)    | LTS40 EHN1 A3    | 1         | 0,15           |
|                                                                                                                           |               | 63A       | 22kW        | 48 □ 1)    | LTS63 EHN1 A3    | 1         | 0,17           |
|                                                                                                                           |               | 80A       | 22kW        | 48 □ 1)    | LTS80 EHN1 A3    | 1         | 0,17           |
| <b>4-pole, padlock device SV1</b>        |               |           |             |            |                  |           |                |
|                                                                                                                           |               | 20A       | 7,5kW       | 48 □ 1)    | LTS20 EHN1 A4    | 1         | 0,19           |
|                                                                                                                           |               | 25A       | 10kW        | 48 □ 1)    | LTS25 EHN1 A4    | 1         | 0,19           |
|                                                                                                                           |               | 32A       | 12,5kW      | 48 □ 1)    | LTS32 EHN1 A4    | 1         | 0,19           |
|                                                                                                                           |               | 40A       | 16kW        | 48 □ 1)    | LTS40 EHN1 A4    | 1         | 0,19           |
|                                                                                                                           |               | 63A       | 22kW        | 48 □ 1)    | LTS63 EHN1 A4    | 1         | 0,21           |
|                                                                                                                           |               | 80A       | 22kW        | 48 □ 1)    | LTS80 EHN1 A4    | 1         | 0,21           |
| <b>3-pole, padlock device SV4(34)</b>    |               |           |             |            |                  |           |                |
|                                                                                                                           |               | 20A       | 7,5kW       | 64 □ 2)    | LTS20 EHN4 A3    | 1         | 0,17           |
|                                                                                                                           |               | 25A       | 10kW        | 64 □ 2)    | LTS25 EHN4 A3    | 1         | 0,17           |
|                                                                                                                           |               | 32A       | 12,5kW      | 64 □ 2)    | LTS32 EHN4 A3    | 1         | 0,17           |
|                                                                                                                           |               | 40A       | 16kW        | 64 □ 2)    | LTS40 EHN4 A3    | 1         | 0,17           |
|                                                                                                                           |               | 63A       | 22kW        | 64 □ 2)    | LTS63 EHN4 A3    | 1         | 0,19           |
|                                                                                                                           |               | 80A       | 22kW        | 64 □ 2)    | LTS80 EHN4 A3    | 1         | 0,19           |
|                                                                                                                           |               | 85A       | 30kW        | 64 □ 2)    | LTS85 EHN4 A3    | 1         | 0,39           |
|                                                                                                                           |               | 100A      | 37kW        | 64 □ 2)    | LTS100 EHN4 A3   | 1         | 0,39           |
|                                                                                                                           |               | 125A      | 45kW        | 64 □ 2)    | LTS125 EHN4 A3   | 1         | 0,39           |
|                                                                                                                           |               | 160A      | 55kW        | 88 □       | LT160 EHN34 T300 | 1         | 1,16           |
| <b>4-pole, padlock device SV4(34)</b>  |               |           |             |            |                  |           |                |
|                                                                                                                           |               | 20A       | 7,5kW       | 64 □ 2)    | LTS20 EHN4 A4    | 1         | 0,20           |
|                                                                                                                           |               | 25A       | 10kW        | 64 □ 2)    | LTS25 EHN4 A4    | 1         | 0,20           |
|                                                                                                                           |               | 32A       | 12,5kW      | 64 □ 2)    | LTS32 EHN4 A4    | 1         | 0,20           |
|                                                                                                                           |               | 40A       | 16kW        | 64 □ 2)    | LTS40 EHN4 A4    | 1         | 0,20           |
|                                                                                                                           |               | 63A       | 22kW        | 64 □ 2)    | LTS63 EHN4 A4    | 1         | 0,23           |
|                                                                                                                           |               | 80A       | 22kW        | 64 □ 2)    | LTS80 EHN4 A4    | 1         | 0,23           |
|                                                                                                                           |               | 85A       | 30kW        | 64 □ 2)    | LTS80 EHN4 A4    | 1         | 0,44           |
|                                                                                                                           |               | 100A      | 37kW        | 64 □ 2)    | LTS100 EHN4 A4   | 1         | 0,44           |
|                                                                                                                           |               | 125A      | 45kW        | 64 □ 2)    | LTS125 EHN4 A4   | 1         | 0,44           |
|                                                                                                                           |               | 160A      | 55kW        | 88 □       | LT160 EHN34 T400 | 1         | 1,55           |
| <b>6-pole, 8-pole</b>                                                                                                     |               |           |             |            | on request       |           |                |

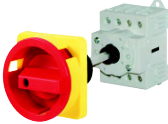
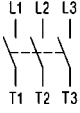


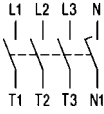

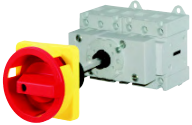
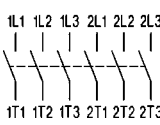

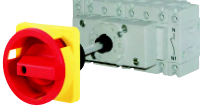
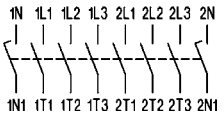

## Main Switches Emergency-Stop for Single Hole Mounting, lockable, IP66

|                                                                                                                       |  |     |        |      |               |   |      |
|-----------------------------------------------------------------------------------------------------------------------|--|-----|--------|------|---------------|---|------|
| <b>3-pole, padlock device SV1</b>  |  |     |        |      |               |   |      |
|                                                                                                                       |  | 20A | 7,5kW  | 48 □ | LTS20 ZHN1 A3 | 1 | 0,16 |
|                                                                                                                       |  | 25A | 10kW   | 48 □ | LTS25 ZHN1 A3 | 1 | 0,16 |
|                                                                                                                       |  | 32A | 12,5kW | 48 □ | LTS32 ZHN1 A3 | 1 | 0,16 |
|                                                                                                                       |  | 40A | 16kW   | 48 □ | LTS40 ZHN1 A3 | 1 | 0,16 |
| <b>4-pole, padlock device SV1</b>  |  |     |        |      |               |   |      |
|                                                                                                                       |  | 20A | 7,5kW  | 48 □ | LTS20 ZHN1 A4 | 1 | 0,20 |
|                                                                                                                       |  | 25A | 10kW   | 48 □ | LTS25 ZHN1 A4 | 1 | 0,20 |
|                                                                                                                       |  | 32A | 12,5kW | 48 □ | LTS32 ZHN1 A4 | 1 | 0,20 |
|                                                                                                                       |  | 40A | 16kW   | 48 □ | LTS40 ZHN1 A4 | 1 | 0,20 |


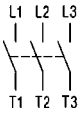


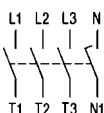

1) Types with padlock device 64 □ type suffix **64**, ordering example: LTS32 EHN164 A3, on request

2) Types with padlock device 88 □ type suffix **88**, ordering example: LTS32 EHN488 A3, on request

## Emergency-Stop-Main Switches, Base Mounting with Door Clutch, Padlock Device for Single-Hole Mounting Depth X is adjustable (delivered with X<sub>max</sub> see page 50), IP66

|                                                                                                                                                                                                              | max. padlocks                                                                      | AC21 690V                                                                                                                                                                                                | AC23 3x400V                                                                       | plate IP65 | Type             | Pack pcs. | Weight kg/pcs.  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|------------------|-----------|-----------------|
| <b>3-pole, padlock device SV4</b><br>      |   | 20A                                                                                                                                                                                                      | 7,5kW                                                                             | 64 □       | LTS20 VZVHN4 A3  | 1         | 0,19            |
|                                                                                                                                                                                                              |                                                                                    | 25A                                                                                                                                                                                                      | 10kW                                                                              | 64 □       | LTS25 VZVHN4 A3  | 1         | 0,19            |
|                                                                                                                                                                                                              |                                                                                    | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 64 □       | LTS32 VZVHN4 A3  | 1         | 0,19            |
|                                                                                                                                                                                                              |                                                                                    | 40A                                                                                                                                                                                                      | 16kW                                                                              | 64 □       | LTS40 VZVHN4 A3  | 1         | 0,19            |
|                                                                                                                                                                                                              |                                                                                    | 63A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS63 VZVHN4 A3  | 1         | 0,22            |
|                                                                                                                                                                                                              |                                                                                    | 80A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS80 VZVHN4 A3  | 1         | 0,22            |
|                                                                                                                                                                                                              |                                                                                    | 85A                                                                                                                                                                                                      | 30kW                                                                              | 64 □       | LTS85 VZVHN4 A3  | 1         | 0,40            |
|                                                                                                                                                                                                              |                                                                                    | 100A                                                                                                                                                                                                     | 37kW                                                                              | 64 □       | LTS100 VZVHN4 A3 | 1         | 0,40            |
|                                                                                                                                                                                                              |                                                                                    | 125A                                                                                                                                                                                                     | 45kW                                                                              | 64 □       | LTS125 VZVHN4 A3 | 1         | 0,40            |
|                                                                                                                                                                                                              |                                                                                    | <b>4-pole, padlock device SV4</b><br>  |  | 20A        | 7,5kW            | 64 □      | LTS20 VZVHN4 A4 |
| 25A                                                                                                                                                                                                          | 10kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS25 VZVHN4 A4  | 1         | 0,20            |
| 32A                                                                                                                                                                                                          | 12,5kW                                                                             |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS32 VZVHN4 A4  | 1         | 0,20            |
| 40A                                                                                                                                                                                                          | 16kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS40 VZVHN4 A4  | 1         | 0,20            |
| 63A                                                                                                                                                                                                          | 22kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS63 VZVHN4 A4  | 1         | 0,26            |
| 80A                                                                                                                                                                                                          | 22kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS80 VZVHN4 A4  | 1         | 0,26            |
| 85A                                                                                                                                                                                                          | 30kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS85 VZVHN4 A4  | 1         | 0,45            |
| 100A                                                                                                                                                                                                         | 37kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS100 VZVHN4 A4 | 1         | 0,45            |
| 125A                                                                                                                                                                                                         | 45kW                                                                               |                                                                                                                                                                                                          |                                                                                   | 64 □       | LTS125 VZVHN4 A4 | 1         | 0,45            |
| <b>6-pole, padlock device SV4</b><br>      |   |                                                                                                                                                                                                          |                                                                                   | 20A        | 7,5kW            | 64 □      | LTS20 VZVHN4 A6 |
|                                                                                                                                                                                                              |                                                                                    | 25A                                                                                                                                                                                                      | 10kW                                                                              | 64 □       | LTS25 VZVHN4 A6  | 1         | 0,32            |
|                                                                                                                                                                                                              |                                                                                    | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 64 □       | LTS32 VZVHN4 A6  | 1         | 0,32            |
|                                                                                                                                                                                                              |                                                                                    | 40A                                                                                                                                                                                                      | 16kW                                                                              | 64 □       | LTS40 VZVHN4 A6  | 1         | 0,32            |
|                                                                                                                                                                                                              |                                                                                    | 63A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS63 VZVHN4 A6  | 1         | 0,37            |
|                                                                                                                                                                                                              |                                                                                    | 80A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS80 VZVHN4 A6  | 1         | 0,37            |
| <b>8-pole, padlock device SV4</b><br>  |  | 20A                                                                                                                                                                                                      | 7,5kW                                                                             | 64 □       | LTS20 VZVHN4 A8  | 1         | 0,34            |
|                                                                                                                                                                                                              |                                                                                    | 25A                                                                                                                                                                                                      | 10kW                                                                              | 64 □       | LTS25 VZVHN4 A8  | 1         | 0,34            |
|                                                                                                                                                                                                              |                                                                                    | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 64 □       | LTS32 VZVHN4 A8  | 1         | 0,34            |
|                                                                                                                                                                                                              |                                                                                    | 40A                                                                                                                                                                                                      | 16kW                                                                              | 64 □       | LTS40 VZVHN4 A8  | 1         | 0,34            |
|                                                                                                                                                                                                              |                                                                                    | 63A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS63 VZVHN4 A8  | 1         | 0,45            |
|                                                                                                                                                                                                              |                                                                                    | 80A                                                                                                                                                                                                      | 22kW                                                                              | 64 □       | LTS80 VZVHN4 A8  | 1         | 0,45            |

## in Switches, Base Mounting with Door Clutch, Padlock Device for Four-Hole Mounting Depth T is adjustable (delivered with T<sub>max</sub> see page 50), IP66

|                                                                                                                                                                                                                    |                                                                                     |      |        |      |                  |   |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|--------|------|------------------|---|------|
| <b>3-pole, padlock device SV4(SV34)</b><br>  |  | 20A  | 7,5kW  | 64 □ | LTS20 VHN4 A3    | 1 | 0,20 |
|                                                                                                                                                                                                                    |                                                                                     | 25A  | 10kW   | 64 □ | LTS25 VHN4 A3    | 1 | 0,20 |
|                                                                                                                                                                                                                    |                                                                                     | 32A  | 12,5kW | 64 □ | LTS32 VHN4 A3    | 1 | 0,20 |
|                                                                                                                                                                                                                    |                                                                                     | 40A  | 16kW   | 64 □ | LTS40 VHN4 A3    | 1 | 0,20 |
|                                                                                                                                                                                                                    |                                                                                     | 63A  | 22kW   | 64 □ | LTS63 VHN4 A3    | 1 | 0,24 |
|                                                                                                                                                                                                                    |                                                                                     | 80A  | 22kW   | 64 □ | LTS80 VHN4 A3    | 1 | 0,24 |
|                                                                                                                                                                                                                    |                                                                                     | 85A  | 30kW   | 64 □ | LTS85 VHN4 A3    | 1 | 0,40 |
|                                                                                                                                                                                                                    |                                                                                     | 100A | 37kW   | 64 □ | LTS100 VHN4 A3   | 1 | 0,40 |
|                                                                                                                                                                                                                    |                                                                                     | 125A | 45kW   | 64 □ | LTS125 VHN4 A3   | 1 | 0,40 |
|                                                                                                                                                                                                                    |                                                                                     | 160A | 55kW   | 88 □ | LT160 VHN34 T300 | 1 | 1,38 |
| <b>4-pole, padlock device SV4(SV34)</b><br>  |  | 20A  | 7,5kW  | 64 □ | LTS20 VHN4 A4    | 1 | 0,21 |
|                                                                                                                                                                                                                    |                                                                                     | 25A  | 10kW   | 64 □ | LTS25 VHN4 A4    | 1 | 0,21 |
|                                                                                                                                                                                                                    |                                                                                     | 32A  | 12,5kW | 64 □ | LTS32 VHN4 A4    | 1 | 0,21 |
|                                                                                                                                                                                                                    |                                                                                     | 40A  | 16kW   | 64 □ | LTS40 VHN4 A4    | 1 | 0,21 |
|                                                                                                                                                                                                                    |                                                                                     | 63A  | 22kW   | 64 □ | LTS63 VHN4 A4    | 1 | 0,28 |
|                                                                                                                                                                                                                    |                                                                                     | 80A  | 22kW   | 64 □ | LTS80 VHN4 A4    | 1 | 0,28 |
|                                                                                                                                                                                                                    |                                                                                     | 85A  | 30kW   | 64 □ | LTS85 VHN4 A4    | 1 | 0,45 |
|                                                                                                                                                                                                                    |                                                                                     | 100A | 37kW   | 64 □ | LTS100 VHN4 A4   | 1 | 0,45 |
|                                                                                                                                                                                                                    |                                                                                     | 125A | 45kW   | 64 □ | LTS125 VHN4 A4   | 1 | 0,45 |
|                                                                                                                                                                                                                    |                                                                                     | 160A | 55kW   | 88 □ | LT160 VHN34 T400 | 1 | 1,77 |

6-pole, 8-pole


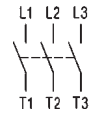


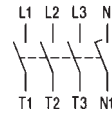


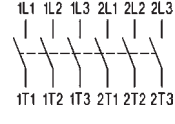


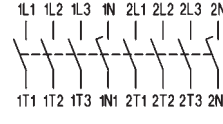

on request

## Emergency-Stop-Main Switches, Base Mounting with Door Clutch, Padlock Device for Single-Hole Mounting Depth X is not adjustable, IP65 on request <sup>1)</sup>


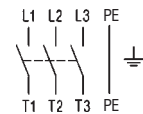


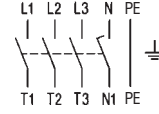

1) For order the installation depth X is necessary, see page 50, Preference value for X: 80, 85, 104, 129 (tolerance -3, +1,5)



## Emergency-Stop-Main Switches for Distribution Boards, lockable IP40

|                                                                                                                                                                                                                | max. padlocks                                                                       | AC21 690V                                                                                                                                                                                                | AC23 3x400V                                                                       | plate IP65 | Type                          | Pack pcs. | Weight kg/pcs.  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|-------------------------------|-----------|-----------------|
| <b>3-pole, padlock device SV1</b><br>        |    | 20A                                                                                                                                                                                                      | 7,5kW                                                                             | 52x45      | LTS20 SMAHN1 A3               | 1         | 0,15            |
|                                                                                                                                                                                                                |                                                                                     | 25A                                                                                                                                                                                                      | 10kW                                                                              | 52x45      | LTS25 SMAHN1 A3               | 1         | 0,15            |
|                                                                                                                                                                                                                |                                                                                     | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 52x45      | LTS32 SMAHN1 A3               | 1         | 0,15            |
|                                                                                                                                                                                                                |                                                                                     | 40A                                                                                                                                                                                                      | 16kW                                                                              | 52x45      | LTS40 SMAHN1 A3               | 1         | 0,15            |
|                                                                                                                                                                                                                |                                                                                     | 63A                                                                                                                                                                                                      | 22kW                                                                              | 52x45      | LTS63 SMAHN1 A3               | 1         | 0,18            |
|                                                                                                                                                                                                                |                                                                                     | 80A                                                                                                                                                                                                      | 22kW                                                                              | 52x45      | LTS80 SMAHN1 A3               | 1         | 0,18            |
|                                                                                                                                                                                                                |                                                                                     | 80A                                                                                                                                                                                                      | 30kW                                                                              | 78x45      | LTS85 SMAHN1 A3               | 1         | 0,37            |
|                                                                                                                                                                                                                |                                                                                     | 100A                                                                                                                                                                                                     | 37kW                                                                              | 78x45      | LTS100 SMAHN1 A3              | 1         | 0,37            |
|                                                                                                                                                                                                                |                                                                                     | 125A                                                                                                                                                                                                     | 45kW                                                                              | 78x45      | LTS125 SMAHN1 A3              | 1         | 0,37            |
|                                                                                                                                                                                                                |                                                                                     | <b>4-pole, padlock device SV1</b><br>  |  | 20A        | 7,5kW                         | 52x45     | LTS20 SMAHN1 A4 |
| 25A                                                                                                                                                                                                            | 10kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 52x45      | LTS25 SMAHN1 A4               | 1         | 0,16            |
| 32A                                                                                                                                                                                                            | 12,5kW                                                                              |                                                                                                                                                                                                          |                                                                                   | 52x45      | LTS32 SMAHN1 A4               | 1         | 0,16            |
| 40A                                                                                                                                                                                                            | 16kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 52x45      | LTS40 SMAHN1 A4               | 1         | 0,16            |
| 63A                                                                                                                                                                                                            | 22kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 52x45      | LTS63 SMAHN1 A4               | 1         | 0,21            |
| 80A                                                                                                                                                                                                            | 22kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 52x45      | LTS80 SMAHN1 A4               | 1         | 0,21            |
| 80A                                                                                                                                                                                                            | 30kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 78x45      | LTS85 SMAHN1 A3               | 1         | 0,42            |
| 100A                                                                                                                                                                                                           | 37kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 78x45      | LTS100 SMAHN1 A3              | 1         | 0,42            |
| 125A                                                                                                                                                                                                           | 45kW                                                                                |                                                                                                                                                                                                          |                                                                                   | 78x45      | LTS125 SMAHN1 A3              | 1         | 0,42            |
| <b>6-pole, padlock device SV1(64)</b><br>    |    |                                                                                                                                                                                                          |                                                                                   | 20A        | 7,5kW                         | 52x45     | LTS20 SMAHN1 A6 |
|                                                                                                                                                                                                                |                                                                                     | 25A                                                                                                                                                                                                      | 10kW                                                                              | 52x45      | LTS25 SMAHN1 A6               | 1         | 0,29            |
|                                                                                                                                                                                                                |                                                                                     | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 52x45      | LTS32 SMAHN1 A6               | 1         | 0,29            |
|                                                                                                                                                                                                                |                                                                                     | 40A                                                                                                                                                                                                      | 16kW                                                                              | 52x45      | LTS40 SMAHN1 A6               | 1         | 0,29            |
|                                                                                                                                                                                                                |                                                                                     | 63A                                                                                                                                                                                                      | 22kW                                                                              | 97x45      | LTS63 SMAHN1 A6 <sup>1)</sup> | 1         | 0,34            |
|                                                                                                                                                                                                                |                                                                                     | 80A                                                                                                                                                                                                      | 22kW                                                                              | 97x45      | LTS80 SMAHN1 A6 <sup>1)</sup> | 1         | 0,34            |
| <b>8-pole, padlock device SV164</b><br>  |  | 20A                                                                                                                                                                                                      | 7,5kW                                                                             | 97x45      | LTS20 SMAHN1 A8               | 1         | 0,31            |
|                                                                                                                                                                                                                |                                                                                     | 25A                                                                                                                                                                                                      | 10kW                                                                              | 97x45      | LTS25 SMAHN1 A8               | 1         | 0,31            |
|                                                                                                                                                                                                                |                                                                                     | 32A                                                                                                                                                                                                      | 12,5kW                                                                            | 97x45      | LTS32 SMAHN1 A8               | 1         | 0,31            |
|                                                                                                                                                                                                                |                                                                                     | 40A                                                                                                                                                                                                      | 16kW                                                                              | 97x45      | LTS40 SMAHN1 A8               | 1         | 0,31            |
|                                                                                                                                                                                                                |                                                                                     | 63A                                                                                                                                                                                                      | 22kW                                                                              | 126x45     | LTS63 SMAHN1 A8               | 1         | 0,42            |
|                                                                                                                                                                                                                |                                                                                     | 80A                                                                                                                                                                                                      | 22kW                                                                              | 126x45     | LTS80 SMAHN1 A8               | 1         | 0,42            |

## Maintenance and Safety Switches, in Plastic Enclosure, lockable, IP65

|                                                                                                                                                                                                                    |                                                                                     |      |        |      |                   |   |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|--------|------|-------------------|---|------|
| <b>3-pole, padlock device SV4(SV34)</b><br>  |  | 20A  | 7,5kW  | 64 □ | LTS20 PFHN4 A3    | 1 | 0,32 |
|                                                                                                                                                                                                                    |                                                                                     | 25A  | 10kW   | 64 □ | LTS25 PFHN4 A3    | 1 | 0,32 |
|                                                                                                                                                                                                                    |                                                                                     | 32A  | 12,5kW | 64 □ | LTS32 PFHN4 A3    | 1 | 0,32 |
|                                                                                                                                                                                                                    |                                                                                     | 40A  | 16kW   | 64 □ | LTS40 PFHN4 A3    | 1 | 0,32 |
|                                                                                                                                                                                                                    |                                                                                     | 63A  | 22kW   | 64 □ | LTS63 PFHN4 A3    | 1 | 0,60 |
|                                                                                                                                                                                                                    |                                                                                     | 80A  | 22kW   | 64 □ | LTS80 PFHN4 A3    | 1 | 0,60 |
|                                                                                                                                                                                                                    |                                                                                     | 85A  | 30kW   | 64 □ | LTS85 PFHN4 A3    | 1 | 0,78 |
|                                                                                                                                                                                                                    |                                                                                     | 100A | 37kW   | 64 □ | LTS100 PFHN4 A3   | 1 | 0,78 |
|                                                                                                                                                                                                                    |                                                                                     | 125A | 45kW   | 64 □ | LTS125 PFHN4 A3   | 1 | 0,78 |
|                                                                                                                                                                                                                    |                                                                                     | 160A | 55kW   | 88 □ | LT160 PFHN34 T300 | 1 | 2,09 |
| <b>4-pole, padlock device SV4(SV34)</b><br>  |  | 20A  | 7,5kW  | 64 □ | LTS20 PFHN4 A4    | 1 | 0,33 |
|                                                                                                                                                                                                                    |                                                                                     | 25A  | 10kW   | 64 □ | LTS25 PFHN4 A4    | 1 | 0,33 |
|                                                                                                                                                                                                                    |                                                                                     | 32A  | 12,5kW | 64 □ | LTS32 PFHN4 A4    | 1 | 0,33 |
|                                                                                                                                                                                                                    |                                                                                     | 40A  | 16kW   | 64 □ | LTS40 PFHN4 A4    | 1 | 0,33 |
|                                                                                                                                                                                                                    |                                                                                     | 63A  | 22kW   | 64 □ | LTS63 PFHN4 A4    | 1 | 0,64 |
|                                                                                                                                                                                                                    |                                                                                     | 80A  | 22kW   | 64 □ | LTS80 PFHN4 A4    | 1 | 0,64 |
|                                                                                                                                                                                                                    |                                                                                     | 85A  | 30kW   | 64 □ | LTS85 PFHN4 A4    | 1 | 0,83 |
|                                                                                                                                                                                                                    |                                                                                     | 100A | 37kW   | 64 □ | LTS100 PFHN4 A4   | 1 | 0,83 |
|                                                                                                                                                                                                                    |                                                                                     | 125A | 45kW   | 64 □ | LTS125 PFHN4 A4   | 1 | 0,83 |
|                                                                                                                                                                                                                    |                                                                                     | 160A | 55kW   | 88 □ | LT160 PFHN34 T400 | 1 | 2,47 |



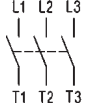


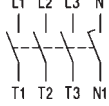


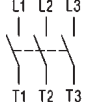


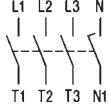
6-pole, 8-pole

on request

**Add-on modules** (4th pole, aux. contacts, PE-terminal, terminal cover plates, escutcheon plates) see page 51

1) With padlock device SV164

## Main Switches for Panel Mounting, lockable, IP66


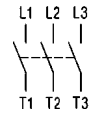

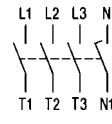
|                                                                                                                                                                         | max. padlocks | AC21<br>690V | AC23<br>3x400V | plate<br>IP65      | Type                    | Pack<br>pcs. | Weigh<br>kg/pcs. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------|----------------|--------------------|-------------------------|--------------|------------------|
| <b>3-pole, padlock device SV1</b>                                                      |               |              |                |                    |                         |              |                  |
|       |               | 20A          | 7,5kW          | 48 □ <sup>1)</sup> | <b>LTS20 EH1 A3</b>     | 1            | 0,15             |
|                                                                                                                                                                         |               | 25A          | 10kW           | 48 □ <sup>1)</sup> | <b>LTS25 EH1 A3</b>     | 1            | 0,15             |
|                                                                                                                                                                         |               | 32A          | 12,5kW         | 48 □ <sup>1)</sup> | <b>LTS32 EH1 A3</b>     | 1            | 0,15             |
|                                                                                                                                                                         |               | 40A          | 16kW           | 48 □ <sup>1)</sup> | <b>LTS40 EH1 A3</b>     | 1            | 0,15             |
|                                                                                                                                                                         |               | 63A          | 22kW           | 48 □ <sup>1)</sup> | <b>LTS63 EH1 A3</b>     | 1            | 0,17             |
|                                                                                                                                                                         |               | 80A          | 22kW           | 48 □ <sup>1)</sup> | <b>LTS80 EH1 A3</b>     | 1            | 0,17             |
| <b>4-pole, padlock device SV1</b>                                                      |               |              |                |                    |                         |              |                  |
|       |               | 20A          | 7,5kW          | 48 □ <sup>1)</sup> | <b>LTS20 EH1 A4</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 25A          | 10kW           | 48 □ <sup>1)</sup> | <b>LTS25 EH1 A4</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 32A          | 12,5kW         | 48 □ <sup>1)</sup> | <b>LTS32 EH1 A4</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 40A          | 16kW           | 48 □ <sup>1)</sup> | <b>LTS40 EH1 A4</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 63A          | 22kW           | 48 □ <sup>1)</sup> | <b>LTS63 EH1 A4</b>     | 1            | 0,21             |
|                                                                                                                                                                         |               | 80A          | 22kW           | 48 □ <sup>1)</sup> | <b>LTS80 EH1 A4</b>     | 1            | 0,21             |
| <b>6-pole, 8-pole, padlock device SV164</b>                                                                                                                             |               |              |                |                    | on request              |              |                  |
| <b>3-pole, padlock device SV4(34)</b>                                                  |               |              |                |                    |                         |              |                  |
|       |               | 20A          | 7,5kW          | 64 □ <sup>2)</sup> | <b>LTS20 EH4 A3</b>     | 1            | 0,17             |
|                                                                                                                                                                         |               | 25A          | 10kW           | 64 □ <sup>2)</sup> | <b>LTS25 EH4 A3</b>     | 1            | 0,17             |
|                                                                                                                                                                         |               | 32A          | 12,5kW         | 64 □ <sup>2)</sup> | <b>LTS32 EH4 A3</b>     | 1            | 0,17             |
|                                                                                                                                                                         |               | 40A          | 16kW           | 64 □ <sup>2)</sup> | <b>LTS40 EH4 A3</b>     | 1            | 0,17             |
|                                                                                                                                                                         |               | 63A          | 22kW           | 64 □ <sup>2)</sup> | <b>LTS63 EH4 A3</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 80A          | 22kW           | 64 □ <sup>2)</sup> | <b>LTS80 EH4 A3</b>     | 1            | 0,19             |
|                                                                                                                                                                         |               | 85A          | 30kW           | 64 □ <sup>2)</sup> | <b>LTS85 EH4 A3</b>     | 1            | 0,39             |
|                                                                                                                                                                         |               | 100A         | 37kW           | 64 □ <sup>2)</sup> | <b>LTS100 EH4 A3</b>    | 1            | 0,39             |
|                                                                                                                                                                         |               | 125A         | 45kW           | 64 □ <sup>2)</sup> | <b>LTS125 EH4 A3</b>    | 1            | 0,39             |
|                                                                                                                                                                         |               | 160A         | 55kW           | 88 □               | <b>LT160 EHN34 T300</b> | 1            | 1,16             |
| <b>4-pole, padlock device SV4(34)</b>                                                |               |              |                |                    |                         |              |                  |
|   |               | 20A          | 7,5kW          | 64 □ <sup>2)</sup> | <b>LTS20 EH4 A4</b>     | 1            | 0,20             |
|                                                                                                                                                                         |               | 25A          | 10kW           | 64 □ <sup>2)</sup> | <b>LTS25 EH4 A4</b>     | 1            | 0,20             |
|                                                                                                                                                                         |               | 32A          | 12,5kW         | 64 □ <sup>2)</sup> | <b>LTS32 EH4 A4</b>     | 1            | 0,20             |
|                                                                                                                                                                         |               | 40A          | 16kW           | 64 □ <sup>2)</sup> | <b>LTS40 EH4 A4</b>     | 1            | 0,20             |
|                                                                                                                                                                         |               | 63A          | 22kW           | 64 □ <sup>2)</sup> | <b>LTS63 EH4 A4</b>     | 1            | 0,23             |
|                                                                                                                                                                         |               | 80A          | 22kW           | 64 □ <sup>2)</sup> | <b>LTS80 EH4 A4</b>     | 1            | 0,23             |
|                                                                                                                                                                         |               | 85A          | 30kW           | 64 □ <sup>2)</sup> | <b>LTS80 EH4 A4</b>     | 1            | 0,44             |
|                                                                                                                                                                         |               | 100A         | 37kW           | 64 □ <sup>2)</sup> | <b>LTS100 EH4 A4</b>    | 1            | 0,44             |
|                                                                                                                                                                         |               | 125A         | 45kW           | 64 □ <sup>2)</sup> | <b>LTS125 EH4 A4</b>    | 1            | 0,44             |
|                                                                                                                                                                         |               | 160A         | 55kW           | 88 □               | <b>LT160 EH34 T400</b>  | 1            | 1,55             |
| <b>6-pole, 8-pole, padlock device SV4</b>                                                                                                                               |               |              |                |                    | on request              |              |                  |

Add-on modules see page 51

- 1) Types with padlock device 64 □ type suffix **64**, ordering example: LTS32 EH**164** A3, on request  
 2) Types with padlock device 88 □ type suffix **88**, ordering example: LTS32 EH**488** A3, on request


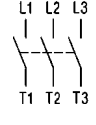
## Main Switches, Base Mounting with Door Clutch, Padlock Device for Single-Hole Mounting

Depth X is adjustable (delivered with  $X_{max}$  see below), IP66

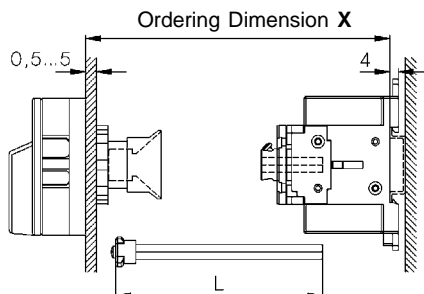
|                                                                                                                                                                                                          | max. padlocks                                                                                                                                                                                            | AC21 690V  | AC23 3x400V | plate IP65 | Type           | Pack pcs.       | Weight kg/pcs. |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|------------|----------------|-----------------|----------------|------|
| <b>3-pole, padlock device SV4</b><br>  | ☰                                                                                                                                                                                                        | 20A        | 7,5kW       | 64 □       | LTS20 VZVH4 A3 | 1               | 0,19           |      |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          | 25A        | 10kW        | 64 □       | LTS25 VZVH4 A3 | 1               | 0,19           |      |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          | 32A        | 12,5kW      | 64 □       | LTS32 VZVH4 A3 | 1               | 0,19           |      |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 40A         | 16kW       | 64 □           | LTS40 VZVH4 A3  | 1              | 0,19 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 63A         | 22kW       | 64 □           | LTS63 VZVH4 A3  | 1              | 0,22 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 80A         | 22kW       | 64 □           | LTS80 VZVH4 A3  | 1              | 0,22 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 85A         | 30kW       | 64 □           | LTS85 VZVH4 A3  | 1              | 0,40 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 100A        | 37kW       | 64 □           | LTS100 VZVH4 A3 | 1              | 0,40 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 125A        | 45kW       | 64 □           | LTS125 VZVH4 A3 | 1              | 0,40 |
|                                                                                                                                                                                                          | <b>4-pole, padlock device SV4</b><br>  | ☰          | 20A         | 7,5kW      | 64 □           | LTS20 VZVH4 A4  | 1              | 0,20 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 25A         | 10kW       | 64 □           | LTS25 VZVH4 A4  | 1              | 0,20 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 32A         | 12,5kW     | 64 □           | LTS32 VZVH4 A4  | 1              | 0,20 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 40A         | 16kW       | 64 □           | LTS40 VZVH4 A4  | 1              | 0,20 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 63A         | 22kW       | 64 □           | LTS63 VZVH4 A4  | 1              | 0,26 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 80A         | 22kW       | 64 □           | LTS80 VZVH4 A4  | 1              | 0,26 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 85A         | 30kW       | 64 □           | LTS85 VZVH4 A4  | 1              | 0,45 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 100A        | 37kW       | 64 □           | LTS100 VZVH4 A4 | 1              | 0,45 |
|                                                                                                                                                                                                          |                                                                                                                                                                                                          |            | 125A        | 45kW       | 64 □           | LTS125 VZVH4 A4 | 1              | 0,45 |
| <b>6-pole, 8-pole</b>                                                                                                                                                                                    |                                                                                                                                                                                                          | on request |             |            |                |                 |                |      |

## Main Switches, Base Mounting with Door Clutch, Padlock Device for Four-Hole Mounting

Depth T is adjustable (delivered with  $T_{max}$  see below), IP66

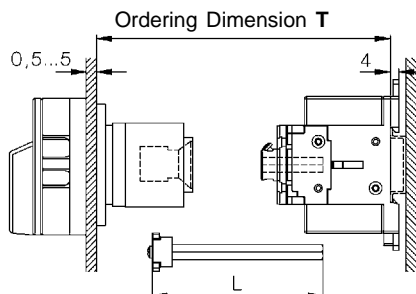
|                                                                                                                                                                                                                    | max. padlocks                 | AC21 690V | AC23 3x400V | plate IP65      | Type         | Pack pcs.     | Weight kg/pcs. |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------|-------------|-----------------|--------------|---------------|----------------|------|
| <b>3-pole, padlock device SV4(SV34)</b><br>  | ☰                             | 20A       | 7,5kW       | 64 □            | LTS20 VH4 A3 | 1             | 0,20           |      |
|                                                                                                                                                                                                                    |                               | 25A       | 10kW        | 64 □            | LTS25 VH4 A3 | 1             | 0,20           |      |
|                                                                                                                                                                                                                    |                               | 32A       | 12,5kW      | 64 □            | LTS32 VH4 A3 | 1             | 0,20           |      |
|                                                                                                                                                                                                                    |                               |           | 40A         | 16kW            | 64 □         | LTS40 VH4 A3  | 1              | 0,20 |
|                                                                                                                                                                                                                    |                               |           | 63A         | 22kW            | 64 □         | LTS63 VH4 A3  | 1              | 0,24 |
|                                                                                                                                                                                                                    |                               |           | 80A         | 22kW            | 64 □         | LTS80 VH4 A3  | 1              | 0,24 |
|                                                                                                                                                                                                                    |                               |           | 85A         | 30kW            | 64 □         | LTS85 VH4 A3  | 1              | 0,40 |
|                                                                                                                                                                                                                    |                               |           | 100A        | 37kW            | 64 □         | LTS100 VH4 A3 | 1              | 0,40 |
|                                                                                                                                                                                                                    |                               |           | 125A        | 45kW            | 64 □         | LTS125 VH4 A3 | 1              | 0,40 |
|                                                                                                                                                                                                                    | 160A                          | 55kW      | 88 □        | LT160 VH34 T300 | 1            | 1,38          |                |      |
|                                                                                                                                                                                                                    | <b>4-pole, 6-pole, 8-pole</b> |           | on request  |                 |              |               |                |      |

Depth  
LTS..VZV..



| Type                      | X min | X max | L        |
|---------------------------|-------|-------|----------|
| LTS20-80 VZV.. 3, 4-pole  | 91 -  | 190   | X - 40±3 |
| LTS20-80 VZV.. 6, 8-pole  | 111 - | 190   | X - 60±3 |
| LTS85-125 VZV.. 3, 4-pole | 95-   | 190   | X - 44±3 |

LTS..V(HN).. (3, 4-pole)
















| Type           | T min | T max | L        |
|----------------|-------|-------|----------|
| LTS20-80 VH..  | 111 - | 190   | T - 60±3 |
| LTS85-125 VH.. | 115 - | 190   | T - 64±3 |





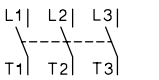

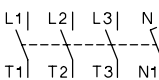


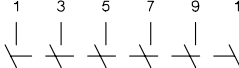


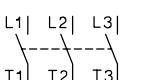

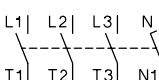


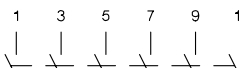
| Type       | T min | T max |
|------------|-------|-------|
| LT160 VH.. | 120 - | 450   |

greater X- and T-Dimensions (max. 380mm for LTS..) on request

## Add-on Modules for main switches and Switch Disconnectors

|                                                                                     | for switch                                                                        | for designs<br>panel-<br>base-<br>mounting | distrib.<br>boards | Type | Pack<br>pcs. | Weight<br>kg/pcs |    |       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------|--------------------|------|--------------|------------------|----|-------|
| <b>4th add-on neutral switching pole</b>                                            |                                                                                   |                                            |                    |      |              |                  |    |       |
|    | N                                                                                 | LTS20 to LTS40                             | x                  | -    | -            | <b>N40E</b>      | 1  | 0,035 |
|                                                                                     |                                                                                   | LTS63 to LTS80                             | x                  | -    | -            | <b>N80E</b>      | 1  | 0,042 |
|                                                                                     | N1                                                                                | LTS20 to LTS40                             | -                  | x    | x            | <b>N40V</b>      | 1  | 0,035 |
|                                                                                     |                                                                                   | LTS63 to LTS80                             | -                  | x    | x            | <b>N80V</b>      | 1  | 0,042 |
| <b>Aux. contact block 1NO + 1NC</b>                                                 |                                                                                   |                                            |                    |      |              |                  |    |       |
|    |  | LTS20 to LTS125                            | x                  | x    | x            | <b>LH11</b>      | 1  | 0,02  |
|                                                                                     |                                                                                   |                                            |                    |      |              |                  |    |       |
| <b>Aux. contact block 1NO + 1NC overlapping</b>                                     |                                                                                   |                                            |                    |      |              |                  |    |       |
|    |  | LTS20 to LTS125                            | x                  | x    | x            | <b>LH11X</b>     | 1  | 0,02  |
|                                                                                     |                                                                                   |                                            |                    |      |              |                  |    |       |
| <b>PE-Terminal</b>                                                                  |                                                                                   |                                            |                    |      |              |                  |    |       |
|    | PE                                                                                | LTS20 to LTS80                             | x                  | -    | -            | <b>PE80E</b>     | 1  | 0,04  |
|                                                                                     |                                                                                   | LT160                                      | x                  | -    | -            | <b>LTXX-E/E</b>  | 1  | 0,2   |
|                                                                                     | PE                                                                                | LTS20 to LTS80                             | -                  | x    | -            | <b>PE80V</b>     | 1  | 0,04  |
|                                                                                     |                                                                                   | LT160                                      | -                  | x    | -            | <b>LTXX-E/V</b>  | 1  | 0,2   |
| <b>N-Terminal</b>                                                                   |                                                                                   |                                            |                    |      |              |                  |    |       |
|  | N                                                                                 | LTS20 to LTS80                             | x                  | -    | -            | <b>PEN80E</b>    | 1  | 0,04  |
|                                                                                     |                                                                                   | LT160                                      | x                  | -    | -            | <b>LTXX-N/E</b>  | 1  | 0,2   |
|                                                                                     | N                                                                                 | LTS20 to LTS80                             | -                  | x    | -            | <b>PEN80V</b>    | 1  | 0,04  |
|                                                                                     |                                                                                   | LT160                                      | -                  | x    | -            | <b>LTXX-N/V</b>  | 1  | 0,2   |
| <b>Additional escutcheon plate yellow marked with: HAUPTSCHALTER</b>                |                                                                                   |                                            |                    |      |              |                  |    |       |
|  | 48mm                                                                              | LTS.. .HN1..                               | x                  | x    | -            | <b>A91501</b>    | 1  | 0,003 |
|                                                                                     | 64mm                                                                              | LTS.. .HN4..                               | x                  | x    | -            | <b>E91501</b>    | 1  | 0,005 |
| <b>Additional escutcheon plate yellow marked with: MAIN SWITCH</b>                  |                                                                                   |                                            |                    |      |              |                  |    |       |
|  | 48mm                                                                              | LTS.. .HN1..                               | x                  | x    | -            | <b>A91524</b>    | 1  | 0,003 |
|                                                                                     | 64mm                                                                              | LTS.. .HN4..                               | x                  | x    | -            | <b>E91524</b>    | 1  | 0,005 |
| <b>Terminal cover plate 3-pole</b>                                                  |                                                                                   |                                            |                    |      |              |                  |    |       |
|  |                                                                                   | LTS20 to LTS40                             | -                  | x    | x            | <b>KLAD40</b>    | 1  | 0,005 |
|                                                                                     |                                                                                   | LTS20 bis LTS40                            | x                  | -    | -            | <b>KLAD70</b>    | 1  | 0,005 |
|                                                                                     |                                                                                   | LTS63 to LTS80                             | x                  | x    | x            | <b>KLAD70</b>    | 1  | 0,005 |
|                                                                                     |                                                                                   | LTS85 to LTS125                            | x                  | x    | x            | <b>KLAD125</b>   | 1  | 0,01  |
|                                                                                     |                                                                                   | LT125 to LT160                             | x                  | x    | -            | <b>XX-KLAD3</b>  | 1  | 0,02  |
| <b>Terminal cover plate for 4. Pole</b>                                             |                                                                                   |                                            |                    |      |              |                  |    |       |
|  | Mains                                                                             | LTS63 to LTS80                             | x                  | x    | x            | <b>KLAD70N</b>   | 1  | 0,002 |
|                                                                                     | Load circuit                                                                      | LTS63 to LTS80                             | x                  | x    | x            | <b>KLAD70N1</b>  | 1  | 0,002 |
| <b>Terminal cover plate 4-pole</b>                                                  |                                                                                   |                                            |                    |      |              |                  |    |       |
|  |                                                                                   | LTS20 to LTS40                             | -                  | x    | x            | <b>KLAD40</b>    | 1  | 0,005 |
|                                                                                     |                                                                                   | LTS85 to LTS125                            | x                  | x    | x            | <b>KLAD125</b>   | 1  | 0,01  |
|                                                                                     |                                                                                   | LT125 to LT160                             | x                  | x    | -            | <b>XX-KLAD4</b>  | 1  | 0,02  |
| <b>Flat Terminal 6,3 x 0,8mm</b>                                                    |                                                                                   |                                            |                    |      |              |                  |    |       |
|  |                                                                                   | LTS20 to LTS40                             | -                  | x    | x            | <b>LG11073</b>   | 10 | 0,001 |

## Main Switches for panel mounting, Cam Switches

|                                                                                     |                                                                                                    | AC21<br>A | AC23<br>kW | Plate | with<br>Emergency-Off<br>Type | without<br>Emergency-Off<br>Type |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------|------------|-------|-------------------------------|----------------------------------|
|    | <b>2-polig</b>    | 20        | 7,5        | 48 □  | <b>M10H EHN1 A2+731</b>       | <b>M10H EH1 A2+731</b>           |
|                                                                                     | <b>3-polig</b>                                                                                     | 20        | 7,5        | 48 □  | <b>M10H EHN1 A3+731</b>       | <b>M10H EH1 A3+731</b>           |
|                                                                                     | <b>4-polig</b>                                                                                     | 20        | 7,5        | 48 □  | <b>M10H EHN1 A4+731</b>       | <b>M10H EH1 A4+731</b>           |
|                                                                                     | <b>6-polig</b>                                                                                     | 20        | 7,5        | 48 □  | <b>M10H EHN1 A6+731</b>       | <b>M10H EH1 A6+731</b>           |
|    | <b>3-polig</b>    | 63        | 22         | 88 □  | <b>N40 EHN3 A3</b>            | <b>N40 EH3 A3</b>                |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN3 A3</b>            | <b>N60 EH3 A3</b>                |
|                                                                                     |                   | 115       | 45         | 88 □  | <b>N80 EHN3 A3</b>            | <b>N80 EH3 A3</b>                |
|                                                                                     |                                                                                                    | 150       | 55         | 132 □ | <b>N100 EHN3 A3</b>           | <b>N100 EH3 A3</b>               |
|                                                                                     |                                                                                                    | 250       | 70         | 132 □ | <b>N200 EHN3 A3</b>           | <b>N200 EH3 A3</b>               |
|                                                                                     | <b>4-polig</b>    | 63        | 22         | 88 □  | <b>N40 EHN3 A4</b>            | <b>N40 EH3 A4</b>                |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN3 A4</b>            | <b>N60 EH3 A4</b>                |
|                                                                                     |                   | 115       | 45         | 88 □  | <b>N80 EHN3 A4</b>            | <b>N80 EH3 A4</b>                |
|                                                                                     |                                                                                                    | 150       | 55         | 132 □ | <b>N100 EHN3 A4</b>           | <b>N100 EH3 A4</b>               |
|                                                                                     |                                                                                                    | 250       | 70         | 132 □ | <b>N200 EHN3 A4</b>           | <b>N200 EH3 A4</b>               |
|  | <b>6-polig</b>    | 63        | 22         | 88 □  | <b>N40 EHN3 A6 *)</b>         | <b>N40 EH3 A6 *)</b>             |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN3 A6 *)</b>         | <b>N60 EH3 A6 *)</b>             |
|                                                                                     |                   | 115       | 45         | 88 □  | <b>N80 EHN3 A6 *)</b>         | <b>N80 EH3 A6 *)</b>             |
|                                                                                     |                                                                                                    | 150       | 55         | 132 □ | <b>N100 EHN3 A6 *)</b>        | <b>N100 EH3 A6 *)</b>            |
|                                                                                     |                                                                                                    | 250       | 70         | 132 □ | <b>N200 EHN3 A6 *)</b>        | <b>N200 EH3 A6 *)</b>            |
|                                                                                     |                                                                                                    |           |            |       |                               |                                  |
|  | <b>3-polig</b>  | 20        | 7,5        | 64 □  | <b>M10H EHN4 A3</b>           | <b>M10H EH4 A3</b>               |
|                                                                                     |                                                                                                    | 32        | 15         | 64 □  | <b>N20 EHN4 A3</b>            | <b>N20 EH4 A3</b>                |
|                                                                                     |                 | 50        | 22         | 64 □  | <b>N33F EHN4 A3</b>           | <b>N33F EH4 A3</b>               |
|                                                                                     |                                                                                                    | 63        | 22         | 88 □  | <b>N40 EHN4 A3</b>            | <b>N40 EH4 A3</b>                |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN4 A3</b>            | <b>N60 EH4 A3</b>                |
|                                                                                     |                                                                                                    | 115       | 45         | 88 □  | <b>N80 EHN4 A3</b>            | <b>N80 EH4 A3</b>                |
|                                                                                     | <b>4-polig</b>  | 20        | 7,5        | 64 □  | <b>M10H EHN4 A4</b>           | <b>M10H EH4 A4</b>               |
|                                                                                     |                                                                                                    | 32        | 15         | 64 □  | <b>N20 EHN4 A4</b>            | <b>N20 EH4 A4</b>                |
|                                                                                     |                 | 50        | 22         | 64 □  | <b>N33F EHN4 A4</b>           | <b>N33F EH4 A4</b>               |
|                                                                                     |                                                                                                    | 63        | 22         | 88 □  | <b>N40 EHN4 A4</b>            | <b>N40 EH4 A4</b>                |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN4 A4</b>            | <b>N60 EH4 A4</b>                |
|                                                                                     |                                                                                                    | 115       | 45         | 88 □  | <b>N80 EHN4 A4</b>            | <b>N80 EH4 A4</b>                |
|  | <b>6-polig</b>  | 20        | 7,5        | 64 □  | <b>M10H EHN4 A6</b>           | <b>M10H EH4 A6</b>               |
|                                                                                     |                                                                                                    | 32        | 15         | 64 □  | <b>N20 EHN4 A6 *)</b>         | <b>N20 EH4 A6 *)</b>             |
|                                                                                     |                 | 50        | 22         | 64 □  | <b>N33F EHN4 A6</b>           | <b>N33F EH4 A6</b>               |
|                                                                                     |                                                                                                    | 63        | 22         | 88 □  | <b>N40 EHN4 A6 *)</b>         | <b>N40 EH4 A6 *)</b>             |
|                                                                                     |                                                                                                    | 80        | 30         | 88 □  | <b>N60 EHN4 A6 *)</b>         | <b>N60 EH4 A6 *)</b>             |
|                                                                                     |                                                                                                    | 115       | 45         | 88 □  | <b>N80 EHN4 A6 *)</b>         | <b>N80 EH4 A6 *)</b>             |

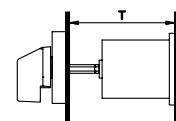
\*) Main terminal protection must be installed by user.

## Switches with other switch programs, auxiliary contacts, PE-terminals on request

### Main Switches for base mounting

Like main switches for panel mounting  
The order number changes from  
N.. E.. A. to N.. V.. A.


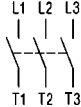

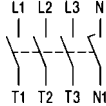
Depth **T** is necessary for order




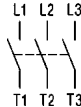

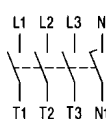
We recommend to use a **door coupling**, see page 64

### Maintenance and Safety Switches, plastic enclosed on request

## Switch Disconnectors for Panel Mounting, IP65

|                                                                                                                                                                     | AC21<br>690V                                                                                                                                                        | AC23<br>3x400V | plate<br>IP65 | Type         | Pack<br>pcs.             | Weight<br>kg/pcs. |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|--------------|--------------------------|-------------------|------|
| <b>On-Off Switches 3-pole</b>                                                                                                                                       |                                                                                                                                                                     |                |               |              |                          |                   |      |
|   | 20A                                                                                                                                                                 | 7,5kW          | 48 □          | LTS20 E A3   | 1                        | 0,15              |      |
|                                                                                                                                                                     | 25A                                                                                                                                                                 | 10kW           | 48 □          | LTS25 E A3   | 1                        | 0,15              |      |
|                                                                                                                                                                     | 32A                                                                                                                                                                 | 12,5kW         | 48 □          | LTS32 E A3   | 1                        | 0,15              |      |
|                                                                                                                                                                     | 40A                                                                                                                                                                 | 16kW           | 48 □          | LTS40 E A3   | 1                        | 0,15              |      |
|                                                                                                                                                                     | 63A                                                                                                                                                                 | 22kW           | 48 □          | LTS63 E A3   | 1                        | 0,17              |      |
|                                                                                                                                                                     | 80A                                                                                                                                                                 | 22kW           | 48 □          | LTS80 E A3   | 1                        | 0,17              |      |
|                                                                                                                                                                     | 85A                                                                                                                                                                 | 30kW           | 64 □          | LTS85 E A3   | 1                        | 0,39              |      |
|                                                                                                                                                                     | 100A                                                                                                                                                                | 37kW           | 64 □          | LTS100 E A3  | 1                        | 0,39              |      |
|                                                                                                                                                                     | 125A                                                                                                                                                                | 45kW           | 64 □          | LTS125 E A3  | 1                        | 0,39              |      |
|                                                                                                                                                                     | 160A                                                                                                                                                                | 55kW           | 88 □          | LT160 E T300 | 1                        | 1,10              |      |
|                                                                                                                                                                     | <b>On-Off Switches 4-pole</b>                                                                                                                                       |                |               |              |                          |                   |      |
|                                                                                                                                                                     |   | 20A            | 7,5kW         | 48 □         | LTS20 E A4               | 1                 | 0,18 |
| 25A                                                                                                                                                                 |                                                                                                                                                                     | 10kW           | 48 □          | LTS25 E A4   | 1                        | 0,18              |      |
| 32A                                                                                                                                                                 |                                                                                                                                                                     | 12,5kW         | 48 □          | LTS32 E A4   | 1                        | 0,18              |      |
| 40A                                                                                                                                                                 |                                                                                                                                                                     | 16kW           | 48 □          | LTS40 E A4   | 1                        | 0,18              |      |
| 63A                                                                                                                                                                 |                                                                                                                                                                     | 22kW           | 48 □          | LTS63 E A4   | 1                        | 0,21              |      |
| 80A                                                                                                                                                                 |                                                                                                                                                                     | 22kW           | 48 □          | LTS80 E A4   | 1                        | 0,21              |      |
| 85A                                                                                                                                                                 |                                                                                                                                                                     | 30kW           | 64 □          | LTS85 E A4   | 1                        | 0,44              |      |
| 100A                                                                                                                                                                |                                                                                                                                                                     | 37kW           | 64 □          | LTS100 E A4  | 1                        | 0,44              |      |
| 125A                                                                                                                                                                |                                                                                                                                                                     | 45kW           | 64 □          | LTS125 E A4  | 1                        | 0,44              |      |
| 160A                                                                                                                                                                |                                                                                                                                                                     | 55kW           | 88 □          | LT160 E T400 | 1                        | 1,50              |      |
| 6-pole, 8-pole<br>Changeover 3-pole, 4-pole                                                                                                                         |                                                                                                                                                                     |                |               |              | on request<br>on request |                   |      |


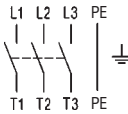
## Switch Disconnectors for Distribution Boards


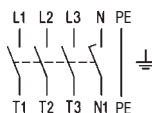
|                                                                                                                                                                         | AC21<br>690V                                                                                                                                                            | AC23<br>3x400V | plate<br>IP65 | Type          | Pack<br>pcs.             | Weight<br>kg/pcs. |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|---------------|--------------------------|-------------------|------|
| <b>On-Off Switches 3-pole</b>                                                                                                                                           |                                                                                                                                                                         |                |               |               |                          |                   |      |
|   | 20A                                                                                                                                                                     | 7,5kW          | 52x45         | LTS20 SMA A3  | 1                        | 0,15              |      |
|                                                                                                                                                                         | 25A                                                                                                                                                                     | 10kW           | 52x45         | LTS25 SMA A3  | 1                        | 0,15              |      |
|                                                                                                                                                                         | 32A                                                                                                                                                                     | 12,5kW         | 52x45         | LTS30 SMA A3  | 1                        | 0,15              |      |
|                                                                                                                                                                         | 40A                                                                                                                                                                     | 16kW           | 52x45         | LTS40 SMA A3  | 1                        | 0,15              |      |
|                                                                                                                                                                         | 63A                                                                                                                                                                     | 22kW           | 52x45         | LTS63 SMA A3  | 1                        | 0,17              |      |
|                                                                                                                                                                         | 80A                                                                                                                                                                     | 22kW           | 52x45         | LTS80 SMA A3  | 1                        | 0,17              |      |
|                                                                                                                                                                         | 85A                                                                                                                                                                     | 30kW           | 78x45         | LTS85 SMA A3  | 1                        | 0,37              |      |
|                                                                                                                                                                         | 100A                                                                                                                                                                    | 37kW           | 78x45         | LTS100 SMA A3 | 1                        | 0,37              |      |
|                                                                                                                                                                         | 125A                                                                                                                                                                    | 45kW           | 78x45         | LTS125 SMA A3 | 1                        | 0,37              |      |
|                                                                                                                                                                         | <b>On-Off Switches 4-pole</b>                                                                                                                                           |                |               |               |                          |                   |      |
|                                                                                                                                                                         |   | 20A            | 7,5kW         | 52x45         | LTS20 SMA A4             | 1                 | 0,16 |
|                                                                                                                                                                         |                                                                                                                                                                         | 25A            | 10kW          | 52x45         | LTS25 SMA A4             | 1                 | 0,16 |
| 32A                                                                                                                                                                     |                                                                                                                                                                         | 12,5kW         | 52x45         | LTS32 SMA A4  | 1                        | 0,16              |      |
| 40A                                                                                                                                                                     |                                                                                                                                                                         | 16kW           | 52x45         | LTS40 SMA A4  | 1                        | 0,16              |      |
| 63A                                                                                                                                                                     |                                                                                                                                                                         | 22kW           | 52x45         | LTS63 SMA A4  | 1                        | 0,21              |      |
| 80A                                                                                                                                                                     |                                                                                                                                                                         | 22kW           | 52x45         | LTS80 SMA A4  | 1                        | 0,21              |      |
| 85A                                                                                                                                                                     |                                                                                                                                                                         | 30kW           | 78x45         | LTS85 SMA A4  | 1                        | 0,42              |      |
| 100A                                                                                                                                                                    |                                                                                                                                                                         | 37kW           | 78x45         | LTS100 SMA A4 | 1                        | 0,42              |      |
| 125A                                                                                                                                                                    |                                                                                                                                                                         | 45kW           | 78x45         | LTS125 SMA A4 | 1                        | 0,42              |      |
| 6-pole, 8-pole<br>Changeover 3-pole, 4-pole                                                                                                                             |                                                                                                                                                                         |                |               |               | on request<br>on request |                   |      |

## Switch Disconnectors for Base mounting on request


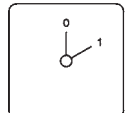
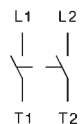
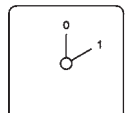
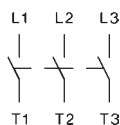
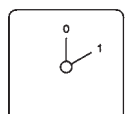
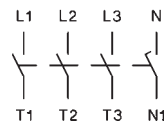
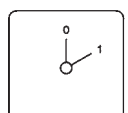
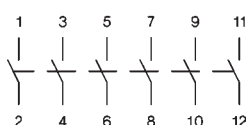
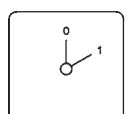
Add-on modules (4th pole, aux. contacts, PE-terminal, terminal cover plates, escutcheon plates) see page 51

## Switch Disconnectors in Plastic Enclosure, IP65

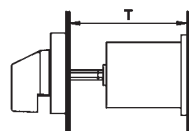
|                                                                                                                                                                                                      | AC21<br>690V | AC23<br>3x400V | plate<br>IP65 | Type        | Pack<br>pcs. | Weight<br>kg/pcs. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|---------------|-------------|--------------|-------------------|
| <b>On-Off Switches 3-pole</b><br>  | 20A          | 7,5kW          | 64 □          | LTS20 PF A3 | 1            | 0,30              |
|                                                                                                                                                                                                      | 25A          | 10kW           | 64 □          | LTS25 PF A3 | 1            | 0,30              |
|                                                                                                                                                                                                      | 32A          | 12,5kW         | 48 □          | LTS32 PF A3 | 1            | 0,30              |
|                                                                                                                                                                                                      | 40A          | 16kW           | 64 □          | LTS40 PF A3 | 1            | 0,30              |
|                                                                                                                                                                                                      | 63A          | 22kW           | 64 □          | LTS63 PF A3 | 1            | 0,58              |
|                                                                                                                                                                                                      | 80A          | 22kW           | 64 □          | LTS80 PF A3 | 1            | 0,58              |

|                                                                                                                                                                                                      |     |        |      |             |   |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------|------|-------------|---|------|
| <b>On-Off Switches 4-pole</b><br>  | 20A | 7,5kW  | 64 □ | LTS20 PF A4 | 1 | 0,31 |
|                                                                                                                                                                                                      | 25A | 10kW   | 64 □ | LTS25 PF A4 | 1 | 0,31 |
|                                                                                                                                                                                                      | 32A | 12,5kW | 64 □ | LTS32 PF A4 | 1 | 0,31 |
|                                                                                                                                                                                                      | 40A | 16kW   | 64 □ | LTS40 PF A4 | 1 | 0,31 |
|                                                                                                                                                                                                      | 63A | 22kW   | 64 □ | LTS63 PF A4 | 1 | 0,62 |
|                                                                                                                                                                                                      | 80A | 22kW   | 64 □ | LTS80 PF A4 | 1 | 0,62 |

## Load Switches for resistive or slightly inductive loads or switching without load

| Description                          | Wiring diagram                                                                                      | Switching angle | Number of cells<br>↓<br>Size<br>↓<br>AC21 | Type       | Design<br>.E. .V.<br>↓ ↓ | Switch<br>pro-<br>gram                                                                | Escutcheon<br>plate |
|--------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------|------------|--------------------------|---------------------------------------------------------------------------------------|---------------------|
| <b>On-Off-switches A</b>             | <b>1-pole</b><br> | 60°             | 2 88 □ 125A                               | L100 . x x | . A1                     |   |                     |
|                                      |                                                                                                     |                 | 1 180A                                    | L160 . x x | . A1                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 1 132 □ 400A                              | L400 . x x | . A1                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 3 600A                                    | L600 . x x | . A1                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 2 800A                                    | L800 . x x | . A1                     |                                                                                       |                     |
| 3 1200A                              | L1200 . x x                                                                                         | . A1            |                                           |            |                          |                                                                                       |                     |
| <b>2-pole</b>                        |                  | 60°             | 2 88 □ 125A                               | L100 . x x | . A2                     |  |                     |
|                                      |                                                                                                     |                 | 2 180A                                    | L160 . x x | . A2                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 2 132 □ 400A                              | L400 . x x | . A2                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 3 600A                                    | L600 . x x | . A2                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 4 800A                                    | L800 . x x | . A2                     |                                                                                       |                     |
| 6 1200A                              | L1200 . x x                                                                                         | . A2            |                                           |            |                          |                                                                                       |                     |
| <b>3-pole</b>                        |                  | 60°             | 4 88 □ 125A                               | L100 . x x | . A3                     |  |                     |
|                                      |                                                                                                     |                 | 3 180A                                    | L160 . x x | . A3                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 3 132 □ 400A                              | L400 . x x | . A3                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 6 600A                                    | L600 . x x | . A3                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 6 800A                                    | L800 . x x | . A3                     |                                                                                       |                     |
| 9 1200A                              | L1200 . x x                                                                                         | . A3            |                                           |            |                          |                                                                                       |                     |
| <b>4-pole<br/>4. pole early make</b> |                  | 60°             | 4 88 □ 125A                               | L100 . x x | . A4                     |  |                     |
|                                      |                                                                                                     |                 | 4 180A                                    | L160 . x x | . A4                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 4 132 □ 400A                              | L400 . x x | . A4                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 6 600A                                    | L600 . x x | . A4                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 8 800A                                    | L800 . x x | . A4                     |                                                                                       |                     |
| 12 1200A                             | L1200 . x x                                                                                         | . A4            |                                           |            |                          |                                                                                       |                     |
| <b>6-pole</b>                        |                  | 60°             | 6 88 □ 125A                               | L100 . x x | . A6                     |  |                     |
|                                      |                                                                                                     |                 | 6 180A                                    | L160 . x x | . A6                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 6 132 □ 400A                              | L400 . x x | . A6                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 9 600A                                    | L600 . x x | . A6                     |                                                                                       |                     |
|                                      |                                                                                                     |                 | 12 800A                                   | L800 . x x | . A6                     |                                                                                       |                     |
| 18 1200A                             | L1200 . x x                                                                                         | . A6            |                                           |            |                          |                                                                                       |                     |

For switches with the design V.. it is necessary to state the installation depth - that is, the distance between mounting level of the switch and the inside edge of the door (dimension T).



Further informations page  
 Technical Data 76  
 Dimensions 85

**Load Switches** for resistive or slightly inductive loads or switching without load

| Description                              | Wiring diagram | Switching angle | Number of cells<br>↓<br>Size<br>↓<br><b>AC21</b> | Type   | Design<br>.E. .V.<br>↓ ↓ | Switch<br>pro-<br>gram | Escutcheon<br>plate |
|------------------------------------------|----------------|-----------------|--------------------------------------------------|--------|--------------------------|------------------------|---------------------|
| <b>Changeover switches U</b>             |                |                 |                                                  |        |                          |                        |                     |
| <b>1-pole</b>                            |                | 60°             | 2 88 □ 125A                                      | L100 . | x x                      | . U1                   |                     |
|                                          |                |                 | 2 180A                                           | L160 . | x x                      | . U1                   |                     |
|                                          |                |                 | 2 132 □ 400A                                     | L400 . | x x                      | . U1                   |                     |
|                                          |                |                 | 3 600A                                           | L600 . | x x                      | . U1                   |                     |
|                                          |                |                 | 4 800A                                           | L800 . | x x                      | . U1                   |                     |
| 6 1200A                                  | L1200 .        | x x             | . U1                                             |        |                          |                        |                     |
| <b>2-pole</b>                            |                | 60°             | 4 88 □ 125A                                      | L100 . | x x                      | . U2                   |                     |
|                                          |                |                 | 4 180A                                           | L160 . | x x                      | . U2                   |                     |
|                                          |                |                 | 4 132 □ 400A                                     | L400 . | x x                      | . U2                   |                     |
|                                          |                |                 | 6 600A                                           | L600 . | x x                      | . U2                   |                     |
|                                          |                |                 | 8 800A                                           | L800 . | x x                      | . U2                   |                     |
| 12 1200A                                 | L1200 .        | x x             | . U2                                             |        |                          |                        |                     |
| <b>3-pole</b>                            |                | 60°             | 6 88 □ 125A                                      | L100 . | x x                      | . U3                   |                     |
|                                          |                |                 | 6 180A                                           | L160 . | x x                      | . U3                   |                     |
|                                          |                |                 | 6 132 □ 400A                                     | L400 . | x x                      | . U3                   |                     |
|                                          |                |                 | 9 600A                                           | L600 . | x x                      | . U3                   |                     |
|                                          |                |                 | 12 800A                                          | L800 . | x x                      | . U3                   |                     |
| 18 1200A                                 | L1200 .        | x x             | . U3                                             |        |                          |                        |                     |
| <b>4-pole<br/>4. pole early make</b>     |                | 60°             | 8 88 □ 125A                                      | L100 . | x x                      | . U4                   |                     |
|                                          |                |                 | 8 180A                                           | L160 . | x x                      | . U4                   |                     |
|                                          |                |                 | 8 132 □ 400A                                     | L400 . | x x                      | . U4                   |                     |
|                                          |                |                 | 12 600A                                          | L600 . | x x                      | . U4                   |                     |
|                                          |                |                 | 16 800A                                          | L800 . | x x                      | . U4                   |                     |
| 24 1200A                                 | L1200 .        | x x             | . U4                                             |        |                          |                        |                     |
| <b>Changeover switches without off W</b> |                |                 |                                                  |        |                          |                        |                     |
| <b>1-pole</b>                            |                | 60°             | 2 88 □ 125A                                      | L100 . | x x                      | . W1                   |                     |
|                                          |                |                 | 2 180A                                           | L160 . | x x                      | . W1                   |                     |
|                                          |                |                 | 2 132 □ 400A                                     | L400 . | x x                      | . W1                   |                     |
|                                          |                |                 | 3 600A                                           | L600 . | x x                      | . W1                   |                     |
|                                          |                |                 | 4 800A                                           | L800 . | x x                      | . W1                   |                     |
| 6 1200A                                  | L1200 .        | x x             | . W1                                             |        |                          |                        |                     |
| <b>2-pole</b>                            |                | 60°             | 4 88 □ 125A                                      | L100 . | x x                      | . W2                   |                     |
|                                          |                |                 | 4 180A                                           | L160 . | x x                      | . W2                   |                     |
|                                          |                |                 | 4 132 □ 400A                                     | L400 . | x x                      | . W2                   |                     |
|                                          |                |                 | 6 600A                                           | L600 . | x x                      | . W2                   |                     |
|                                          |                |                 | 8 800A                                           | L800 . | x x                      | . W2                   |                     |
| 12 1200A                                 | L1200 .        | x x             | . W2                                             |        |                          |                        |                     |
| <b>3-pole</b>                            |                | 60°             | 6 88 □ 125A                                      | L100 . | x x                      | . W3                   |                     |
|                                          |                |                 | 6 180A                                           | L160 . | x x                      | . W3                   |                     |
|                                          |                |                 | 6 132 □ 400A                                     | L400 . | x x                      | . W3                   |                     |
|                                          |                |                 | 9 600A                                           | L600 . | x x                      | . W3                   |                     |
|                                          |                |                 | 12 800A                                          | L800 . | x x                      | . W3                   |                     |
| 18 1200A                                 | L1200 .        | x x             | . W3                                             |        |                          |                        |                     |
| <b>4-pole<br/>4. pole early make</b>     |                | 60°             | 8 88 □ 125A                                      | L100 . | x x                      | . W4                   |                     |
|                                          |                |                 | 8 180A                                           | L160 . | x x                      | . W4                   |                     |
|                                          |                |                 | 8 132 □ 400A                                     | L400 . | x x                      | . W4                   |                     |
|                                          |                |                 | 12 600A                                          | L600 . | x x                      | . W4                   |                     |
|                                          |                |                 | 16 800A                                          | L800 . | x x                      | . W4                   |                     |
| 24 1200A                                 | L1200 .        | x x             | . W4                                             |        |                          |                        |                     |

Ordering example: AC1 1200A panel mounting, changeover switch without off 4-pole

L1200 E W4



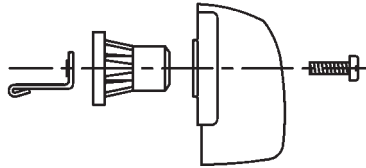
## Operating Knobs and Handles

### Types of handles

In the standard version, the switches are supplied with a black twist knob or instrument knob (M10H - N33F), except for design SMA, which has a grey toggle knob. Switches of size L, which consist of 2 or 3 switch columns, come with a black hand wheel. If required, the switch can be supplied with other knobs, which can later easily be exchanged.

All operating knobs have an insert, which sets the position of the knob in relation to the switch shaft. This insert can be mounted in 8 different positions (at intervals of 45°), causing the angle of each individual switch setting to be rotated by 45°.

In the standard version, the switch terminals are positioned left and right (except M10H). When the knob insert is turned by 90°, the lay-out of the terminals changes to top and bottom.



All operating knobs can be moved on the hexagonal shaft, to permit adaptation to different sheet thicknesses, etc.

| Type                         | M10<br>M10H<br>M20 | N20<br>N33F | N40<br>N60<br>N80<br>L100<br>L160 | N100<br>N200<br>L400<br>L600<br>L800<br>L1200 |
|------------------------------|--------------------|-------------|-----------------------------------|-----------------------------------------------|
| Knob movement mm             | 5                  | 5           | 7                                 | 9                                             |
| Hexagonal shaft dimension mm | 5                  | 7           | 9                                 | 12                                            |

**Ordering example:** Cam switch N60 V U3 with ball type handle red  
Order type: **N60 V U3 +B3**

**Dimensions** see page 84



### Knobs and handles

| Description                                        | Colour                                  | Ordering Code                                                      | M10<br>M10H<br>M20    | N20<br>N33F      | N40<br>N60<br>N80<br>L100<br>L160 | N100<br>N200<br>L400<br>L600<br>L800<br>L1200 |
|----------------------------------------------------|-----------------------------------------|--------------------------------------------------------------------|-----------------------|------------------|-----------------------------------|-----------------------------------------------|
| <b>Instrument knob</b><br>Standard for M10 to N33F | grey<br>black<br>red<br>white           | <b>+G1</b><br><b>+G2</b><br><b>+G3</b><br><b>+G5</b>               | X<br>X<br>X<br>X      | X<br>X<br>X<br>X |                                   |                                               |
| <b>Twist knob</b><br>Standard for N40 to N200      | grey<br>black<br>red<br>white<br>yellow | <b>+R1</b><br><b>+R2</b><br><b>+R3</b><br><b>+R5</b><br><b>+R7</b> | X<br>X<br>X<br>X      | X<br>X<br>X<br>X | X<br>X<br>X<br>X                  | X<br>X<br>X                                   |
| <b>Toggle knob</b>                                 | grey<br>black<br>red<br>white<br>blue   | <b>+K1</b><br><b>+K2</b><br><b>+K3</b><br><b>+K5</b><br><b>+K6</b> | X<br>X<br>X<br>X<br>X | X<br>X<br>X<br>X |                                   |                                               |
| <b>Ball type handle</b>                            | grey<br>black<br>red                    | <b>+B1</b><br><b>+B2</b><br><b>+B3</b>                             |                       | X<br>X<br>X      | X<br>X<br>X                       | X<br>X<br>X                                   |
| <b>Hand wheel</b>                                  | black                                   | <b>+HR</b>                                                         |                       |                  |                                   | X                                             |



**Escutcheon Plates**

**TELUX-Cam Switches** in designs E, V, P, PF, SM, UP, Z and KE are supplied with a square escutcheon plate consisting of a black frame and plexi insert plate. The markings are printed in black are on the back of the insert plate. To protect the markings so that they remain easy to read, the back of the insert plate is lined with silver foil. In addition, rectangular plates can be provided for all switch sizes, which can fitted on all switches after mounting.

Square plate



Rectangular plate (with square plate)



**TELUX-Cam Switches** in design SMA, for distribution boards with 45mm inside edge of installation cover, is supplied with a grey cover and black markings.



**Special engraved markings** on escutcheon plates are limited by the available space. In the case of relatively large production runs or frequent use of the text, we recommend ordering of a printing block. This will be invoiced at cost price, and the engraving will not be charged for. This investment generally pays with batches from 50 pieces upwards.

The "escutcheon plate" column of the selection and ordering tables for switch programs indicates the standard plate and, in some cases, an additional plate that is often used for the programs in question. If such a plate, listed in the selection table, is desired, the appropriate code number should be stated when ordering a switch and switch program.

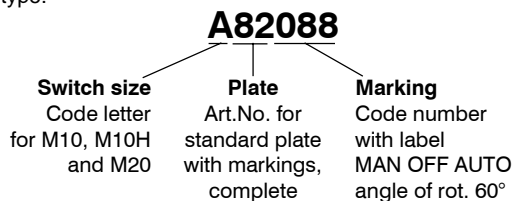
Should only **plates** or **parts** of the latter be ordered, the order type is assembled as shown by the following example.

**Code letter** of switch sizes

|                                     |          |
|-------------------------------------|----------|
| M10, M10H, M20                      | <b>A</b> |
| N20, N33F                           | <b>E</b> |
| N40, N60, N80, L100, L160           | <b>H</b> |
| N100, N200, L400, L600, L800, L1200 | <b>L</b> |

**Ordering example:** Escutcheon plate silver, complete, for cam switch M10, marked with MAN OFF AUTO, angle of rotation 60°

Order type:



However, if a **switch** with non-standard lettering is required, only three-digit code number for the marking need be added to the order type (see next page).

**Dimensions** see page 86

**Description**

| Description                                                                                                                         | Order type<br>Switch size<br>Code letter | Plate<br>Art.No. | Marking<br>Code number |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------|------------------------|
| <b>Escutcheon plate for designs E, V, P., Z, SM, KE and UP</b><br>Escutcheon frame black, plexi insert plate silver, markings black |                                          |                  |                        |
| Escutcheon plate complete silver                                                                                                    | A E H L                                  | .82...           | ... (see pp. 58-60)    |
| Escutcheon plate complete yellow                                                                                                    | A E H L                                  | .90...           | ... (see pp. 58-60)    |
| Plexi insert plate silver                                                                                                           | A E H L                                  | .85...           | ... (see pp. 58-60)    |
| Plexi insert plate yellow                                                                                                           | A E H L                                  | .80...           | ... (see pp. 58-60)    |
| Escutcheon frame black                                                                                                              | A E H L                                  | .8203            | -                      |
| <b>Rectangular escutcheon plate for designs E, V, Z and SM</b><br>Escutcheon frame black, plexi insert plate silver, markings black |                                          |                  |                        |
| Rectangular additional escutcheon plate complete silver                                                                             | A E H L                                  | .865..           | ... (see pp. 58-60)    |
| Rectangular additional escutcheon plate complete yellow                                                                             | A E H L                                  | .915..           | ... (see pp. 58-60)    |
| Plexi insert plate silver                                                                                                           | A E H L                                  | .885..           | ... (see pp. 58-60)    |
| Plexi insert plate yellow                                                                                                           | A E H L                                  | .895..           | ... (see pp. 58-60)    |
| Escutcheon frame black                                                                                                              | A E H L                                  | .8503            | -                      |
| <b>Installation cover for design SMA</b><br>grey cover , markings black                                                             | A - - -                                  | .68...           | ... (see page 60)      |

## Escutcheon Plates

### Selected standard markings

The markings that are most commonly required are shown below, together with code letters for the switch size and the code number.

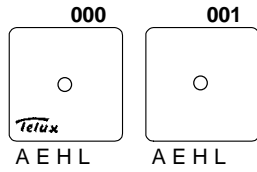
**Ordering example:** Switch type M10H E A3 with escutcheon plate "OFF ON" and additional rectangular escutcheon plate "PUMP"  
Order type: **M10H E A3 +003 +516**

### Code letter of switch sizes

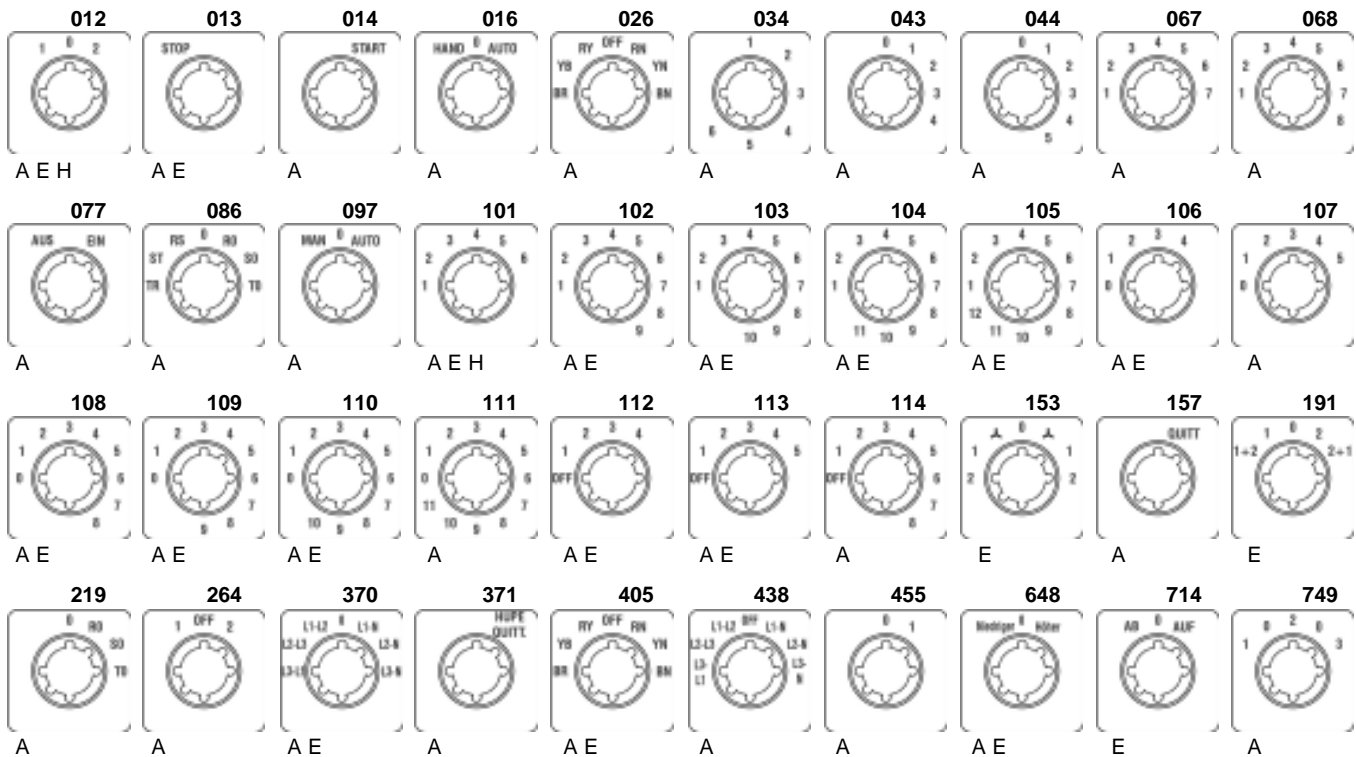
M10, M10H, M20  
N20, N33F  
N40, N60, N80, L100, L160  
N100, N200, L400, L600, L800, L1200

A  
E  
H  
L

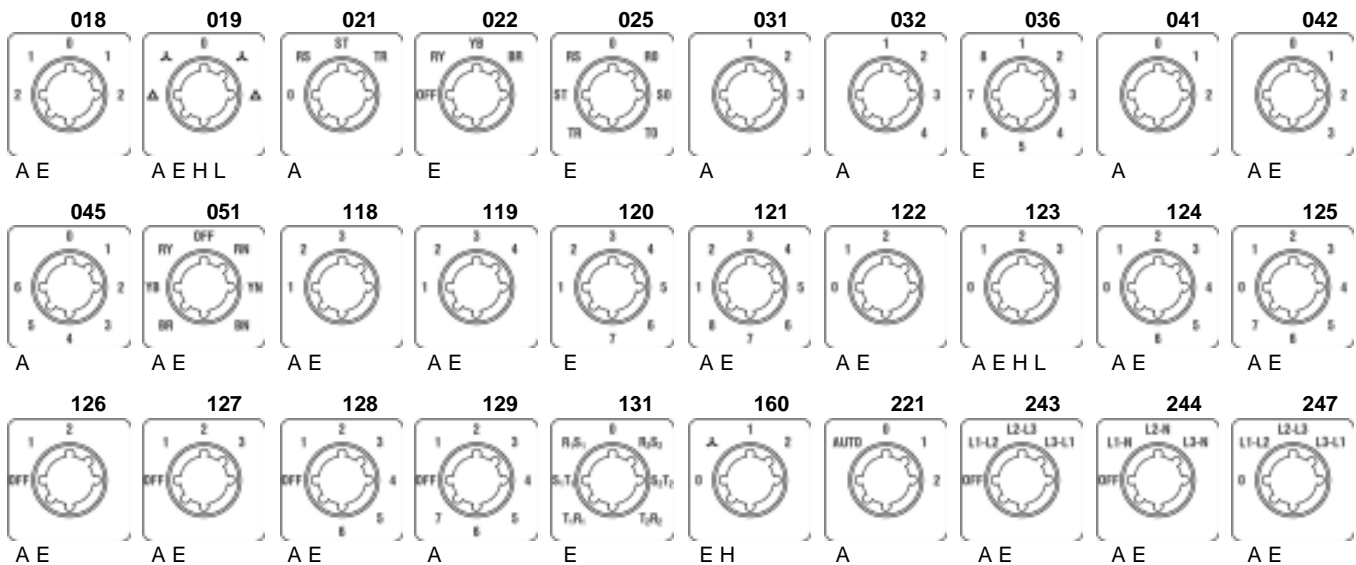
### Blank escutcheon plates



### Switching angle 30°

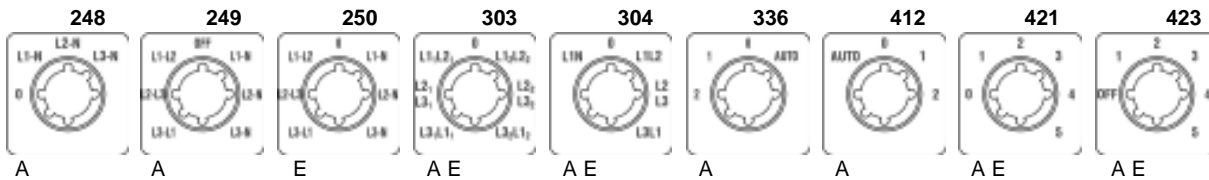


### Switching angle 45°

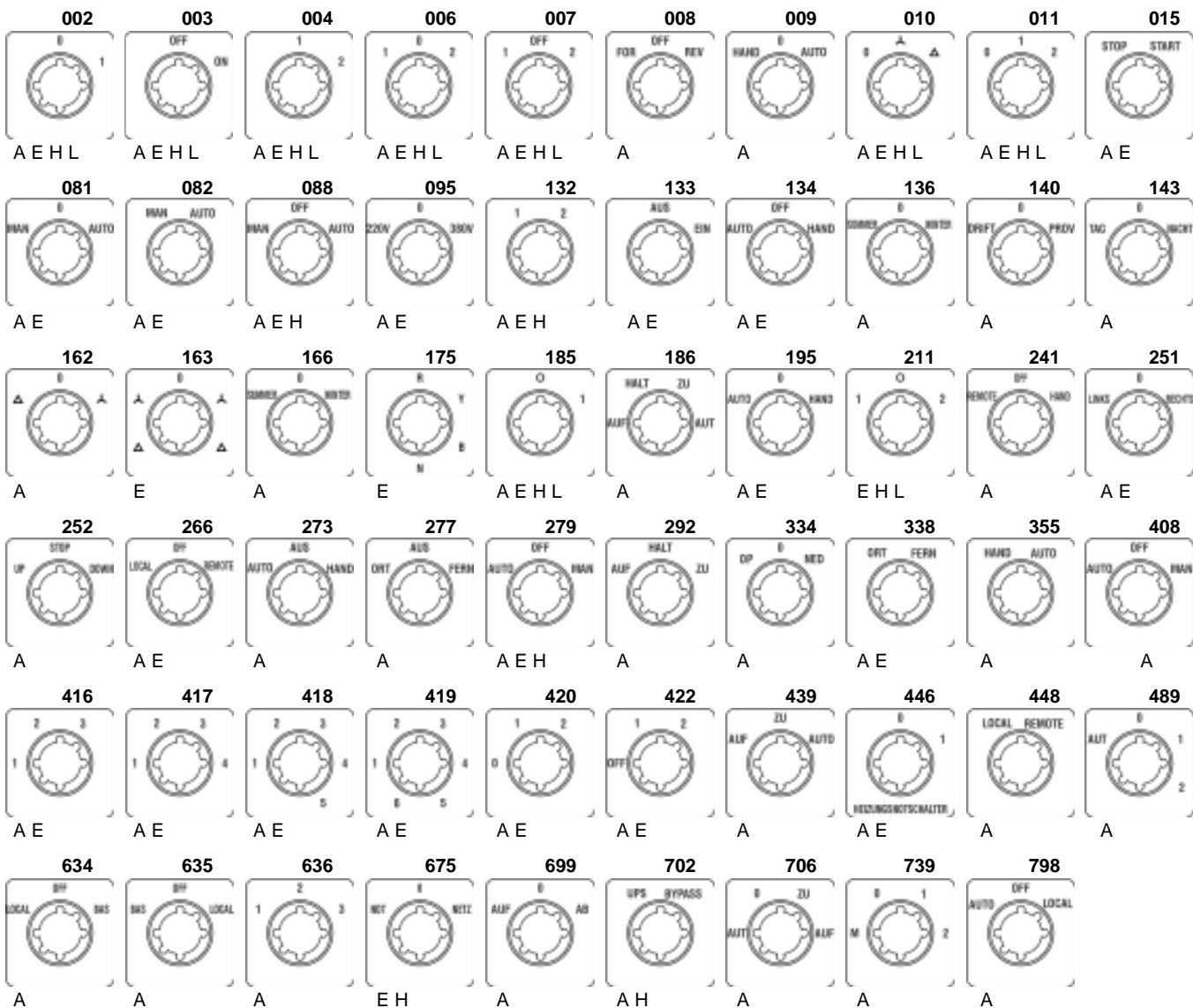


Escutcheon Plates

Switching angle 45°

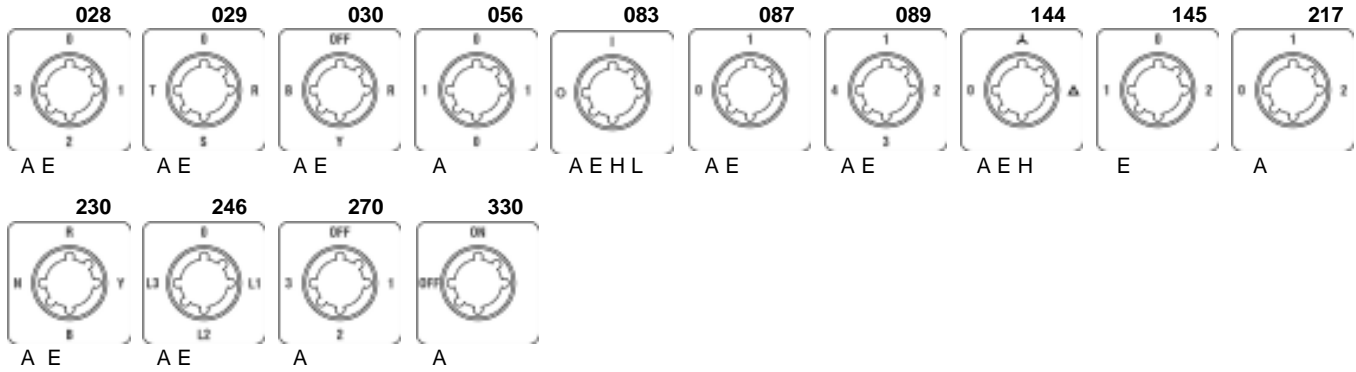


Switching angle 60°

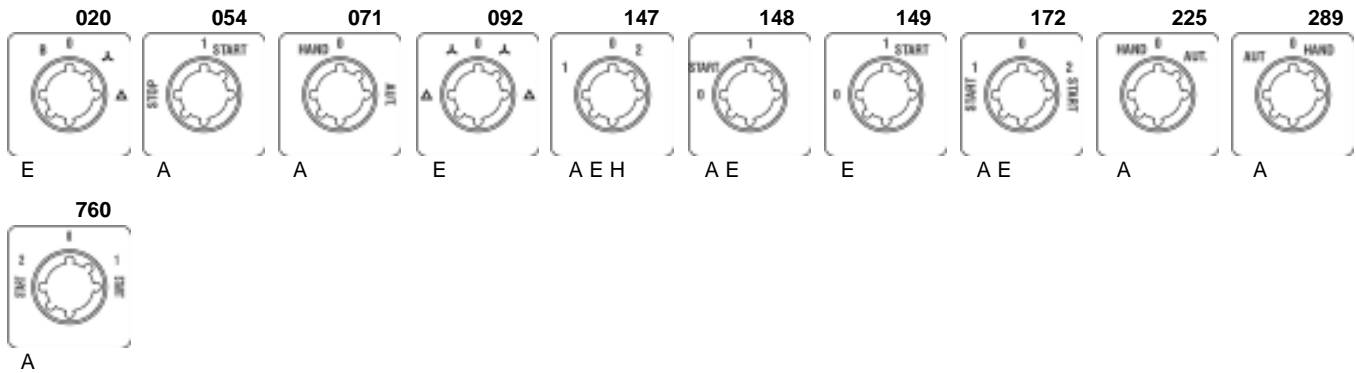


**Escutcheon Plates**

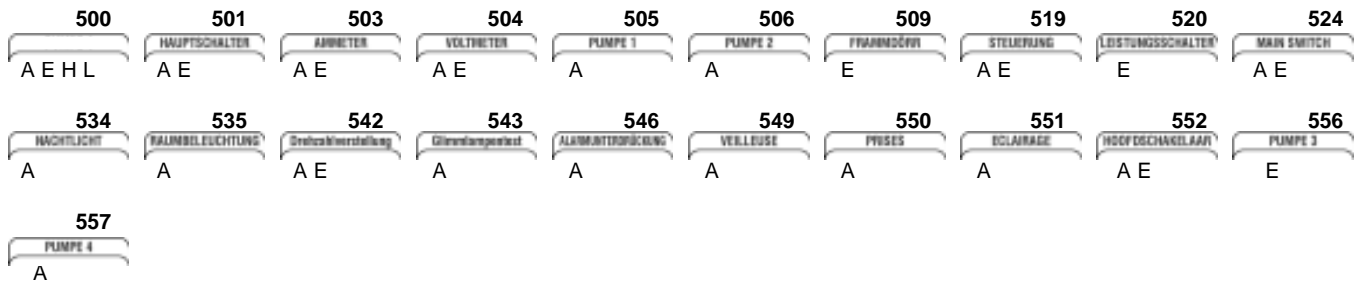
Switching angle 90°



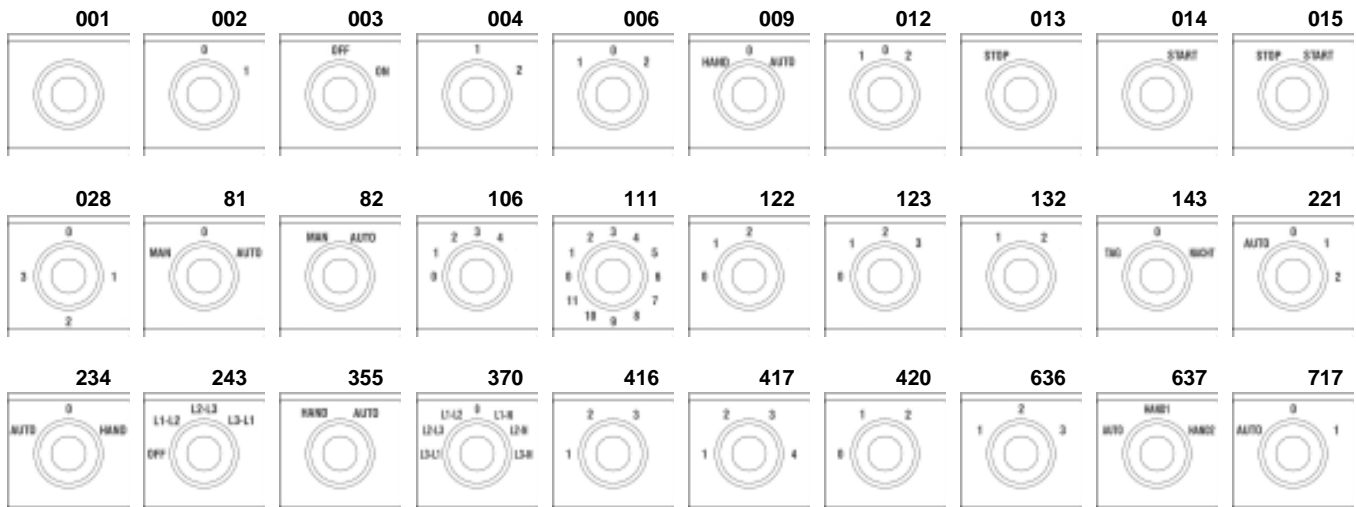
**Miscellaneous**



**Rectangular additional escutcheon plates**



**Covers for design SMA**



Switching angles

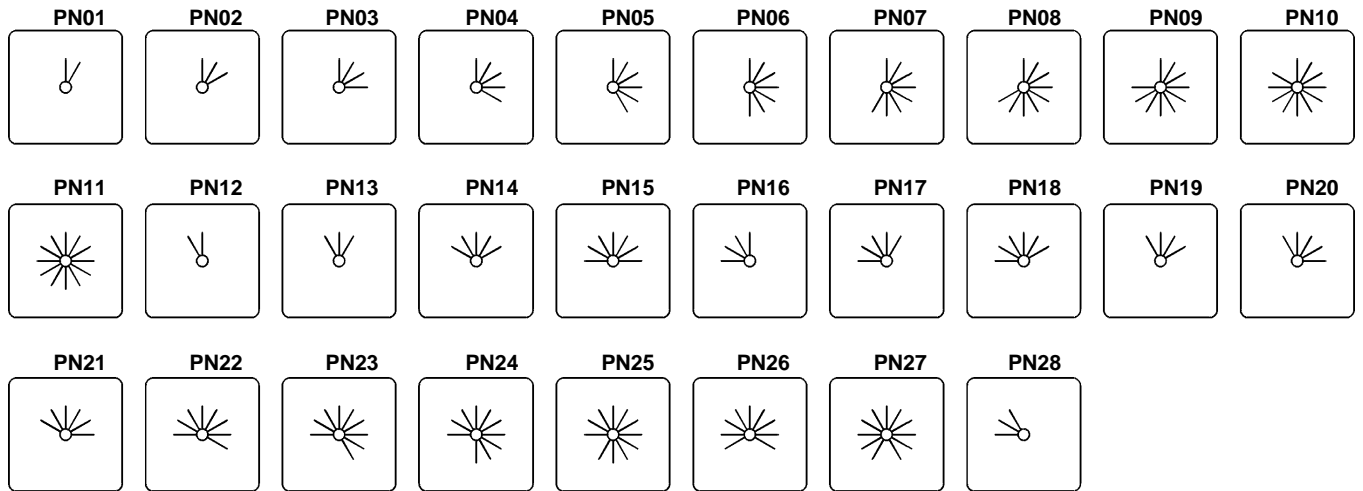
Arrangement of switch settings

All feasible arrangements of switch settings are shown, and defined by position numbers, in the following tables. Not only the switching angles, but also switches with latched or momentary settings, or combinations of the two, are distinguished from one another.

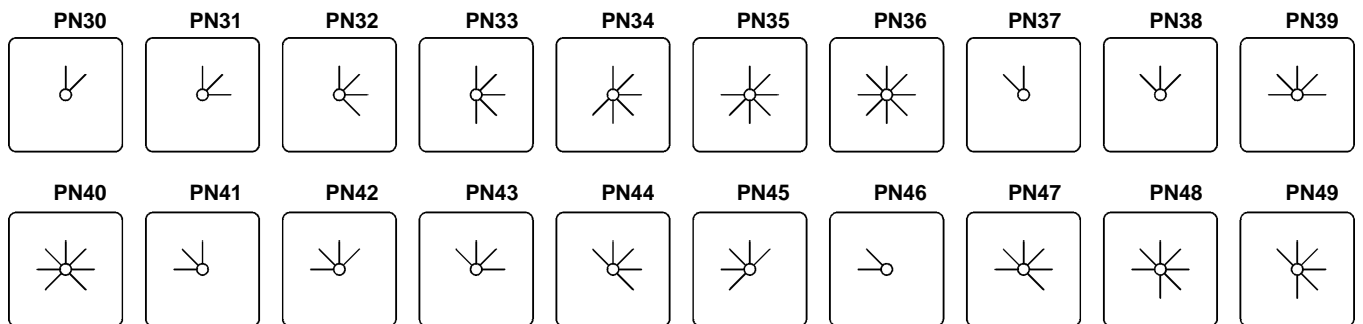
Knowledge of the following variations is particularly important when planning special switches. It is necessary to state the position number when ordering special switches, as the cheapest version will otherwise be selected.

All the switches types listed can be supplied with switching angles other than those indicated, provided that they are permitted by the switch program (additional charge).

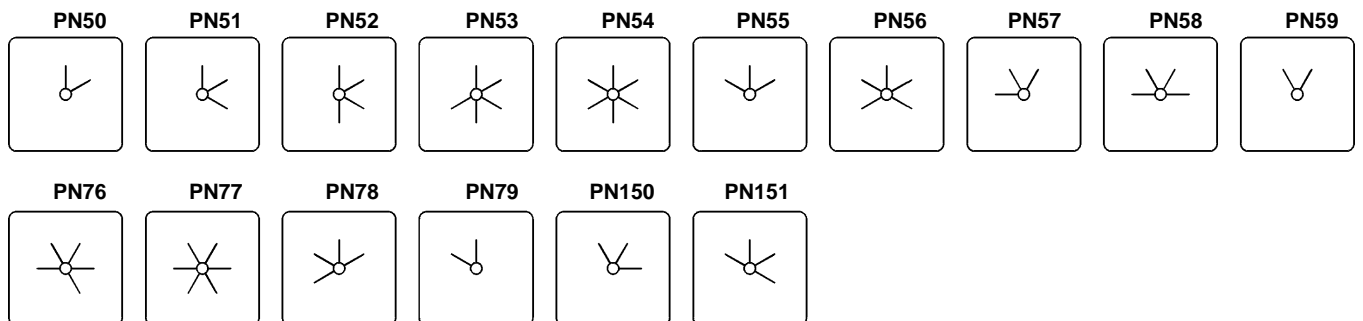
Switching angle 30°



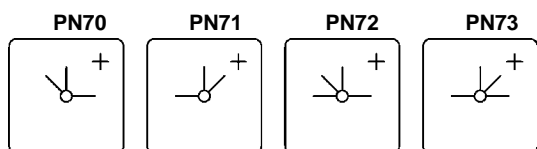
Switching angle 45°



Switching angle 60°



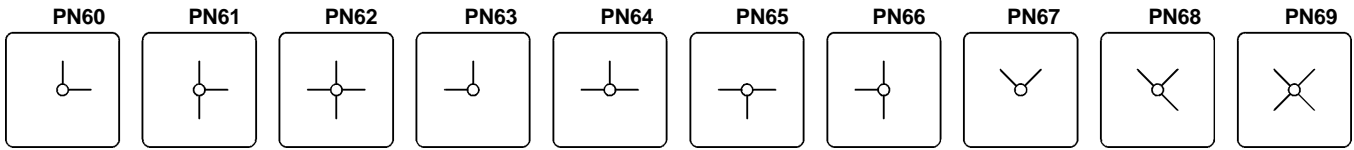
Switching angle 45/90°



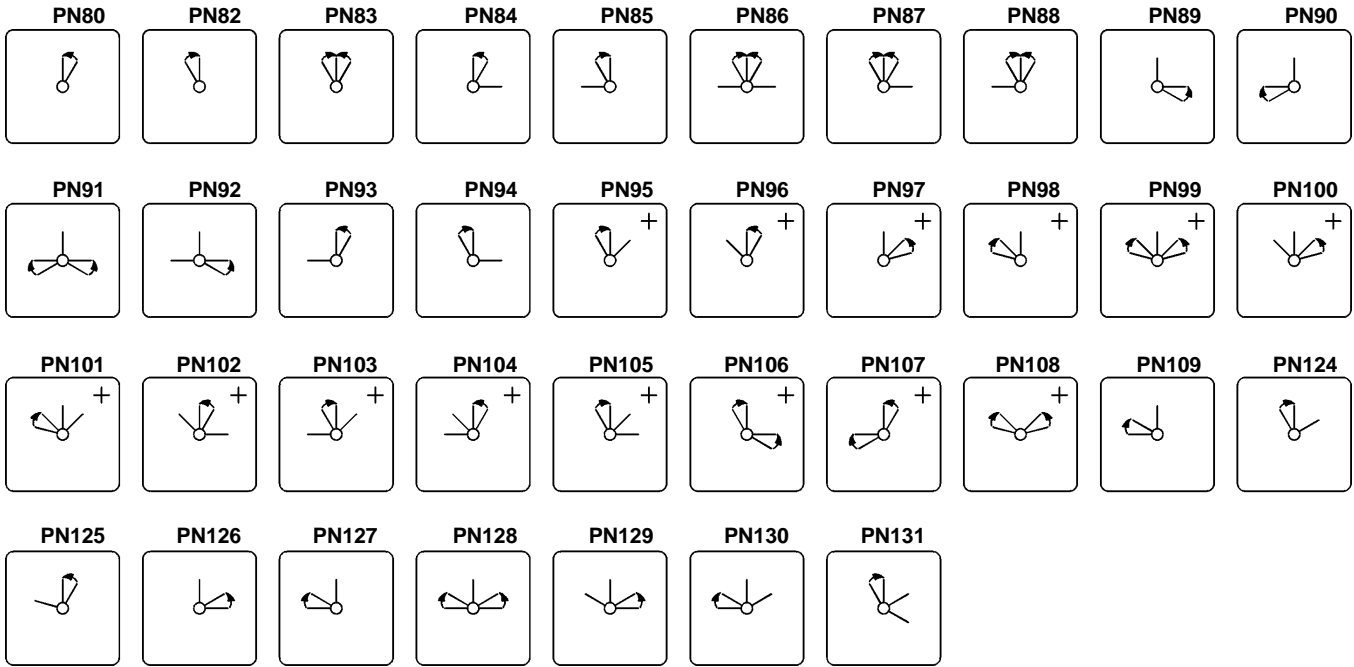
+) Not available for switch types M10, M10H and M20

**Switching angles**

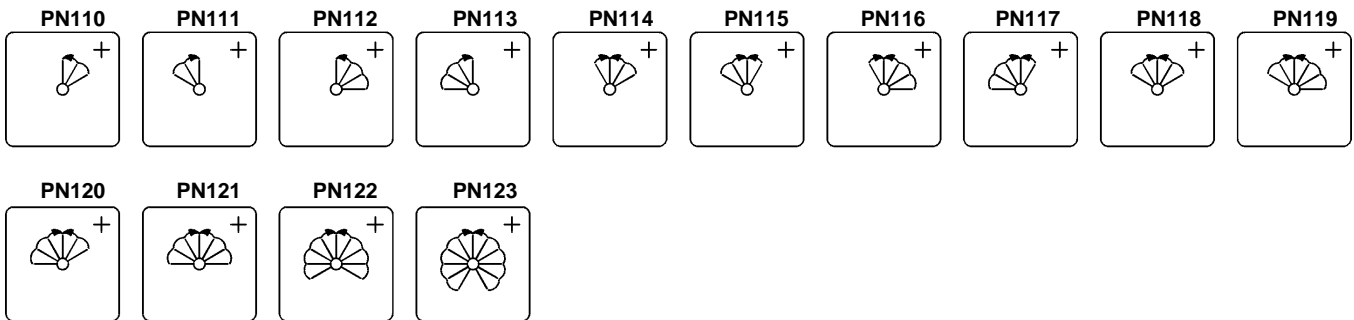
**Switching angle 90°**



**Momentary settings and special combinations**



**Spring return over several settings**



+) Not available for switch types M10, M10H and M20

**Handles and drive units**

Special actuating mechanisms and ancillary attachments can be provided for many switch sizes and designs. Here, the switch type is followed by order code for the ancillary attachment.

**Ordering example:** Cam switch N20 GF W3R for foot operation  
**Order type: N20 GF W3R +FUSS1**

**Dimensions** see page 87



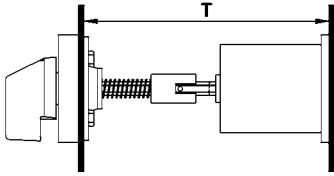
|                                                                                                                                                                                                          | <b>Ordering Code</b> | Suitable for designs | Suitable for switch type               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------------------------|
| <p><b>Removable knob drive</b><br/>                     The operating knob is designed to be removable, and can be withdrawn in any setting. The switch shaft is covered when the knob is withdrawn.</p> | <b>+STGR</b>         | E<br>P               | M10H, M20, N20, N33F<br>M10, N20, N33F |
| <p><b>Removable knob drive 2</b><br/>                     The operating knob is designed to be removable. It can be withdrawn in one setting, to be stated when ordering.</p>                            | <b>+STGR2</b>        | E<br>P               | M10H, M20, N20, N33F<br>M10, N20, N33F |

1) Cast enclosed switches are delivered with switch type N32



## Door couplings

For switches with door couplings it is necessary to state the installation depth - that is, the distance between mounting level of the switch and the inside edge of the door (dimension T).



Door couplings are available for switches to be installed in switchgear cabinets or distribution boards with hinged doors. These permit the doors to be opened without removal of the operating knobs.

**Ordering example:** Cam switch N100 V A3 with lockable door coupling, moisture protected IP65, dimension T=580mm  
Order type: **N100 V A3 +TK2FR/580**

**Dimensions** see page 88



|                                                                                                                                                                                    | Ordering Code     | Suitable for designs | Suitable for switch type                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|-------------------------------------------------------------|
| <b>Door coupling</b><br>Protection class from front: IP65<br>5-hole mounting                                                                                                       | <b>+TKE/...</b>   | V, SM                | M10H, M20, N20, N33F                                        |
| <b>Door coupling locked</b><br>Protection class from front: IP65<br>5-hole mounting<br>Doors only open at a given switch setting: unless otherwise stated, the "OFF" setting.      | <b>+TK2E/...</b>  | V, SM                | M10H, M20, N20, N33F                                        |
| <b>Door coupling locked</b><br>Protection class from front: IP65<br>Central fixing Ø22mm<br>Doors only open at a given switch setting: unless otherwise stated, the "OFF" setting. | <b>+TK2Z/...</b>  | V, SM                | M10H, M20, N20, N33F                                        |
| <b>Door coupling</b><br>Protection class from front: IP40<br>5-hole mounting                                                                                                       | <b>+TK/...</b>    | V                    | N40, N60, N80, N100, N200<br>L100, L160, L400, L600<br>L800 |
| <b>Door coupling</b><br>Protection class from front: IP65<br>5-hole mounting                                                                                                       | <b>+TKFR/...</b>  | V                    | N40, N60, N80, N100, N200<br>L100, L160, L400, L600<br>L800 |
| <b>Door coupling locked</b><br>Protection class from front: IP40<br>5-hole mounting<br>Doors only open at a given switch setting: unless otherwise stated, the "OFF" setting.      | <b>+TK2/...</b>   | V                    | N40, N60, N80, N100, N200<br>L100, L160, L400, L600<br>L800 |
| <b>Door coupling locked</b><br>Protection class from front: IP65<br>5-hole mounting<br>Doors only open at a given switch setting: unless otherwise stated, the "OFF" setting.      | <b>+TK2FR/...</b> | V                    | N40, N60, N80, N100, N200<br>L100, L160, L400, L600<br>L800 |

**Lockable switches**

Key-operated and lockable switches are supplied with two keys. Additional keys or other types of lock on request.

**Ordering example:** Cam switch N20 E A3 key operated  
Order type: **N20 E A3 +SA**

**Dimensions** see page 89 and 90







|                                                                                                                                                                                                                                                                                                                                                                           | Ordering Code                           | Suitable for designs                          | Suitable for switch type                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------|
| <p><b>Key operated switch</b><br/>Lock Willenhal FT101, key removable in all lockable settings.<br/>Other types of lock on request.<br/>Maximum number of cells<br/>M10 - N33F: 6    N40, N60: 2</p> <p><b>Key operated switch</b>, key removable only in some settings. Add letter of setting where key is removable to ordering code according to the scetch below.</p> | <p><b>+SA</b></p> <p><b>+SA/.</b></p>   | <p>E, V, SM<br/>E, V<br/>P<br/>SMA<br/>UP</p> | <p>M10H, M20, N20, N33F<br/>N40, N60<br/>M10, N20, N33F, N40, N60<br/>M10H, M20<br/>M10</p> |
| <p><b>Key operated switch IP65</b><br/>Lock Ronis R455, key removable in all lockable settings.</p> <p><b>Key operated switch</b>, key removable only in some settings. Add letter of setting where key is removable to ordering code according to the scetch above.</p>                                                                                                  | <p><b>+SA</b></p> <p><b>+SA/.</b></p>   | <p>Z, ZO</p>                                  | <p>M10H, M20</p>                                                                            |
| <p><b>Key operated switch</b><br/>Lock KABA8, key removable in all lockable settings.</p> <p><b>Key operated switch</b>, key removable only in some settings. Add letter of setting where key is removable to ordering code according to the scetch below.</p>                                                                                                            | <p><b>+SAK</b></p> <p><b>+SAK/.</b></p> | <p>E</p>                                      | <p>M10H, M20</p>                                                                            |
| <p><b>Key operated switch with barrel for special security functions</b><br/>Lock EVVA EHZ50/5 Nickel matt<br/>Special version which prevents not only switching but also access to the cable ends and removal of the switch when locked.<br/>Maximum number of cells<br/>Design E, P: 4<br/>Design UP : 3</p>                                                            | <p><b>+SASI</b></p>                     | <p>E<br/>P<br/>UP</p>                         | <p>M10H, M20<br/>M10, M20<br/>M10, M20</p>                                                  |
| <p><b>Key operated switch for special security functions without lock</b><br/>for use of lock EVVA EHZ50/5 or with same dimensions<br/>Maximum number of cells<br/>Design E, P: 4<br/>Design UP : 3</p>                                                                                                                                                                   | <p><b>+SASO</b></p>                     | <p>E<br/>P<br/>UP</p>                         | <p>M10H, M20<br/>M10, M20<br/>M10, M20</p>                                                  |

## Padlock devices

A range of padlock devices designed to prevent from being turned on by unauthorized personnel, or during maintenance and repair work, can be supplied.

Dimensions see page 91

**Ordering example:** Cam switch N33F E A3 with interlocking device SV3 suitable for 3 padlocks  
Order type: **N33F E A3 +SV3**

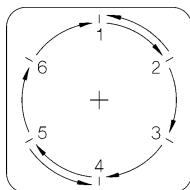
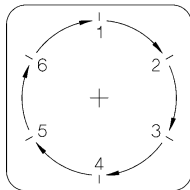
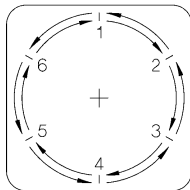
|                                                                                     | Padlock device<br>Description                                                                                                                                                                                                                                                                                                                                          | Ordering<br>Code                                                            | Suitable<br>for designs                                     | Suitable for<br>switch type                                                                                         |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Padlock device</b><br/>Standard version <b>black</b>, otherwise <b>red</b>, for 1 or 2 padlocks.<br/>Shackles up to Ø6mm<br/>Standard version <b>black</b> 64 x 64mm, otherwise <b>red</b> 64 x 64mm</p>                                                                                                                                                         | <p><b>+SV1</b><br/><b>+SV1R</b></p> <p><b>+SV164</b><br/><b>+SV164R</b></p> | <p>E, V, SM<br/>P, PF</p> <p>E, V<br/>P, PF</p>             | <p>M10H, M20<br/>M10</p> <p>M10H, N20, N33F<br/>N20, N33F</p>                                                       |
|    | <p><b>Padlock device</b><br/>Standard version <b>black</b>, otherwise <b>yellow</b> insert plate and <b>red</b> twist knob for 1-3 padlocks.<br/>Shackles up to Ø8,5mm<br/>Prior to insertion of the first padlock, a red locking ledge must be depressed. This indicates that the switch is locked.</p>                                                               | <p><b>+SV3</b><br/><b>+SV3R</b></p>                                         | <p>E, V<br/>E, V<br/>E, V<br/>PF</p>                        | <p>N40, N60, N80, L100, L160<br/>N100, N200, L400, L600,<br/>L800, L1200<br/>N40, N60, N80, N100, N200</p>          |
|  | <p><b>Padlock device</b><br/>Standard base <b>grey</b>, locking ring <b>black</b>, or with <b>yellow</b> base and <b>red</b> locking ring.<br/>Locking ring for 1-3 padlocks.<br/>Shackles up to Ø6mm<br/>Standard base <b>grey</b>, locking ring <b>black</b> 88 x 88mm, or with <b>yellow</b> base and <b>red</b> locking ring 88 x 88mm</p>                         | <p><b>+SV4</b><br/><b>+SV4R</b></p> <p><b>+SV488</b><br/><b>+SV488R</b></p> | <p>E, V<br/>SM<br/>P, PF</p> <p>E, V<br/>E, V<br/>P, PF</p> | <p>M10H, N20, N33F<br/>M10H, N20, N33F<br/>N20, N33F</p> <p>M10H, N20, N33F<br/>N40, N60, N80<br/>N40, N60, N80</p> |
|  | <p><b>Key lock device</b><br/>With a cylinder lock in the lock attachment, one or more switch settings are lockable (state when ordering). The operating knob can only be turned when unlocked. The key can be withdrawn wheter locked or unlocked.<br/>Special versions, in which the key cannot be withdrawn when in some (unlockable) settings can be supplied.</p> | <p><b>+SZ</b></p>                                                           | <p>E, V<br/>SM</p>                                          | <p>alle<br/>M10H, M20, N20, N33F</p>                                                                                |
|                                                                                     | <p><b>Key lock device</b><br/>Special version for on-off switches, in which it is possible to switch off without a key.</p>                                                                                                                                                                                                                                            | <p><b>+SZ2</b></p>                                                          | <p>E, V<br/>SM</p>                                          | <p>alle<br/>M10H, M20, N20, N33F</p>                                                                                |

## Switch interlocks

A wide range of locks and interlocking devices, designed to prevent accidental or hazardous switching, can be supplied.

**Ordering example:** Cam switch N20 E A3 with push button switch lock  
Order type: **N20 E A3 +DV**

**Dimensions** see page 92



| Description                                                                                                                                                                                                        | Ordering Code | Suitable for designs | Suitable for switch type             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------|--------------------------------------|
| <b>Push button interlock</b><br>The switch can only be actuated when the pushbutton is simultaneously depressed (two-handed operation).                                                                            | <b>+DV</b>    | E, V                 | all                                  |
| <b>Interlock with electrical contact</b><br>The switch can only be actuated when the pushbutton, which also operates a make and break contact, is actuated (for external interlocking devices or safety measures). | <b>+ET</b>    | E, V                 | all                                  |
| <b>Magnetic interlock</b><br>The switch can only be actuated when an electromagnet is simultaneously excited. When ordering, voltage and percentage duty cycle of the magnet coil should be stated.                | <b>+MV</b>    | E                    | N20, N33F, N40, N60, N80, N100, N200 |
| <b>Circular switch</b><br>Switches that have the maximum number of settings for a given switching angle can be made without a stop position, permitting direct switching from the last to the first setting.       | <b>+RU</b>    | all                  | all                                  |
| <b>Backswitch 1</b><br>Special version of the circular switch, in which the switch can only be turned in one direction.                                                                                            | <b>+RS1</b>   | all                  | all                                  |
| <b>Backswitch 2</b><br>Special version of the circular switch, in which, in given positions, the switch can only be operated in one direction.                                                                     | <b>+RS2</b>   | all                  | all                                  |

## Couplings and stop mechanism

A range of couplings and stop mechanisms for trouble-free operation of switches with a very large number of contacts can be supplied.  
**Dimension** see page 93

**Ordering example:** Cam switch N200 V ST0113 spread over three columns interconnected by gears  
 Order type: **N200 V ST0113 +ZK3**

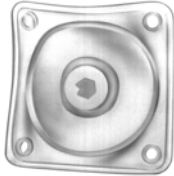


| Description                                                                                                                                                                                                                                                                                                                | Ordering Code | Suitable for designs          | Suitable for switch type                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------|----------------------------------------------------------------------------|
| <b>Coupling of two columns</b><br>For simultaneous drive of two switch columns (with very large number of switch cells or limited installation depth).                                                                                                                                                                     | <b>+ZK2</b>   | E, V                          | all                                                                        |
| <b>Coupling of three columns</b><br>For simultaneous drive of three switch columns.                                                                                                                                                                                                                                        | <b>+ZK3</b>   | E, V                          | all                                                                        |
| <b>Coupling of different switch sizes</b><br>For attachment of control switches (auxiliary contacts) to larger switches.<br>M10H, M20 in sizes E and H.<br>N20 to N80 in size L.                                                                                                                                           | <b>+ZWK</b>   | E                             | N40, N60, N80, L100, L160<br>N100, N200, L400, L600,<br>L800, L1200        |
| <b>Delayed action switch</b><br>Using a delayed action coupling, two switch shafts - a main shaft and delayed shaft - can be coupled, such that the delayed shaft is rotated together with the main shaft once a given angle of rotation is reached (e.g. for off-load return of switches used with pole-changing motors). | <b>+SK</b>    | E, V<br>G, GF                 | N20, N33F, N40, N60, N80<br>N20                                            |
| <b>Second stop mechanism</b><br>With switches in which a large number of contacts is simultaneously operated, use of a second stop mechanism is sometimes necessary, in order to ensure precise switching to the next setting.                                                                                             | <b>+RW2</b>   | all                           | all                                                                        |
| <b>Metal stop mechanism</b><br>for extreme mechanical stress on the stop mechanism, e.g. where many contacts are switched at the same time.<br>Not for PN110 to PN123                                                                                                                                                      | <b>+MRW</b>   | E, V<br>E, V<br>E, V<br>G, GF | N40, N60, N80, L100, L160<br>N100, N200, L400, L600,<br>L800, L1200<br>N20 |

## Special versions

A number of special versions can be supplied for adaptation of switches to various conditions of use.

**Ordering example:** Cam switch M10H E U3 with large front plate  
Order type: **M10H E U3 +GFP**




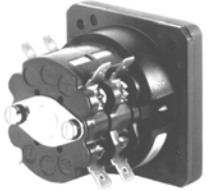
| Description                                                                                                                                                                 | Ordering Code                                                            | Suitable for designs | Suitable for switch type                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------|---------------------------------------------|
| <b>Switch shaft sealing</b><br>For increased front protection class on IP54.                                                                                                | <b>+WD</b>                                                               | E, V<br>SM           | N20 to L1200<br>N20, N33F                   |
| <b>Front plate/switch shaft sealing</b><br>For increased front protection class on IP65. In this version, a wider hole is required for the shaft.<br>Dimensions see page 89 | <b>+FPWD</b>                                                             | E, V, SM             | N20, N33F                                   |
| <b>Extended switch shaft</b><br>For adaptation of switch designs V and SM to the enclosure depth. State additional shaft length when ordering.                              | <b>+VW/...</b>                                                           | E, V<br>SM           | all<br>M10H, M20, N20, N33F                 |
| <b>Large front plate</b><br>Switch with front plate and operating knob of the next size (for replacement of older, larger switches or aesthetic reasons).                   | <b>+GFP</b>                                                              | E, V, SM             | M10H, N20, N33F                             |
| <b>Switch with pilot lamp</b><br>lamp red, 230V<br>lamp red, 400V<br>lamp green, 230V<br>lamp green, 400V                                                                   | <b>+SLR/230</b><br><b>+SLR/400</b><br><b>+SLG/230</b><br><b>+SLG/400</b> | E<br>P<br>UP         | all<br>M10, N20, N33F, N40, N60<br>M10, N20 |
| <b>Gold plated contacts</b><br>For electronic circuits with low voltages and currents.                                                                                      | <b>+GK</b>                                                               | all                  | M10H, M20, N20, N33F                        |
| <b>Tropical proof type</b>                                                                                                                                                  | <b>+TR</b>                                                               | all                  | all                                         |
| <b>Neon safety switch</b><br>For all-pole switching off of neon advertisement circuits by the Fire Brigade.<br>Dimensions see page 91                                       | <b>+FEU</b>                                                              | E                    | N20, N33F                                   |



## Accessories

A number of special versions can be supplied for adaptation of switches to various conditions of use.  
**Dimensions** see page 92

**Ordering example:** Cam switch N20 E A3 with terminal cover plate  
 Order type: **N20 E A3 +KLAD**

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Ordering Code                                                                                                                              | Suitable for designs          | Suitable for switch type                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------|
| <b>Terminal cover plate</b><br>Prevents accidental touching of live terminals (requirement for main switches according to VDE 0113) only for 2 cells for all cells                                                                                                                                                                                                                                                                                                                | <b>+KLAD</b>                                                                                                                               | E, V                          | N20, N40, N60, N80<br>N100, N200                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>+KLAD</b>                                                                                                                               | E, V                          | N33F                                                      |
| <b>Moisture proofing caps</b><br>Protection class from rear: IP54.<br>For protection of the switch from dust and moisture (e.g. when installed in machine pedestals). For switch mounting from the front and rear. Conical cable entry glands.<br>Maximum number of cells:<br>M10H        7<br>N20         5<br>N40         4<br>N60         2                                                                                                                                    | <b>+FR</b>                                                                                                                                 | E                             | M10H, N20, N40, N60                                       |
| <br><b>Angled terminals</b><br>For easy connection of inaccessible switches.<br>Unless otherwise stated, all terminals specified with markings are equipped in this manner.<br>A distinction is drawn between left and right angled terminals. Seen from the switch end, the left terminals are located above left and below right; conversely, right terminals are above right and below left. | <b>+WK</b>                                                                                                                                 | E, V                          | M20, N20, N40, N60, N80,<br>N100                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <br><b>Fast-on connectors</b><br>For 6,3 x 0,8mm plugs. | <b>+AMPZ</b>                  | E, V                                                      |
| <b>Earth terminals</b><br>2 terminals, connected with one another, insulated from switch column: for earth conductors.                                                                                                                                                                                                                                                                                                                                                            | <b>+PE</b>                                                                                                                                 | E, V,<br>P, PF<br>PF<br>G, GF | all<br>M10, N20, N33F, N40, N60<br>N80, N100, N200<br>N20 |
| <b>Additional rectangular escutcheon plate 1 line</b><br>Dimensions see page 84                                                                                                                                                                                                                                                                                                                                                                                                   | <b>SRE</b>                                                                                                                                 | E, Z, V, SM                   | all                                                       |
| <b>Big additional rectangular escutcheon plate for 2 lines</b><br>Dimensions see page 84                                                                                                                                                                                                                                                                                                                                                                                          | <b>SRE2</b>                                                                                                                                | E, V                          | M10H, M20, N20, N33F                                      |
| <b>Spare key</b> for key operated switches with Lock Willenhal FT101                                                                                                                                                                                                                                                                                                                                                                                                              | <b>J7101</b>                                                                                                                               | E, V, P<br>SMA                | M10H, M20, N20, N33F, N40<br>M10H, M20                    |
| <b>Spare key</b> for key operated switches with Lock Ronis R455                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>B4-R455</b>                                                                                                                             | Z, ZO                         | M10H, M20                                                 |
| <b>Wrench</b><br>for switches with central fixing                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>J7049</b>                                                                                                                               | Z, ZO                         | M10H, M20                                                 |

**Switching Programs to Customer Requirements**

As a result of their modular construction, TELUX cam switches are particularly suitable for manufacturing of special variants. According to its function, each pair of contacts in the switch is adapted to the desired program by appropriate design of the cam plate. In the case of switches with an overall switching angle of more than 180°, provision must be made for a cam plate in each switching cell, controlling two opposite, independent contact pairs with matching programs (does not apply to M10, M10H, M20 and N20).

Depending on the desired contact program for the special switch, it may often be impossible to make full use of all switching cells, that is, to include the maximum possible number of contacts. In determining the number of cells or switch length, one-contact cells will sometimes be resorted to.

Switch sizes M10, M10H, M20 and N20 are exceptions to this rule. Here, two cam plates can be built into each cell, so that both contacts are independently controlled (full use of the cells with special programs).

In all special switches with overall switching angles of less than 180°, the number of cells required is calculated by having the total number of contacts in the switching program.

When planning for switches with special programs, choice of the optimum switching angle thus plays an important part. The listing of all the options for lay-out of switch settings, on pages 59 and 60, should be an aid to planning (position numbers PN).

If special markings are to be engraved on the escutcheon plates, it is vital to take account of the available space. It is advisable to use abbreviations.

We provide forms (see final page) on request, free of charge, to give a clear overview when special programs are being defined. Switch size, design, type of operating knob and desired switching angle, as well as the function of the contacts, are entered on these forms. Provision has also been made in them for entry of details as to escutcheon plate engravings or other special requirements.

**Ordering Example**

| <b>Order sheet</b> D399E                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | <b>Cam switches with special switching program</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     | Customer:                                                                                                                                                                                                                                                                                                                                                                          |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|---|-----|-----|--------------------------|--------------------------|---|---|-------------------------------------|--------------------------|--|----|-------------------------------------|--------------------------|---|----|--------------------------|-------------------------------------|-------|-----|-------------------------------------|-------------------------------------|--|--|
| <b>Switch Type</b><br>M4H <input type="checkbox"/><br>M10 <input type="checkbox"/><br>M10H <input checked="" type="checkbox"/><br>M20 <input type="checkbox"/><br>N20 <input type="checkbox"/><br>N33F L100 <input type="checkbox"/><br>N40 L160 <input type="checkbox"/><br>N60 L400 <input type="checkbox"/><br>N80 L600 <input type="checkbox"/><br>N100 L800 <input type="checkbox"/><br>N200 L1200 <input type="checkbox"/>                           |        | <b>Benedict GmbH</b><br>A-1220 Vienna, Liebgasse 7<br>Phone: 251 51-0 Fax: 251 51-88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                     |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| <b>Design</b><br>Panel mounting E <input type="checkbox"/><br>Central fixing Z <input checked="" type="checkbox"/><br>ZO <input type="checkbox"/><br>Base mounting V <input type="checkbox"/><br>Snap-on mount SM <input type="checkbox"/><br>SMA <input type="checkbox"/><br>Plastic enclosure P <input type="checkbox"/><br>IP54 PF <input type="checkbox"/><br>Cast enclosure G <input checked="" type="checkbox"/><br>IP54 GF <input type="checkbox"/> |        | <b>Explanations:</b><br>Contact closed over several positions <input checked="" type="checkbox"/><br>Spring return from pos. <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     | <b>Handles</b><br>Twist knob R (standard) <input type="checkbox"/><br>Instrument knob G (standard M4H) <input checked="" type="checkbox"/><br>Toggle knob K (standard SMA) <input type="checkbox"/><br>Pointer knob Z <input type="checkbox"/><br>Ball type handle B <input type="checkbox"/><br>Lever handle H <input type="checkbox"/><br>Hand wheel HR <input type="checkbox"/> |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | <b>Handle colour</b><br>black (standard) <input checked="" type="checkbox"/><br>red <input type="checkbox"/><br>grey (standard SMA) <input type="checkbox"/><br>white <input type="checkbox"/><br>cream-coloured <input type="checkbox"/><br>yellow <input type="checkbox"/><br>blue <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| <b>Diagram</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | <b>Terminal Connections</b><br>Connect. Terminals 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47<br>Terminals 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 40 42 44 46 48<br>Connect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| <b>Optional extras</b><br>Circular switch <input type="checkbox"/><br>Key removeable <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                              |        | <b>Marking for switch position</b><br><table border="1"> <thead> <tr> <th>Marking</th> <th>Degree</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>270</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>1</td> <td>0</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>45</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>2</td> <td>90</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>START</td> <td>120</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table> |                                     | Marking                                                                                                                                                                                                                                                                                                                                                                            | Degree | 1 | 2 | OFF | 270 | <input type="checkbox"/> | <input type="checkbox"/> | 1 | 0 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | 45 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2 | 90 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | START | 120 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |
| Marking                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Degree | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2                                   |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 270    | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0      | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 45     | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 90     | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input checked="" type="checkbox"/> |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |
| START                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 120    | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input checked="" type="checkbox"/> |                                                                                                                                                                                                                                                                                                                                                                                    |        |   |   |     |     |                          |                          |   |   |                                     |                          |  |    |                                     |                          |   |    |                          |                                     |       |     |                                     |                                     |  |  |





Order sheet A4 see last page



## Technical Data

Benedikt & Jäger-Low voltage switchgear are built and tested decisive national and international specifications. All devices suit all important specifications without any test obligation, like VDE 0660, BS 5419 and also relative to IEC-recommendations.

That is the reason why Benedikt & Jäger-Low voltage switchgear are used all over the world. In order to provide special versions are sometimes limitations to the max. voltages, currents and power ratings or special markings necessary.

| Country                                              | North America                                                                                                                                                                           | Switzerland                                                                       | Russia                                                                              |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| State deputy or private examination (state admitted) | UL<br>Canada, USA                                                                                                                                                                       | SEV                                                                               | GOST                                                                                |
| Label marking of examination boards                  |  Listed<br> Component |  |  |
| Duty of approvals                                    | all switchgear                                                                                                                                                                          | all switchgear                                                                    | all switchgear                                                                      |

## Utilization Categories

For easier choice of devices and in order to make the comparison of different products simpler are utilization categories for cam switches according to IEC 947-3, VDE 0660 Part 107 and auxiliary contacts

according to IEC 947-5-1 and VDE 0660 Part 200 determined. The Table below offers divers utilization categories and assorted test conditions.

| Kind of current     | Category           |                      | Typical applications                                                                  | Rated operational current                                        | Test conditions for the number of on-load operating cycles (normal service) |                  |      |                                      |                                |      | Test conditions for making and breaking capacities (operation in fault case) |                  |      |                                      |                                |      |   |
|---------------------|--------------------|----------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------|------|--------------------------------------|--------------------------------|------|------------------------------------------------------------------------------|------------------|------|--------------------------------------|--------------------------------|------|---|
|                     | frequent operation | infrequent operation |                                                                                       |                                                                  | Make I <sub>e</sub>                                                         | U/U <sub>e</sub> | cosφ | Break I <sub>c</sub> /I <sub>e</sub> | U <sub>r</sub> /U <sub>e</sub> | cosφ | Make I <sub>e</sub>                                                          | U/U <sub>e</sub> | cosφ | Break I <sub>c</sub> /I <sub>e</sub> | U <sub>r</sub> /U <sub>e</sub> | cosφ |   |
| Alternating Current | <b>AC20A</b>       | <b>AC20B</b>         | No-load conditions                                                                    | all values                                                       | -                                                                           | -                | -    | -                                    | -                              | -    | -                                                                            | -                | -    | -                                    | -                              | -    | - |
|                     | <b>AC21A</b>       | <b>AC21B</b>         | Switching of resistive loads including moderate overloads                             | all values                                                       | 1                                                                           | 1                | 0,95 | 1                                    | 1                              | 0,95 | 1,5                                                                          | 1,05             | 0,95 | 1,5                                  | 1,05                           | 0,95 |   |
|                     | <b>AC22A</b>       | <b>AC22B</b>         | Switching of mixed resistive and inductive loads including moderate overloads         | all values                                                       | 1                                                                           | 1                | 0,8  | 1                                    | 1                              | 0,8  | 3                                                                            | 1,05             | 0,65 | 3                                    | 1,05                           | 0,65 |   |
|                     | <b>AC23A</b>       | <b>AC23B</b>         | Switching of motor loads or other highly inductive loads                              | 0 < I <sub>e</sub> ≤ 100A<br>all values<br>100A < I <sub>e</sub> | 1                                                                           | 1                | 0,65 | 1                                    | 1                              | 0,65 | 10                                                                           | 1,05             | 0,45 | 8                                    | 1,05                           | 0,45 |   |
|                     | <b>AC2</b>         |                      | Slip-ring motors: Starting, plugging                                                  | all values                                                       | 2,5                                                                         | 1                | 0,65 | 2,5                                  | 1                              | 0,65 | 4                                                                            | 1,05             | 0,65 | 4                                    | 1,05                           | 0,65 |   |
|                     | <b>AC3</b>         |                      | Squirrel-cage motors: Starting, switching off motors during running                   | 0 < I <sub>e</sub> ≤ 100A<br>all values<br>100A < I <sub>e</sub> | I <sub>e</sub> ≤ 17A<br>6                                                   | 1                | 0,65 | I <sub>e</sub> ≤ 17A<br>1            | 0,17                           | 0,65 | 10                                                                           | 1,05             | 0,45 | 8                                    | 1,05                           | 0,45 |   |
|                     | <b>AC4</b>         |                      | Squirrel-cage motors: Starting, plugging, inching                                     | 0 < I <sub>e</sub> ≤ 100A<br>all values<br>100A < I <sub>e</sub> | I <sub>e</sub> ≤ 17A<br>6                                                   | 1                | 0,65 | I <sub>e</sub> ≤ 17A<br>6            | 1                              | 0,65 | 12                                                                           | 1,05             | 0,45 | 10                                   | 1,05                           | 0,45 |   |
|                     | <b>AC15</b>        |                      | Control of electromagnetic loads (> 72VA)                                             | -                                                                | 10                                                                          | 1                | 0,7  | 1                                    | 1                              | 0,4  | 10                                                                           | 1,1              | 0,3  | 10                                   | 1,1                            | 0,3  |   |
| Direct current      | <b>DC20A</b>       | <b>DC20B</b>         | No-load conditions                                                                    | all values                                                       | -                                                                           | -                | -    | -                                    | -                              | -    | -                                                                            | -                | -    | -                                    | -                              | -    |   |
|                     | <b>DC21A</b>       | <b>DC21B</b>         | Switching of resistive loads including moderate overloads                             | all values                                                       | 1                                                                           | 1                | 1    | 1                                    | 1                              | 1    | 1,5                                                                          | 1,05             | 1    | 1,5                                  | 1,05                           | 1    |   |
|                     | <b>DC22A</b>       | <b>DC22B</b>         | Switching of mixed resistive a. induct. loads incl. moderate overloads (shunt motors) | all values                                                       | 1                                                                           | 1                | 2    | 1                                    | 1                              | 2    | 4                                                                            | 1,05             | 2,5  | 4                                    | 1,05                           | 2,5  |   |
|                     | <b>DC23A</b>       | <b>DC23B</b>         | Switching of highly inductive loads (e.g. series motors)                              | all values                                                       | 1                                                                           | 1                | 7,5  | 1                                    | 1                              | 7,5  | 4                                                                            | 1,05             | 15   | 4                                    | 1,05                           | 15   |   |
|                     | <b>DC3</b>         |                      | Shunt-motors: Starting, plugging, inching                                             | all values                                                       | 2,5                                                                         | 1                | 2    | 2,5                                  | 1                              | 2    | 4                                                                            | 1,05             | 2,5  | 4                                    | 1,05                           | 2,5  |   |
|                     | <b>DC5</b>         |                      | Series-motors: Starting, plugging, inching                                            | all values                                                       | 2,5                                                                         | 1                | 7,5  | 2,5                                  | 1                              | 7,5  | 4                                                                            | 1,05             | 15   | 4                                    | 1,05                           | 15   |   |

U<sub>e</sub> Rated operational voltage, U Voltage before make, U<sub>r</sub> Recovery voltage, I<sub>e</sub> Rated operational current, I Current made, I<sub>c</sub> Current broken  
1) Time in milliseconds (ms)

Note: By plugging, is understood stopping or reversing the motor rapidly by reversing motor primary connections while the motor is running. By inching (jogging), is understood energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.

Technical Data

Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

| Type                                                                                                                     | M10 P | M10H              | M20               | N20               | N33F              | N40               | N60               | N80               | N100              | N200              |
|--------------------------------------------------------------------------------------------------------------------------|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Rated therm. current $I_{th}$ open A                                                                                     | 20    | 20                | 32                | 32                | 50                | 63                | 85                | 115               | 150               | 250               |
| Rated therm. current $I_{the}$ encl. A                                                                                   | 20    | 20                | 32                | 32                | 50                | 63                | 85                | 115               | 150               | 250               |
| Rated operational voltage $U_e$ V                                                                                        | 440   | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> | 690 <sup>1)</sup> |
| Disconnection property <sup>2)</sup><br>acc. to VDE, IEC up to V                                                         | 440   | 440               | 440               | 440               | 440               | 690               | 440               | 440               | 690               | 690               |
| <b>Breaking capacity <math>I_{eff}</math></b>                                                                            |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 3 x 220-440V A                                                                                                           | 160   | 160               | 220               | 220               | 260               | 380               | 520               | 740               | 900               | 1100              |
| 3 x 500V A                                                                                                               | -     | 100               | 160               | 160               | 200               | 290               | 380               | 560               | 680               | 850               |
| 3 x 660-690V A                                                                                                           | 80    | 120               | 120               | 150               | 150               | 200               | 290               | 520               | 450               | -                 |
| <b>Utilization categ. AC21A, AC21B</b><br>Switching of resistive loads<br>including moderate overloads                   |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated operational current $I_e$ A                                                                                        | 20    | 20                | 32                | 32                | 50                | 63                | 85                | 115               | 150               | 250               |
| <b>Utilization categ. AC23A, AC23B</b><br>Switching of motor loads<br>or other highly inductive loads                    |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated current $I_e$ 400V A                                                                                               | 16    | 16                | 30                | 30                | 45                | 45                | 60                | 85                | 105               | 135               |
| Power rating 220-240V kW                                                                                                 | 4     | 4                 | 7,5               | 7,5               | 11                | 15                | 22                | 30                | 40                | 40                |
| 3-phase 3-pole 380-440V kW                                                                                               | 7,5   | 7,5               | 15                | 15                | 22                | 22                | 30                | 45                | 55                | 70                |
| 500V kW                                                                                                                  | -     | 7,5               | 15                | 15                | 22                | 22                | 30                | 45                | 55                | 70                |
| 660-690V kW                                                                                                              | -     | 7,5               | 15                | 15                | 22                | 18,5              | 30                | 45                | 45                | -                 |
| <b>Star-Delta-Switches</b><br>for squirrel cage motors                                                                   |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Power rating 220-240V kW                                                                                                 | 3,7   | 3,7               | 7,5               | 7,5               | 8                 | 11                | 15                | 18,5              | 37                | 40                |
| 3-phase 3-pole 380-415V kW                                                                                               | 7,5   | 7,5               | 15                | 15                | 18,5              | 18,5              | 25                | 30                | 40                | 70                |
| <b>Utilization category AC3</b><br>Switching of three-phase motors                                                       |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated current $I_e$ 400V A                                                                                               | 12    | 12                | 22                | 22                | 30                | 30                | 50                | 60                | 80                | 135               |
| Power rating 220-240V kW                                                                                                 | 3     | 3                 | 5,5               | 5,5               | 7,5               | 7,5               | 15                | 18,5              | 37                | 40                |
| 3-phase 3-pole 380-440V kW                                                                                               | 5,5   | 5,5               | 11                | 11                | 15                | 15                | 25                | 30                | 40                | 70                |
| 500V kW                                                                                                                  | -     | 5,5               | 11                | 11                | 15                | 15                | 25                | 30                | 40                | 70                |
| 660-690V kW                                                                                                              | -     | 5,5               | 11                | 11                | 15                | 15                | 25                | 30                | 40                | -                 |
| <b>Utilization category AC4</b><br>squirrel cage motors, inching                                                         |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Power rating 220-240V kW                                                                                                 | 0,55  | 0,55              | 2,2               | 2,2               | 3,7               | 4                 | 5,5               | 6                 | 11                | 18,5              |
| 3-phase 3-pole 380-440V kW                                                                                               | 1,5   | 1,5               | 4                 | 4                 | 5,5               | 7,5               | 11                | 15                | 18,5              | 35                |
| 500V kW                                                                                                                  | -     | 1,5               | 4                 | 4                 | 5,5               | 7,5               | 11                | 15                | 22                | 35                |
| 660-690V kW                                                                                                              | -     | 1,5               | 4                 | 4                 | 5,5               | 7,5               | 11                | 15                | 22                | -                 |
| <b>Utilization category AC15</b><br>Control of electromagnetic loads,<br>contactors,                                     |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated current $I_e$                                                                                                      |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| up to 240V A                                                                                                             | 6     | 6                 | 12                | 12                | 16                | -                 | -                 | -                 | -                 | -                 |
| 380-440V A                                                                                                               | 4     | 4                 | 6                 | 6                 | 7                 | -                 | -                 | -                 | -                 | -                 |
| 2-pole in series 500V A                                                                                                  | -     | 5                 | 8                 | 8                 | 10                | -                 | -                 | -                 | -                 | -                 |
| <b>Utilization categ. DC21A, DC21B</b><br>Switching of resistive loads<br>Time constant $L/R \leq 1ms$                   |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated current $I_e$                                                                                                      |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 1-pole 30V A                                                                                                             | 20    | 20                | 32                | 32                | 40                | 63                | 80                | 100               | 150               | 250               |
| 60V A                                                                                                                    | 4     | 4                 | 6                 | 6                 | 20                | 30                | 30                | 30                | -                 | -                 |
| 110V A                                                                                                                   | 0,6   | 0,6               | 3                 | 3                 | 4                 | 6                 | 6                 | 6                 | -                 | -                 |
| 220V A                                                                                                                   | 0,3   | 0,3               | 0,8               | 0,8               | 0,8               | 1,3               | 1,3               | 1,3               | 2,5               | 2,5               |
| 440V A                                                                                                                   | -     | -                 | 0,4               | 0,4               | 0,4               | 0,6               | 0,6               | 0,6               | 0,7               | 0,7               |
| <b>Utilization category DC3 - DC5</b><br>Switching of shunt motors<br>and series motors<br>Time constant $L/R \leq 15ms$ |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| Rated current $I_e$                                                                                                      |       |                   |                   |                   |                   |                   |                   |                   |                   |                   |
| 1-pole 30V A                                                                                                             | 8     | 8                 | 13                | 13                | 16                | 25                | 32                | 40                | 60                | 100               |
| 60V A                                                                                                                    | 1     | 1                 | 2,4               | 2,4               | 4                 | 12                | 12                | 12                | -                 | -                 |
| 110V A                                                                                                                   | 0,3   | 0,3               | 0,5               | 0,5               | 1,6               | 2,4               | 2,4               | 2,4               | -                 | -                 |
| Protection class of terminals                                                                                            | IP00  | IP20              | IP00              | IP00              | IP20              | IP00              | IP00              | IP00              | IP00              | IP00              |

1) suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry);  $U_{imp} = 6kV$ . Data for other conditions on request  
2) valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3.

## Technical Data

Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

| Type                                                                    |                   | M10 P    | M10H                   | M20     | N20     | N33F    | N40                  | N60                | N80   | N100                | N200   |
|-------------------------------------------------------------------------|-------------------|----------|------------------------|---------|---------|---------|----------------------|--------------------|-------|---------------------|--------|
| <b>Cable cross-sections</b>                                             |                   |          |                        |         |         |         |                      |                    |       |                     |        |
| solid                                                                   | mm <sup>2</sup>   | 1-2,5    | 1-2,5 <sup>1)</sup>    | 1,5-6   | 1,5-6   | 2,5-10  | 2,5-16 <sup>1)</sup> | 6-25 <sup>1)</sup> | 6-35  | 10-50 <sup>1)</sup> | 50-150 |
| flexible                                                                | mm <sup>2</sup>   | 0,75-2,5 | 0,75-2,5 <sup>1)</sup> | 1-4     | 1-4     | 1,5- 6  | 2,5-10 <sup>1)</sup> | 6-25 <sup>1)</sup> | 6-35  | 10-35 <sup>1)</sup> | 35-120 |
| flexible w. multicore cable end                                         | mm <sup>2</sup>   | 0,75-2,5 | 0,75-1,5               | 1-4     | 1-4     | 1,5- 6  | 2,5-6                | 6-16               | 6-35  | 10-25               | -      |
| Conductors to clamp per pole                                            |                   | 2        | 2                      | 2       | 2       | 2       | 2                    | 1                  | 1     | 1                   | 1      |
| Size of terminal screw                                                  |                   | M3       | M3,5                   | M4      | M4      | M4      | M5                   | 2xM5               | 2xM5  | 2xM6                | M10    |
| Tightening torque                                                       | Nm                | 0,6-1,2  | 0,8-1,4                | 1,2-1,8 | 1,2-1,8 | 1,2-1,8 | 2,5-3                | 2,5-3              | 2,5-3 | 3,5-4,5             | 10     |
|                                                                         | lb.inch           | 5-11     | 7-12                   | 11-16   | 11-16   | 11-16   | 22-26                | 22-26              | 22-26 | 31-40               | 88     |
| <b>Short circuit protection</b>                                         |                   |          |                        |         |         |         |                      |                    |       |                     |        |
| Max. fuse size                                                          | gL (gG) A         | 20       | 20                     | 35      | 35      | 50      | 63                   | 100                | 125   | 160                 | 250    |
| Rated short-time withstand current (1sec. current)                      | A                 | 250      | 250                    | 400     | 400     | 500     | 800                  | 1000               | 1400  | 1800                | 3000   |
| Rated conditional short-circuit current                                 | kA <sub>eff</sub> | 10       | 10                     | 10      | 10      | 10      | 10                   | 10                 | 10    | 10                  | 10     |
| <b>Short-time capacity</b>                                              |                   |          |                        |         |         |         |                      |                    |       |                     |        |
| Load duration                                                           | 3s A              | 100      | 100                    | 200     | 200     | 350     | 400                  | 600                | 720   | 1000                | 2000   |
|                                                                         | 10s A             | 60       | 60                     | 130     | 130     | 230     | 250                  | 400                | 480   | 600                 | 1200   |
| Note: Ratings applies to contacts already closed                        | 30s A             | 35       | 35                     | 85      | 85      | 110     | 160                  | 250                | 300   | 500                 | 600    |
|                                                                         | 60s A             | 25       | 25                     | 65      | 65      | 80      | 110                  | 200                | 250   | 370                 | 480    |
| <b>Power loss at AC21A per pole</b>                                     |                   |          |                        |         |         |         |                      |                    |       |                     |        |
|                                                                         | A                 | 20       | 20                     | 32      | 32      | 50      | 63                   | 85                 | 115   | 150                 | 250    |
|                                                                         | W                 | 0,6      | 0,5                    | 0,9     | 1,1     | 1,9     | 2                    | 2,8                | 4,4   | 5,7                 | 21     |
| <b>Switching of capacitive loads maximum making capacity up to 500V</b> |                   |          |                        |         |         |         |                      |                    |       |                     |        |
|                                                                         | A                 | 140      | 140                    | 300     | 300     | 350     | 400                  | 600                | 700   | 900                 | 1800   |

Data according to UL and cUL

| Type                        |                                                | M10 P            | M10H    | M20     | N20     | N33F    | N80     | N100    | N200     | L400     |  |
|-----------------------------|------------------------------------------------|------------------|---------|---------|---------|---------|---------|---------|----------|----------|--|
| Rated voltage               | V~                                             | 300              | 600     | 600     | 600     | 600     | 600     | 600     | 600      | 600      |  |
| Rated operational current   | "General Use" A                                | 20               | 20      | 35      | 35      | 60      | 115     | 130     | 250      | 350      |  |
|                             | with jumper A                                  | 15               | -       | 25      | 25      | 40      | 80      | -       | -        | -        |  |
| DOL-Rating 3-phase          | 110-120V hp                                    | 1½               | 1½      | 5       | 5       | 7½      | 10      | 15      | 15       | 15       |  |
|                             | 200-208V hp                                    | 2                | 2       | 5       | 5       | 10      | 15      | 25      | 25       | 25       |  |
|                             | 220-240V hp                                    | 3                | 3       | 5       | 5       | 15      | 20      | 30      | 30       | 30       |  |
|                             | 440-480V hp                                    | -                | 5       | 10      | 10      | 25      | 40      | 40      | 60       | 60       |  |
|                             | 550-600V hp                                    | -                | 7½      | 15      | 15      | 30      | 50      | 50      | 75       | 75       |  |
| DOL-Rating 1-phase          | 110-120V hp                                    | ½                | ½       | 1½      | 1½      | 3       | 5       | 7½      | 7½       | 7½       |  |
|                             | 200-208V hp                                    | 1                | 1       | 3       | 3       | 5       | 7½      | 15      | 15       | 15       |  |
|                             | 220-240V hp                                    | 1½               | 1½      | 5       | 5       | 7½      | 10      | 15      | 20       | 20       |  |
| Fuse size (RK5) 5kA / 600V  | Manual Motor Controller and Motor Disconnect A | 40 <sup>2)</sup> | 40      | 80      | 80      | 150     | 200     | 300     | 350      | 350      |  |
| Heavy pilot duty            | AC                                             | A300             | A600    | A600    | A600    | A600    | -       | -       | -        | -        |  |
| <b>Cable cross sections</b> |                                                |                  |         |         |         |         |         |         |          |          |  |
| solid                       | AWG                                            | 12 - 20          | 12 - 20 | 10 - 18 | 10 - 18 | 10 - 12 | 10 - 12 | 10 - 14 | -        | -        |  |
| flexible                    | AWG                                            | 14 - 20          | 14 - 20 | 8 - 18  | 8 - 18  | 6 - 12  | 2 - 12  | 1 - 14  | 250kcmil | 500kcmil |  |
| Tightening torque           | Nm                                             | 1.7              | 1-1.7   | 1.7-2.8 | 1.7-2.8 | 2.3-2.8 | 2.8     | 4.5     | -        | -        |  |
|                             | lb.inch                                        | 15               | 9-15    | 15-25   | 15-25   | 20-25   | 25      | 40      | -        | -        |  |

1) Maximum cable cross-section with prepared conductor

2) 5kA / 300V

# Technical Data

Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

| Type                                               |                   | LTS20   | LTS25   | LTS32   | LTS40   | LTS63 | LTS80 | LTS85              | LTS100             | LTS125             | LT160              |
|----------------------------------------------------|-------------------|---------|---------|---------|---------|-------|-------|--------------------|--------------------|--------------------|--------------------|
| <b>Main contacts</b>                               |                   |         |         |         |         |       |       |                    |                    |                    |                    |
| Rated thermal current $I_{th}$ open                | A                 | 20      | 25      | 32      | 40      | 63    | 80    | 85                 | 100                | 125                | 160                |
| Rated thermal current $I_{the}$ enclosed           | A                 | 20      | 25      | 32      | 40      | 63    | 80    | 85                 | 100                | 110                | 160                |
| Rated insulation voltage $U_i$ <sup>1)</sup>       | V                 | 690     | 690     | 690     | 690     | 690   | 690   | 1000 <sup>5)</sup> | 1000 <sup>5)</sup> | 1000 <sup>5)</sup> | 1000 <sup>3)</sup> |
| Rated operational current $I_e$ AC21A              | A                 | 20      | 25      | 32      | 40      | 63    | 80    | 85                 | 100                | 125                | 160                |
| Making capacity $I_{eff}$ 3x380-440V               | A                 | 160     | 190     | 220     | 300     | 370   | 440   | 600                | 725                | 850                | 1050               |
| Breaking capacity 3x220-240V                       | A                 | 160     | 180     | 200     | 250     | 330   | 380   | 480                | 580                | 680                | 900                |
|                                                    | A                 | 160     | 180     | 200     | 250     | 330   | 380   | 480                | 580                | 680                | 850                |
|                                                    | A                 | 80      | 110     | 140     | 170     | 190   | 220   | 250                | 330                | 420                | 340                |
| 3x380-440V                                         | A                 | 160     | 180     | 200     | 250     | 330   | 380   | 480                | 580                | 680                | 900                |
|                                                    | A                 | 160     | 180     | 200     | 250     | 330   | 380   | 480                | 580                | 680                | 850                |
|                                                    | A                 | 80      | 110     | 140     | 170     | 190   | 220   | 250                | 330                | 420                | 340                |
| 3x660-690V                                         | A                 | 80      | 110     | 140     | 170     | 190   | 220   | 250                | 330                | 420                | 340                |
| Disconnection property performed up to             | V                 | 690     | 690     | 690     | 690     | 690   | 690   | 1000               | 1000               | 1000               | 1000 <sup>3)</sup> |
| Motor Switch AC3 3x400V                            | A                 | 12      | 16      | 23      | 30      | 37    | 37    | 45                 | 60                 | 72                 | 85                 |
| Motor Switch AC3 3x220-240V                        | kW                | 3       | 4       | 5,5     | 7,5     | 11    | 11    | 15                 | 18,5               | 22                 | 30                 |
| Direct switching of single motors 3x380-440V       | kW                | 5,5     | 7,5     | 11      | 15      | 18,5  | 18,5  | 22                 | 30                 | 37                 | 45                 |
|                                                    | kW                | 5,5     | 7,5     | 11      | 15      | 18,5  | 18,5  | 22                 | 30                 | 37                 | 45                 |
| 3x660-690V                                         | kW                | 5,5     | 7,5     | 11      | 15      | 18,5  | 18,5  | 22                 | 30                 | 37                 | 45                 |
| Main Switch AC23 3x400V                            | A                 | 16      | 20      | 25      | 32      | 45    | 45    | 60                 | 72                 | 85                 | 110                |
| Motor Switch, AC23A, 3x220-240V                    | kW                | 4       | 5,5     | 7,5     | 9       | 15    | 15    | 18,5               | 22                 | 30                 | 30                 |
| Main Switch, AC23B 3x380-440V                      | kW                | 7,5     | 10      | 12,5    | 16      | 22    | 22    | 30                 | 37                 | 45                 | 55                 |
| Safety Switch 3x660-690V                           | kW                | 5,5     | 7,5     | 11      | 15      | 18,5  | 18,5  | 22                 | 30                 | 37                 | 45                 |
| Rated conditional short-circuit current            | kA <sub>eff</sub> | 10      | 10      | 10      | 10      | 10    | 10    | 10                 | 10                 | 10                 | 30                 |
| Max. fuse size gL (gG)                             | A                 | 25      | 35      | 40      | 50      | 63    | 80    | 100                | 100                | 125                | 160                |
| Mechanical life                                    | x10 <sup>3</sup>  | 200     | 200     | 200     | 200     | 100   | 100   | 100                | 100                | 100                | 100                |
| Rated short-time withstand current (1sec. current) | A                 | 250     | 300     | 400     | 500     | 600   | 850   | 1000               | 1200               | 1500               | 3000               |
| <b>Maximum cable cross sections</b>                |                   |         |         |         |         |       |       |                    |                    |                    |                    |
| solid                                              | mm <sup>2</sup>   | 10      | 10      | 10      | 10      | 25    | 25    | 50                 | 50                 | 50                 | 95                 |
|                                                    | AWG               | 8       | 8       | 8       | 8       | 4     | 4     | 0                  | 0                  | 0                  | 3/0                |
| flexible (+ multicore cable end)                   | mm <sup>2</sup>   | 6       | 6       | 6       | 6       | 16    | 16    | 35                 | 35                 | 35                 | 70                 |
|                                                    | AWG               | 10      | 10      | 10      | 10      | 6     | 6     | 2                  | 2                  | 2                  | 2/0                |
| Size of terminal screw                             |                   | M3,5    | M3,5    | M3,5    | M3,5    | M5    | M5    | M6                 | M6                 | M6                 | M10                |
| Tightening torque                                  | Nm                | 0,8-1,7 | 0,8-1,7 | 0,8-1,7 | 0,8-1,7 | 2-4   | 2-4   | 3,5-4,5            | 3,5-4,5            | 3,5-4,5            | 14                 |
| <b>Auxiliary contacts</b>                          |                   |         |         |         |         |       |       |                    |                    |                    |                    |
| Rated insulation voltage $U_i$ <sup>1)</sup>       | V                 | 690     | 690     | 690     | 690     | 690   | 690   | 690                | 690                | 690                | 690                |
| Rated thermal current $I_{th}$ , $I_{the}$         | A                 | 10      | 10      | 10      | 10      | 10    | 10    | 10                 | 10                 | 10                 | 16                 |
| Switching capacity AC15 220-240V                   | A                 | 2,5     | 2,5     | 2,5     | 2,5     | 2,5   | 2,5   | 2,5                | 2,5                | 2,5                | 6                  |
|                                                    | A                 | 1,5     | 1,5     | 1,5     | 1,5     | 1,5   | 1,5   | 1,5                | 1,5                | 1,5                | 4                  |
| AC15 380-440V                                      | A                 | 1,5     | 1,5     | 1,5     | 1,5     | 1,5   | 1,5   | 1,5                | 1,5                | 1,5                | 4                  |
| Rated conditional short-circuit current            | kA <sub>eff</sub> | 3       | 3       | 3       | 3       | 3     | 3     | 3                  | 3                  | 3                  | 3                  |
| Max. short circuit protection gL (gG)              | A                 | 10      | 10      | 10      | 10      | 10    | 10    | 10                 | 10                 | 10                 | 16                 |
| <b>Maximum cable cross sections</b>                |                   |         |         |         |         |       |       |                    |                    |                    |                    |
| solid                                              | mm <sup>2</sup>   | 2,5     | 2,5     | 2,5     | 2,5     | 2,5   | 2,5   | 2,5                | 2,5                | 2,5                | 4                  |
|                                                    | AWG               | 12      | 12      | 12      | 12      | 12    | 12    | 12                 | 12                 | 12                 | 12                 |
| flexible (+ multicore cable end)                   | mm <sup>2</sup>   | 2,5     | 2,5     | 2,5     | 2,5     | 2,5   | 2,5   | 2,5                | 2,5                | 2,5                | 2,5                |
|                                                    | AWG               | 14      | 14      | 14      | 14      | 14    | 14    | 14                 | 14                 | 14                 | 14                 |

## Data according to UL and cUL

| Type                                    |          | LTS20   | LTS25   | LTS32   | LTS40   | LTS63 | LTS80 | LTS85   | LTS100  | LTS125  | LT160             |
|-----------------------------------------|----------|---------|---------|---------|---------|-------|-------|---------|---------|---------|-------------------|
| Rated voltage                           | V        | 600     | 600     | 600     | 600     | 600   | 600   | 600     | 600     | 600     | 600               |
| Ampere-Rating "General use"             | A        | 20      | 25      | 32      | 40      | 63    | 80    | 85      | 100     | 125     | 200               |
| DOL-Rating 3-phase                      | 110-120V | HP      | 1,5     | 2       | 2       | 3     | 5     | 7,5     | 10      | 15      | 20                |
|                                         | 220-240V | HP      | 3       | 5       | 5       | 5     | 10    | 20      | 25      | 30      | 40                |
|                                         | 440-480V | HP      | 7,5     | 10      | 10      | 10    | 20    | 20      | 40      | 50      | 60                |
|                                         | 550-600V | HP      | 10      | 10      | 15      | 15    | 25    | 25      | 50      | 60      | 60                |
| DOL-Rating 1-phase                      | 110-120V | HP      | 1       | 1       | 1       | 2     | 2     | 3       | 5       | 7,5     | -                 |
|                                         | 200-208V | HP      | 1       | 2       | 2       | 2     | 3     | 7,5     | 10      | 10      | -                 |
|                                         | 220-240V | HP      | 2       | 2       | 3       | 3     | 5     | 10      | 15      | 15      | -                 |
| Fuse size (RK5) Manual Motor Controller | A        | 40      | 50      | 50      | 70      | 90    | 110   | 125     | 125     | 125     | 400 <sup>4)</sup> |
| 5kA / 600V Motor Disconnect             | A        | 40      | 50      | 50      | 50      | 70    | 70    | 125     | 125     | 125     | 400 <sup>4)</sup> |
| Tightening torque                       | Nm       | 1,2-2,3 | 1,2-2,3 | 1,2-2,3 | 1,2-2,3 | 2,8-4 | 2,8-4 | 1,7-4,5 | 1,7-4,5 | 1,7-4,5 | 14                |
|                                         | lb.inch  | 11-20   | 11-20   | 11-20   | 11-20   | 24-35 | 24-35 | 15-40   | 15-40   | 15-40   | 124               |

1) suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): Uimp = 6kV. Data for other conditions on request

2) the values after the slash are valid for switches 6-pole or more

3) Suitable for no load applications(AC20A) above 690V

4) Fuse RK1 / 10kA / 600V

5) Uimp = 8kV

## Technical Data





Data according to IEC 947-3, IEC 947-5-1, VDE 0660, EN 60947-3, EN 60947-5-1

| Type                                                       |                 | L100                | L160              | L400              | L600              | L800              | L1200             |
|------------------------------------------------------------|-----------------|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Rated insulation voltage $U_i$                             | V               | 690 <sup>2)</sup>   | 690 <sup>2)</sup> | 690 <sup>2)</sup> | 690 <sup>2)</sup> | 690 <sup>2)</sup> | 690 <sup>2)</sup> |
| Rated thermal current $I_{th}$ open                        | A               | 125                 | 180               | 400               | 600               | 800               | 1200              |
| Rated thermal current $I_{the}$ encl.                      | A               | 125                 | 180               | 400               | 600               | 800               | 1200              |
| with conductor                                             | mm <sup>2</sup> | 50                  | 70                | 40x5              | 40x10             | busbar<br>2x40x10 | busbar<br>2x50x10 |
| <b>Utilization category AC21A, AC21B</b>                   |                 |                     |                   |                   |                   |                   |                   |
| Switching of resistive loads, including moderate overloads |                 |                     |                   |                   |                   |                   |                   |
| Rated operational current $I_e$                            | A               | 125                 | 180               | 400               | 400               | 400               | 400               |
| <b>Shot-time current-carrying capacity</b>                 |                 |                     |                   |                   |                   |                   |                   |
| Load duration                                              | 1s              | -                   | -                 | 4800              | 6500              | 8500              | 10000             |
|                                                            | 3s              | 800                 | 1200              | 3600              | 5000              | 6500              | 8000              |
|                                                            | 10s             | 500                 | 800               | 2000              | 3200              | 4000              | 5800              |
| Note: Ratings applies to contacts already closed           | 30s             | 320                 | 480               | 1200              | 1700              | 2200              | 3200              |
|                                                            | 60s             | 180                 | 380               | 960               | 1300              | 1700              | 2300              |
| <b>Cable cross-sections</b>                                |                 |                     |                   |                   |                   |                   |                   |
| solid or stranded                                          | mm <sup>2</sup> | 25-50 <sup>1)</sup> | cable lug         | busbar            | busbar            | busbar            | busbar            |
| flexible                                                   | mm <sup>2</sup> | 25-50 <sup>1)</sup> | 70                | 40x5              | 40x10             | 2x40x10           | 2x50x10           |
| flexible with multicore cable end                          | mm <sup>2</sup> | 25-35               | -                 | -                 | -                 | -                 | -                 |
| Size of terminal screw                                     |                 | 2xM5                | M8                | M12               | M16               | M16               | M16               |
| Number of conductors to clamp per pole                     |                 | 1                   | 1                 | 1                 | 2                 | 1                 | 1                 |
| <b>Short circuit protection</b>                            |                 |                     |                   |                   |                   |                   |                   |
| Max. fuse size                                             | slow, gL (gG) A | 125                 | 200               | 400               | 630               | 800               | 1250              |

1) Maximum cable cross-section with prepared conductor

2) suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry):  $U_{imp} = 6kV$ . Data for other conditions on request

## Approvals

| Country | USA, Canada<br>UL                                                                   | Switzerland<br>SEV                                                                  | Europe                                                                              | Russia<br>GOST                                                                       | CB/CCA-<br>Certificates |
|---------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------|
| Type    |  |  |  |  |                         |

**Cam Switches** (UL-Listed as MANUAL MOTOR CONTROLLER and suitable as MOTOR DISCONNECT)

|      |   |   |   |   |   |
|------|---|---|---|---|---|
| M10  | o | - | o | o | o |
| M10H | o | - | o | o | o |
| M20  | o | - | o | o | o |
| N20  | o | - | o | o | o |
| N33F | o | - | o | o | o |
| N40  | - | - | o | o | o |
| N60  | - | - | o | o | o |
| N80  | o | - | o | o | o |
| N100 | o | - | o | o | o |
| N200 | o | - | o | o | o |
| L400 | o | - | o | - | - |

**Switch disconnectors** (UL-Listed as MANUAL MOTOR CONTROLLER and suitable as MOTOR DISCONNECT)

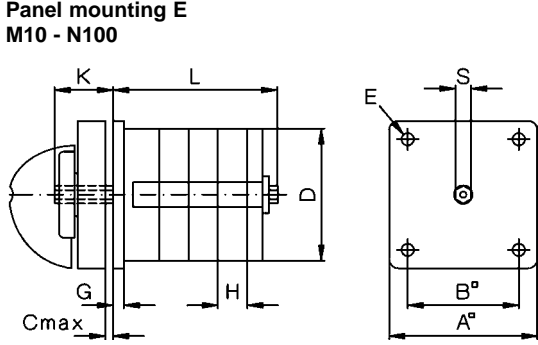
|        |   |   |   |   |   |
|--------|---|---|---|---|---|
| LTS20  | o | - | o | o | o |
| LTS25  | o | - | o | o | o |
| LTS32  | o | - | o | o | o |
| LTS40  | o | - | o | o | o |
| LTS63  | o | - | o | o | o |
| LTS80  | o | - | o | o | o |
| LTS85  | o | - | o | - | - |
| LTS100 | o | - | o | - | - |
| LTS125 | o | - | o | - | - |
| LT160  | o | - | o | - | o |

o In standard version approved  
- Not provided for test till now

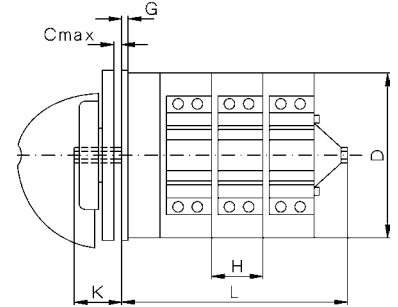
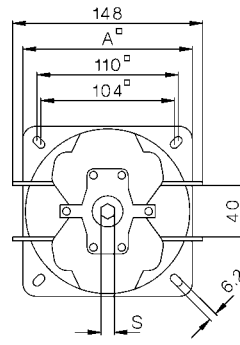
/ No testing required CE

x In test

**Panel mounting E**  
**M10 - N100**



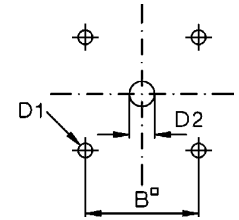
**N200**



Mounting holes: built in from ear

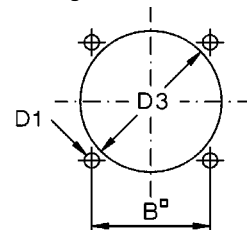
| Type | A   | B   | C | D                | D1 | D2 | D3  | E   | G   | H    | K    | S    |
|------|-----|-----|---|------------------|----|----|-----|-----|-----|------|------|------|
| M10H | 48  | 36  | 5 | 44 <sup>1)</sup> | 5  | 8  | -   | 4   | 3,5 | 9,5  | 19   | SW5  |
| M20  | 48  | 36  | 5 | 56               | 5  | 8  | -   | 4   | 3,5 | 12,5 | 19   | SW5  |
| N20  | 64  | 48  | 5 | 56               | 5  | 12 | 57  | 4,2 | 3   | 12,5 | 20   | SW7  |
| N33F | 64  | 48  | 5 | 58 <sup>2)</sup> | 5  | 12 | -   | 4,2 | 3   | 15,5 | 20   | SW7  |
| N40  | 86  | 68  | 7 | 80               | 6  | 12 | 82  | 5,2 | 3,5 | 18   | 24,5 | SW9  |
| N60  | 86  | 68  | 7 | 80               | 6  | 12 | 82  | 5,2 | 3,5 | 29,5 | 24,5 | SW9  |
| N80  | 86  | 68  | 7 | 80               | 6  | 12 | 82  | 5,2 | 3,5 | 29,5 | 24,5 | SW9  |
| N100 | 132 | 110 | 9 | 128              | 7  | 16 | 129 | 6,2 | 5   | 30   | 37   | SW12 |
| N200 | 132 | 110 | 9 | 128              | 7  | 16 | -   | 6,2 | 5   | 40   | 37   | SW12 |

- 1) 44,5 x 42
- 2) 58 x 58

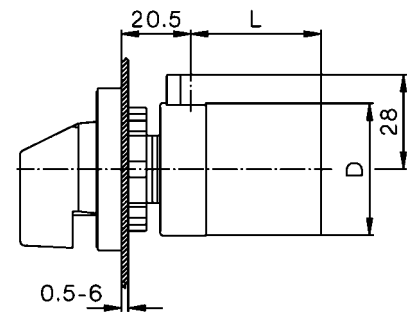


Mounting holes: built in from front

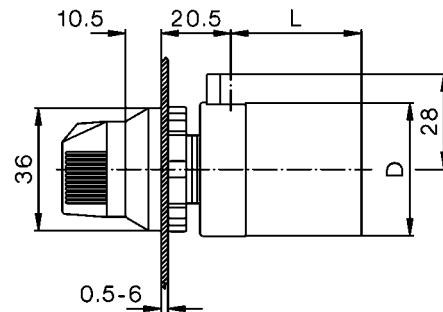
| Type | Dimension L with ... cells |      |      |       |       |       |       |       |       |       |       |       |       |       |       |
|------|----------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | 1                          | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    |
| M10H | 36,5                       | 46   | 55,5 | 65    | 74,5  | 84    | 93,5  | 103   | 112,5 | 122   | 131,5 | 141   | -     | -     | -     |
| M20  | 38,5                       | 51   | 63,5 | 76    | 88,5  | 101   | 113,5 | 126   | 138,5 | 151   | 163,5 | 176   | -     | -     | -     |
| N20  | 40,5                       | 53   | 65,5 | 78    | 90,5  | 103   | 115,5 | 128   | 140,5 | 153   | 165,5 | 178   | 190,5 | 203   | 215,5 |
| N33F | 44                         | 59,5 | 75   | 90,5  | 106   | 121,5 | 137   | 152,5 | 168   | 183,5 | 199   | 214,5 | 230   | 245,5 | 261   |
| N40  | 52,5                       | 70,5 | 88,5 | 106,5 | 124,5 | 142,5 | 160,5 | 178,5 | 196,5 | 214,5 | 232,5 | 250,5 | 268,5 | 286,5 | 304,5 |
| N60  | 64                         | 93,5 | 123  | 152,5 | 182   | 211,5 | 241   | 270,5 | 300   | 329,5 | 359   | 388,5 | -     | -     | -     |
| N80  | 64                         | 93,5 | 123  | 152,5 | 182   | 211,5 | 241   | 270,5 | 300   | 329,5 | 359   | 388,5 | -     | -     | -     |
| N100 | 88                         | 118  | 148  | 178   | 208   | 238   | 268   | 298   | 328   | 358   | 388   | 418   | -     | -     | -     |
| N200 | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   | -     | -     | -     |



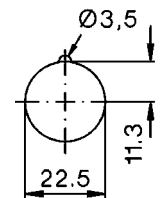
**Central fixing Z**  
**M10H, M20, N33F**



**Central fixing without escutcheon plate ZO**  
**M10H, M20**



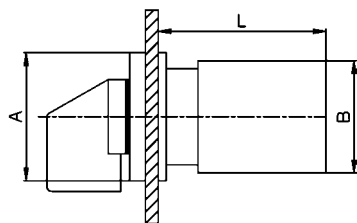
Mounting hole:



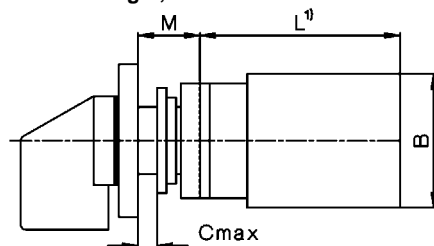
Further dimensions see tables above

**Mini-Cam Switches M4H**

**Panel mounting E**

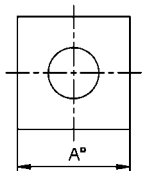
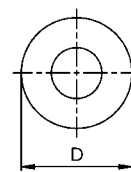


**Central fixing Z, ZO**



**ZO**

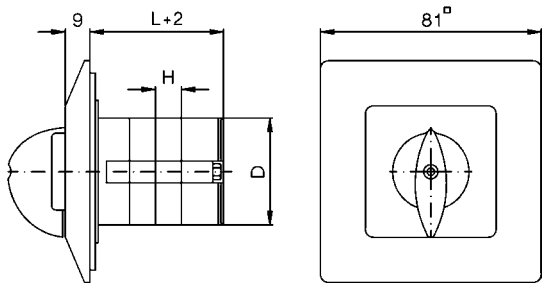
**Z**



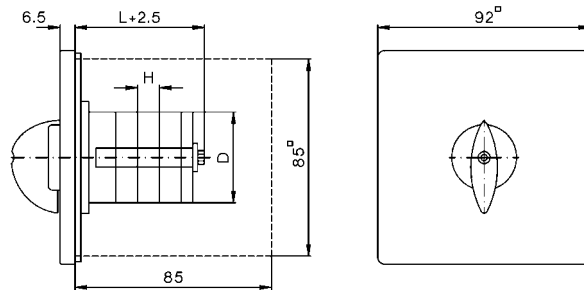
| Type | A  | B  | D  | M    | Dimension L with ... cells |      |      |      |      |      |      |       |       |
|------|----|----|----|------|----------------------------|------|------|------|------|------|------|-------|-------|
|      |    |    |    |      | 1                          | 2    | 3    | 4    | 5    | 6    | 7    | 8     |       |
| M4H  | mm | 30 | 28 | 29,5 | 12,5                       | 38,5 | 50,5 | 62,5 | 74,5 | 86,5 | 98,5 | 110,5 | 122,5 |

Mounting holes see page 42

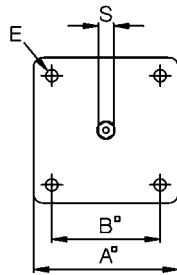
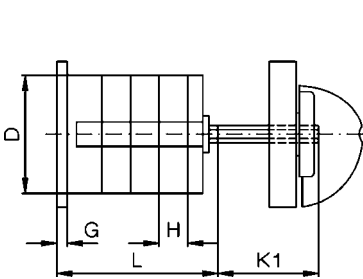
## Flush mounting UP M10



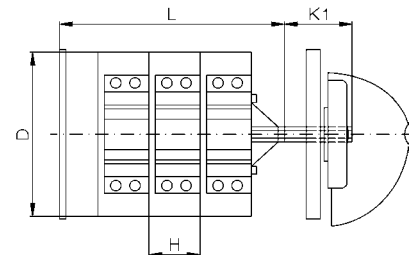
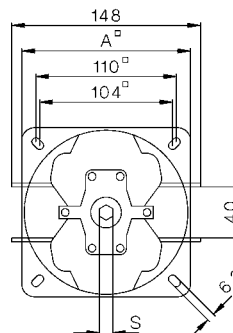
N20 (dimensions of standard flush wall mounting box see page 90)



## Base mounting V M10H - N100

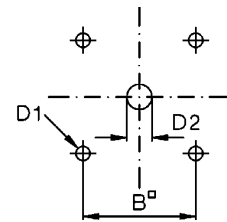


## N200



| Type | A   | B   | D                | D1 | D2 | E   | G   | H    | I | K  | K1   | S    |
|------|-----|-----|------------------|----|----|-----|-----|------|---|----|------|------|
| M10  | 48  | 36  | 39               | 5  | 8  | 4   | 3,5 | 9,5  | 6 | 19 | 41   | SW5  |
| M10H | 48  | 36  | 44 <sup>1)</sup> | 5  | 8  | 4,2 | 3   | 9,5  | 6 | 19 | 41   | SW5  |
| M20  | 48  | 36  | 56               | 5  | 8  | 4,2 | 3   | 12,5 | 6 | 19 | 47   | SW5  |
| N20  | 64  | 48  | 56               | 5  | 12 | 4,2 | 3   | 12,5 | 0 | 20 | 29   | SW7  |
| N33F | 64  | 48  | 58 <sup>2)</sup> | 5  | 12 | 4,2 | 3   | 15,5 | 0 | 20 | 31,5 | SW7  |
| N40  | 86  | 68  | 80               | 6  | 12 | 5,2 | 3,5 | 18   | - | -  | 38,5 | SW9  |
| N60  | 86  | 68  | 80               | 6  | 12 | 5,2 | 3,5 | 29,5 | - | -  | 49,5 | SW9  |
| N80  | 86  | 68  | 80               | 6  | 12 | 5,2 | 3,5 | 29,5 | - | -  | 49,5 | SW9  |
| N100 | 132 | 110 | 128              | 7  | 16 | 6,2 | 5   | 30   | - | -  | 79,5 | SW12 |
| N200 | 132 | 110 | 128              | 7  | 16 | 6,2 | 5   | 40   | - | -  | 104  | SW12 |

Mounting holes: for escutcheon plate

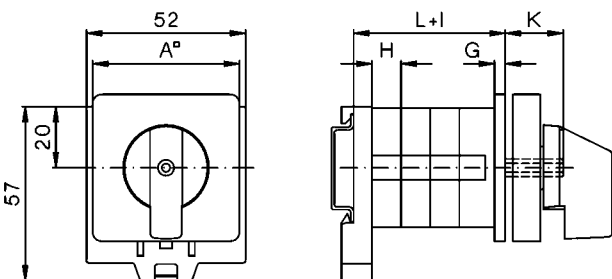


| Type | Dimensions L with .. cells |      |      |       |       |       |       |       |       |       |       |       |       |       |       |
|------|----------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      | 1                          | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    |
| M10  | 34,5                       | 44   | 53,5 | 63    | 72,5  | 82    | 91,5  | 101   | 110,5 | 120   | 129,5 | 139   | -     | -     | -     |
| M10H | 36,5                       | 46   | 55,5 | 65    | 74,5  | 84    | 93,5  | 103   | 112,5 | 122   | 131,5 | 141   | -     | -     | -     |
| M20  | 38,5                       | 51   | 63,5 | 76    | 88,5  | 101   | 113,5 | 126   | 138,5 | 151   | 163,5 | 176   | -     | -     | -     |
| N20  | 40,5                       | 53   | 65,5 | 78    | 90,5  | 103   | 115,5 | 128   | 140,5 | 153   | 165,5 | 178   | 190,5 | 203   | 215,5 |
| N33F | 44                         | 59,5 | 75   | 90,5  | 106   | 121,5 | 137   | 152,5 | 168   | 183,5 | 199   | 214,5 | 230   | 245,5 | 261   |
| N40  | 52,5                       | 70,5 | 88,5 | 106,5 | 124,5 | 142,5 | 160,5 | 178,5 | 196,5 | 214,5 | 232,5 | 250,5 | 268,5 | 286,5 | 304,5 |
| N60  | 64                         | 93,5 | 123  | 152,5 | 182   | 211,5 | 241   | 270,5 | 300   | 329,5 | 359   | 388,5 | -     | -     | -     |
| N80  | 64                         | 93,5 | 123  | 152,5 | 182   | 211,5 | 241   | 270,5 | 300   | 329,5 | 359   | 388,5 | -     | -     | -     |
| N100 | 88                         | 118  | 148  | 178   | 208   | 238   | 268   | 298   | 328   | 358   | 388   | 418   | -     | -     | -     |
| N200 | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   | -     | -     | -     |

## Snap-on mounting SM

M10H - N33F for 35mm DIN-rail mounting according to DIN EN 50022

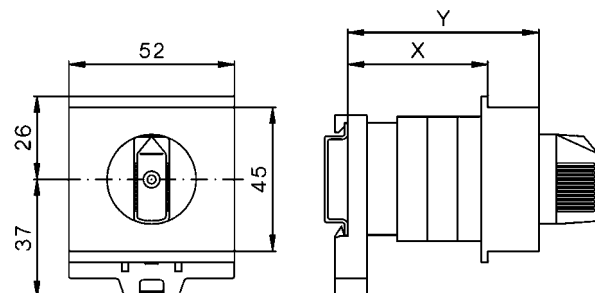
Dimensions see tables above



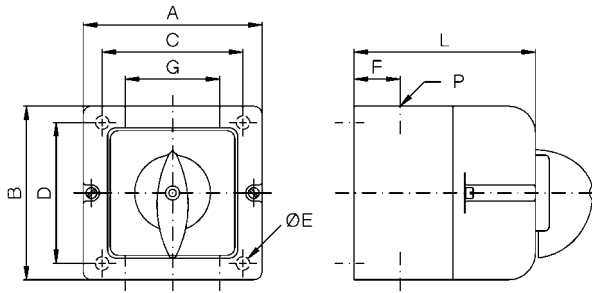
## Switch with installation cover SMA

M10H, M20 for 35mm DIN-rail mounting according to DIN EN 50022

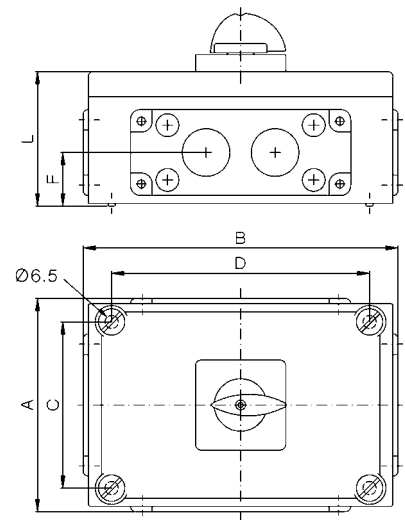
| Type | Dimension X with .. cells |    |    |    |      | Dimension Y with .. cells |    |    |  |  |
|------|---------------------------|----|----|----|------|---------------------------|----|----|--|--|
|      | 1, 2                      | 3  | 4  | 5  | 1, 2 | 3                         | 4  | 5  |  |  |
| M10H | 44                        | 44 | 61 | 76 | 60   | 60                        | 75 | 90 |  |  |
| M20  | 44                        | 61 | 76 | 76 | 60   | 75                        | 90 | 90 |  |  |



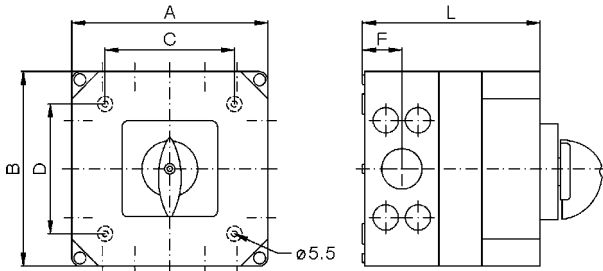
## Plastic enclosed switches P, PF M10 - N60



## N100, N200



## N60, N80



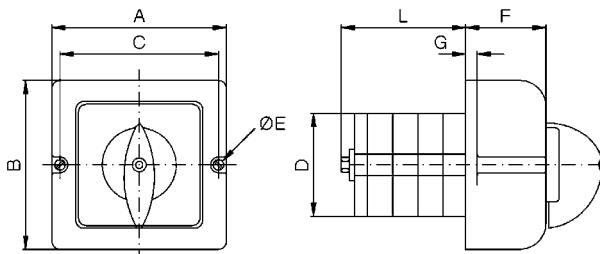
1) knock outs for M40/M32 + 4x M20 at top and bottom  
M32/M25 + 4x M20 at the right and left hand side,

2) 2 flange plates with hole 50,5 at top and bottom

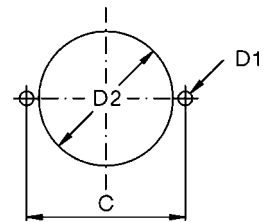
3) 2 flange plates with hole 50,5 at top and bottom, can also be mounted at the right and left hand side

| Type | A   | B   | C   | D   | E   | F    | G  | P   | Dimension L with .. cells |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|------|----|-----|---------------------------|-----|-----|-----|-----|-----|
|      |     |     |     |     |     |      |    |     | 1                         | 2   | 3   | 4   | 5   | 6   |
| M10  | 66  | 64  | 50  | 36  | 5   | 15,5 | 26 | M20 | 43                        | 52  | 62  | 71  | 81  | 90  |
| N20  | 82  | 78  | 57  | 53  | 4,5 | 17   | 35 | M20 | 66                        | 66  | 80  | 94  | 108 | 122 |
| N33F | 112 | 108 | 85  | 50  | 5   | 20   | 50 | M25 | 92                        | 92  | 92  | 110 | 128 | 146 |
| N40  | 112 | 108 | 85  | 50  | 5   | 20   | 50 | M25 | 92                        | 92  | 110 | 128 | 146 | 164 |
| N60  | 112 | 108 | 85  | 50  | 5   | 20   | 50 | M25 | 92                        | 110 | -   | -   | -   | -   |
| N60  | 182 | 180 | 120 | 120 | 5,5 | 36,5 | -  | 1)  | -                         | -   | 165 | 215 | 215 | -   |
| N80  | 182 | 180 | 120 | 120 | 5,5 | 36,5 | -  | 1)  | 110                       | 110 | 165 | 215 | 215 | -   |
| N100 | 210 | 310 | 165 | 255 | 6,5 | 52,5 | -  | 2)  | 130                       | 130 | 180 | -   | -   | -   |
| N200 | 310 | 310 | 255 | 255 | 6,5 | 52,5 | -  | 3)  | 130                       | 180 | 230 | -   | -   | -   |

## Motor terminal box mounting KE M10 - N33F



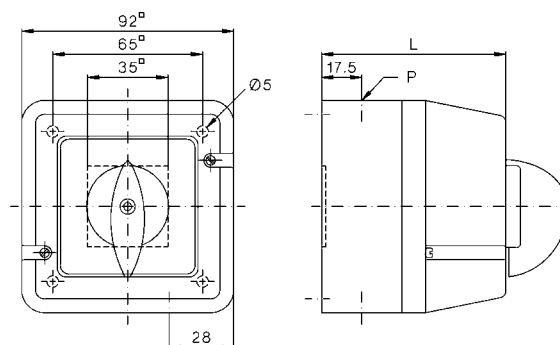
## Mounting holes



| Type | A   | B   | C   | D  | D1 | D2 | E   | F  | G  | Dimension L with .. cells |      |      |      |      |  |
|------|-----|-----|-----|----|----|----|-----|----|----|---------------------------|------|------|------|------|--|
|      |     |     |     |    |    |    |     |    |    | 2                         | 3    | 4    | 5    | 6    |  |
| M10  | 66  | 64  | 58  | 39 | 4  | 48 | 3,2 | 24 | 6  | 22                        | 31,5 | 41   | 50,5 | 60   |  |
| N20  | 82  | 78  | 71  | 48 | 5  | 57 | 4,2 | 34 | 5  | 24,5                      | 37   | 49,5 | 62   | 74,5 |  |
| N33F | 112 | 108 | 100 | 56 | 5  | 70 | 4,2 | 49 | 11 | 32,5                      | 48   | 63,5 | 79   | 94,5 |  |

## Plastic enclosed motor starter PM N20

| Typ | P   | Dimension L with .. cells |    |    |      |     |       |
|-----|-----|---------------------------|----|----|------|-----|-------|
|     |     | 1                         | 2  | 3  | 4    | 5   | 6     |
| N20 | M25 | 80                        | 80 | 80 | 92,5 | 105 | 117,5 |

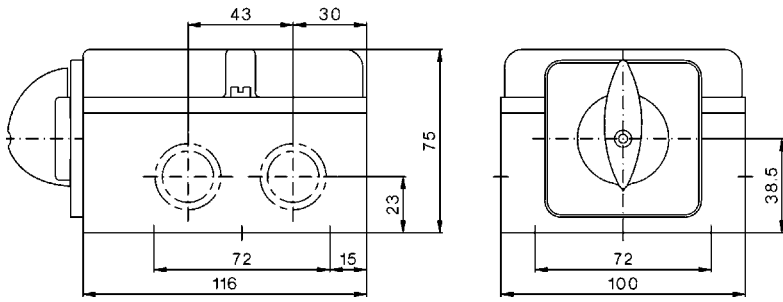


4) old version



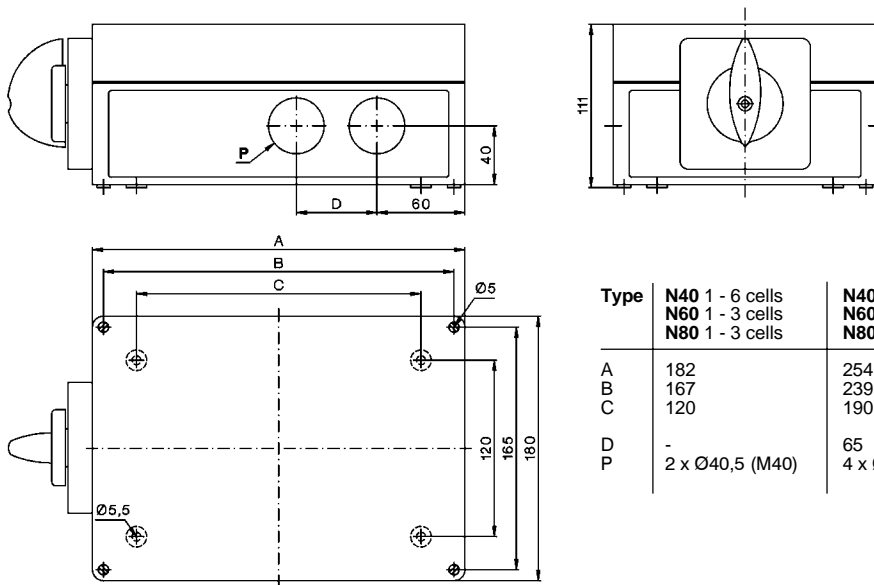
# Telux - Cam Switches

Cast aluminium enclosed switches G, GF  
N20



N20 4 x M25

Plastic enclosure horizontal PLF (Replacement for cast aluminium enclosure G, GF)  
N40, N60, N80



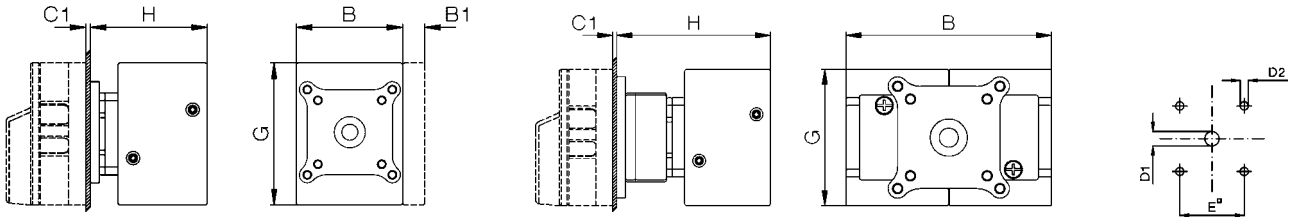
| Type | N40 1 - 6 cells<br>N60 1 - 3 cells<br>N80 1 - 3 cells | N40 7 - 10 cells<br>N60 4 - 6 cells<br>N80 4 - 6 cells |
|------|-------------------------------------------------------|--------------------------------------------------------|
| A    | 182                                                   | 254                                                    |
| B    | 167                                                   | 239                                                    |
| C    | 120                                                   | 190                                                    |
| D    | -                                                     | 65                                                     |
| P    | 2 x Ø40,5 (M40)                                       | 4 x Ø40,5 (M40)                                        |

## Main Switches, Switch Disconnectors LT(S)..

**Panel mounting LT(S).. E(HN)..**  
ON-OFF Switches 3-pole, 4-pole

ON-OFF Switches 6-pole, 8-pole  
Changeover Switches 3-pole, 4-pole

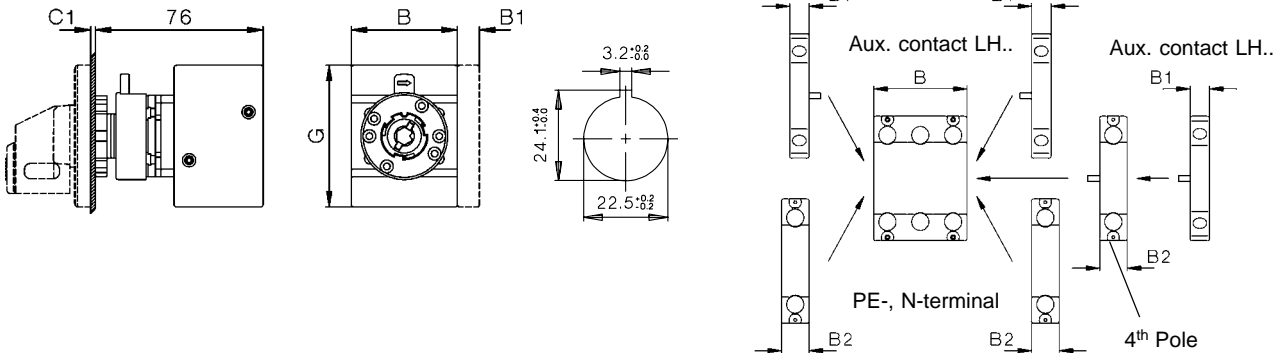
Mounting holes



**Single hole mounting LTS.. Z(HN)..**  
ON-OFF Switches 3-pole, 4-pole

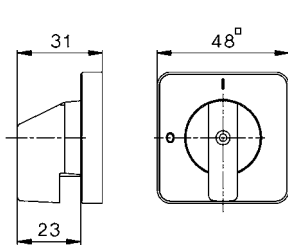
Mounting holes

**Mounting of add-on modules LTS20 - LTS80**  
Panel mounting, Single hole mounting

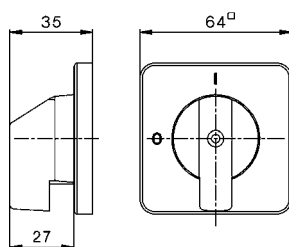


| Type        | Changeover ON-OFF Escutch. plate or padlock device | 3-pole |     | 4-pole |     | 3-pole 6-pole | 4-pole 8-pole | aux. contact B1 | 4 Pole PE |       |    |    | G    | 3,4-pole |    |    |
|-------------|----------------------------------------------------|--------|-----|--------|-----|---------------|---------------|-----------------|-----------|-------|----|----|------|----------|----|----|
|             |                                                    | A      | B   | B      | B   |               |               |                 | B         | B2    | C1 | D1 |      | D2       | E  | F  |
| LTS..       | 48 □, SV1                                          | 48     | 48  | 62,5   | -   | -             | 10            | 14,5            | 1-5       | 10    | 5  | 36 | -    | 64       | 54 | -  |
| LTS..       | 64 □, SV4, SV164                                   | 64     | 48  | 62,5   | 97  | 126           | 10            | 14,5            | 1-5       | 10    | 5  | 48 | -    | 64       | 54 | 74 |
| LTS85-125.. | 64 □, SV4                                          | 64     | 78  | 78     | -   | -             | 10            | -               | 1-5       | 10    | 5  | 48 | -    | 85       | 60 | -  |
| LT125/160   | 88 □, SV34                                         | 88     | 112 | 150    | 224 | -             | -             | -               | 1-4       | 13-17 | 6  | 68 | 49,3 | 108      | 96 | 98 |

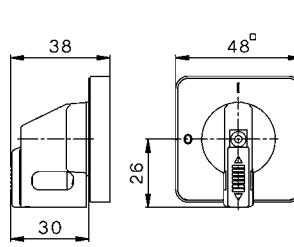
**Escutcheon plate**  
48 □



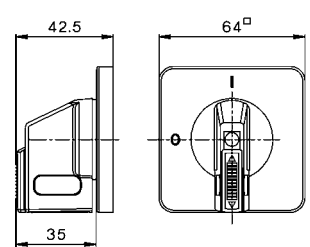
64 □



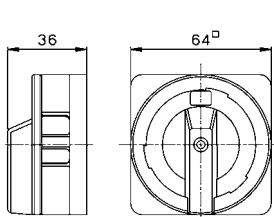
**Padlock devices**  
SV1



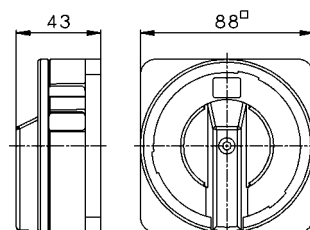
SV164



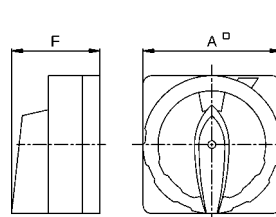
**Padlock devices**  
SV4



SV488



SV34



# Switch disconnectors LT(S)

## Main Switches, Switch Disconnectors LT(S)..

### Base mounting LTS.. VZV(HN)..

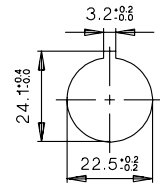
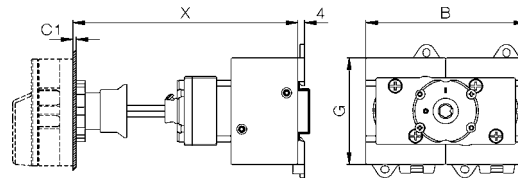
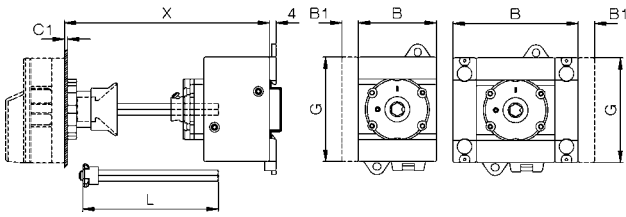
ON-OFF Switches 3-pole, 4-pole

$L = X - 40 \pm 3$

6-pole  
for LTS20 - 40 only  
 $L = X - 40 \pm 3$

ON-OFF Switches 6-pole, 8-pole  
Changeover Switches 3-pole, 4-pole  
 $L = X - 60 \pm 3$

Mounting holes



### Base mounting LT(S).. V(HN)..

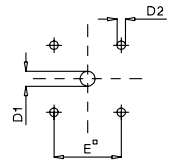
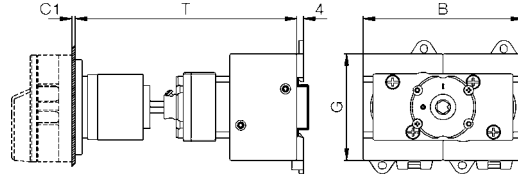
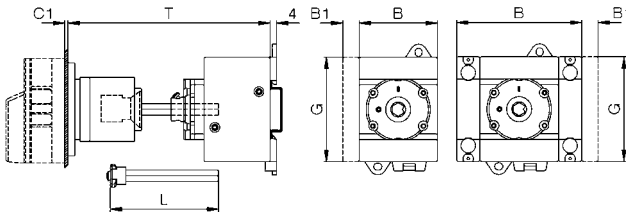
ON-OFF Switches 3-pole, 4-pole

$L = T - 60 \pm 3$  for LTS20 - 80 only

6-pole  
for LTS20 - 40 only  
 $L = X - 60 \pm 3$

ON-OFF Switches 6-pole, 8-pole  
Changeover Switches 3-pole, 4-pole  
 $L = T - 80 \pm 3$  for LTS20 - 80 only

Mounting holes



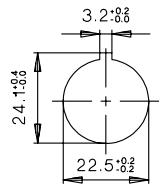
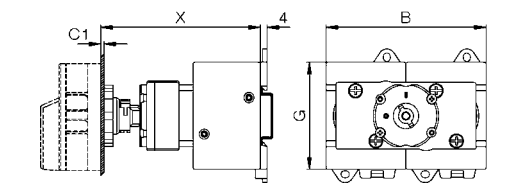
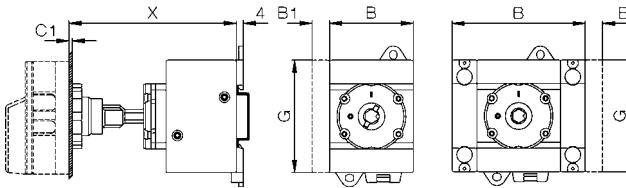
### Base mounting LTS.. VZ(HN)..

ON-OFF Switches 3-pole, 4-pole

6-pole  
for LTS20 - 40 only

ON-OFF Switches 6-pole, 8-pole  
Changeover Switches 3-pole, 4-pole

Mounting holes



| Type        | Changeover ON-OFF Escutch. plate or padlock device | 3-pole |     |      |     | 3,4-pole |    | aux. contact B1 | 4.Pole PE B2 | C1                  | D1 | D2 | D3 | E   | G  | K  | K1  | J |
|-------------|----------------------------------------------------|--------|-----|------|-----|----------|----|-----------------|--------------|---------------------|----|----|----|-----|----|----|-----|---|
|             |                                                    | A      | B   | B    | B   | B        | B  |                 |              |                     |    |    |    |     |    |    |     |   |
| LTS20 -40   | 64 □, SV4, SV164                                   | 64     | 48  | 48   | 77  | 97       | 10 | 14,5            | 1-5          | 10                  | 5  | M4 | 48 | 64  | 25 | 48 | 70  |   |
| LTS63, 80   | 64 □, SV4, SV164                                   | 64     | 48  | 62,5 | 97  | 126      | 10 | 14,5            | 1-5          | 10                  | 5  | M4 | 48 | 64  | 25 | 48 | 70  |   |
| LTS85-125.. | 64 □, SV4                                          | 64     | 78  | 78   | -   | -        | 10 | -               | 1-5          | 10                  | 5  | M4 | 48 | 85  | 38 | -  | 90  |   |
| LT125/160   | 88 □, SV34                                         | 88     | 112 | 150  | 224 | -        | -  | -               | 1-4          | 13/27 <sup>2)</sup> | 6  | M6 | 68 | 108 | 36 | -  | 120 |   |

### Base mounting

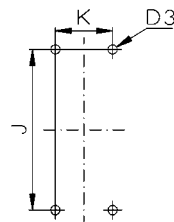
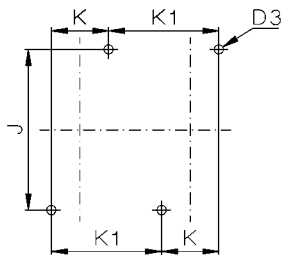
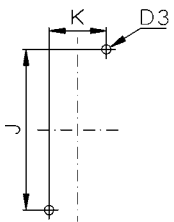
ON-OFF Switches LTS20 - LTS80

3-pole, 4-pole  
6-pole LTS20 -40

6-pole, 8-pole  
Changeover Switches

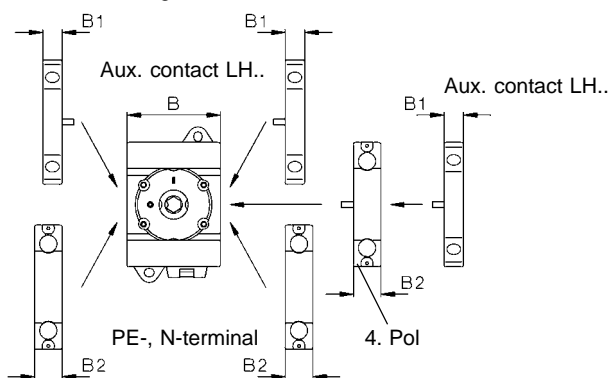
LTS85-125, LT160

3-pole, 4-pole



### Mounting of Accessories LTS20 - LTS80

Base mounting, for distribution boards



1) Ø 22-25 for LT80(100) VH(N)34 .. only  
2) Ø 26-30 for LT125(160) VH(N)34 .. only

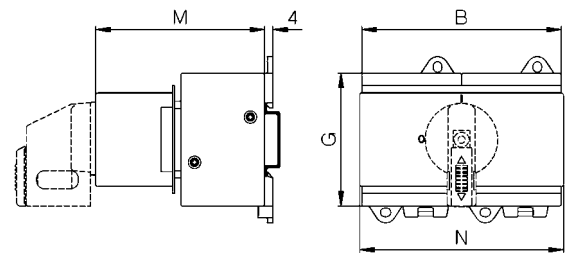
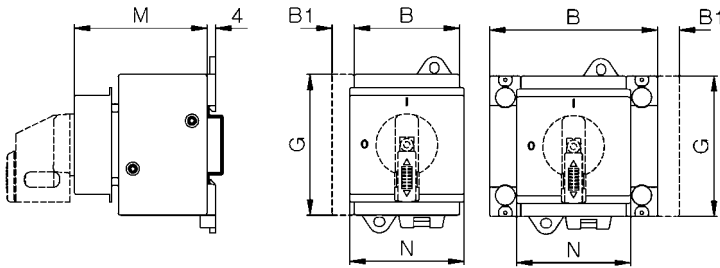
## Main Switches, Switch Disconnectors LT(S)..

### Installation cover LT(S).. SMA(HN)..

ON-OFF Switches 3-pole, 4-pole

ON-OFF Switches 6-pole  
for LTS20 - 40 only

ON-OFF Switches 6-pole, 8-pole  
Changeover Switches 3-pole, 4-pole

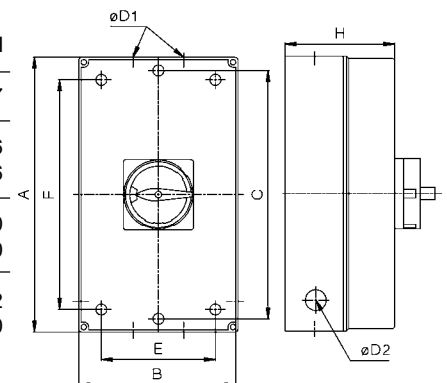


| Type       | Changeover ON-OFF padlock device | 3,4-pole |        |        |        |              |           | G  | 3,4-pole      |        |        | 3,4-pole      |                  |                  |
|------------|----------------------------------|----------|--------|--------|--------|--------------|-----------|----|---------------|--------|--------|---------------|------------------|------------------|
|            |                                  | 3-pole   | 4-pole | 6-pole | 8-pole | aux. contact | 4.pole PE |    | 3-pole 4-pole | 6-pole | 8-pole | 3-pole 4-pole | 6-pole           | 8-pole           |
|            |                                  | B        | B      | B      | B      | B1           | B2        |    | M             | M      | M      | N             | N                | N                |
| LTS20 - 40 | SV1, SV164                       | 48       | 48     | 77     | 96     | 10           | 14,5      | 64 | 60            | 60     | 74     | 52            | 52               | 97 <sup>1)</sup> |
| LTS63, 80  | SV1, SV164                       | 48       | 62,5   | 96     | 125    | 10           | 14,5      | 64 | 60            | 74     | 74     | 52            | 97 <sup>1)</sup> | 126              |
| LT80..     | SV1                              | 70       | 92     | 140    | -      | 11           | -         | 80 | 70            | 70     | 70     | 70            | 70               | -                |
| LT100..    | SV1                              | 70       | 92     | 140    | -      | 11           | -         | 80 | 70            | 70     | 70     | 70            | 70               | -                |

1) inclusiv removable cover parts 126mm

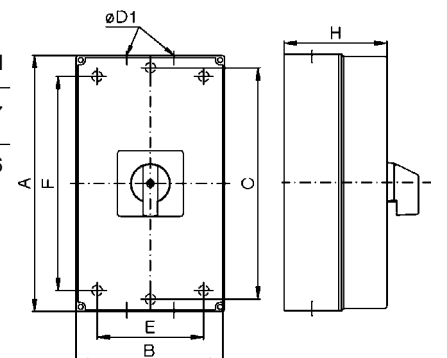
## Maintenance and Safety Switches LT(S)..PF..

| Type                           | Pole | A   | B   | D1              | D2   | E   | F   | H   |
|--------------------------------|------|-----|-----|-----------------|------|-----|-----|-----|
| LTS20 PFH.. A., LTS40 PFH.. A  | 3, 4 | 130 | 98  | 2x25,5/20,5     | -    | 75  | 100 | 77  |
| LTS63 PFH.. - LTS125 PFH.. A.  | 3, 4 | 200 | 120 | 40,5/32,5 +16,5 | -    | 95  | 165 | 86  |
| LTS20 PFH.. A., LTS40 PFH.. A  | 6    | 200 | 120 | 40,5/32,5 +16,5 | -    | 95  | 165 | 86  |
| LTS20 PFH.. A., LTS40 PFH.. A  | 8    | 240 | 160 | 40,5/32,5       | -    | 130 | 228 | 120 |
| LTS63 PFH.. A., LTS80 PFH.. A. | 6, 8 | 240 | 160 | 40,5/32,5       | -    | 130 | 228 | 120 |
| LT125 PFH..., LT160 PF..       | 3    | 300 | 200 | 2x50,5          | 25,5 | 172 | 272 | 172 |
| LT125 PFH..., LT160 PF..       | 4    | 300 | 280 | 2x50,5          | -    | 254 | 254 | 180 |



## Switch Disconnectors in Plastic Enclosure LTS..PF..

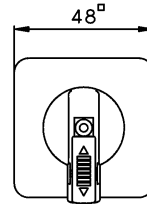
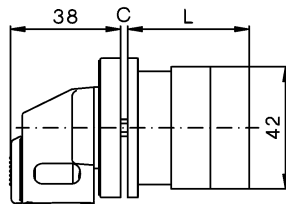
| Type                     | Pole | A   | B   | D1              | E  | F   | H  |
|--------------------------|------|-----|-----|-----------------|----|-----|----|
| LTS20 PF A., LTS40 PF A  | 3, 4 | 130 | 98  | 2x25,5/20,5     | 75 | 100 | 77 |
| LTS63 PF A., LTS80 PF A. | 3, 4 | 200 | 120 | 40,5/32,5 +16,5 | 95 | 165 | 86 |



## Main and Emergency Off Switches

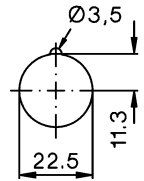
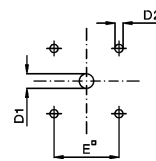
Panel mounting , Central fixing M10H ..

| Type         | C   | D1 | D2 | E  | L    |
|--------------|-----|----|----|----|------|
| M10H EHN1 A2 | 1-5 | 8  | 5  | 36 | 36,5 |
| M10H EHN1 A3 | 1-5 | 8  | 5  | 36 | 46   |
| M10H EHN1 A4 | 1-5 | 8  | 5  | 36 | 46   |
| M10H ZHN1 A2 | 1-5 | -  | -  | -  | 52   |
| M10H ZHN1 A3 | 1-5 | -  | -  | -  | 63   |
| M10H ZHN1 A4 | 1-5 | -  | -  | -  | 63   |

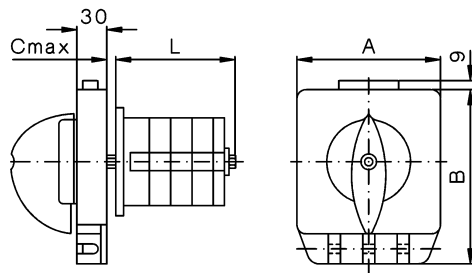


Mounting holes  
Panel mounting  
M10H E ..

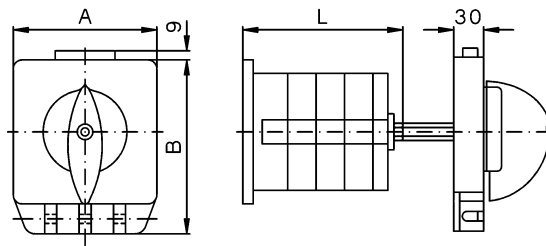
Central fixing  
M10H Z ..



Panel mounting EH3, EHN3  
N40 - N200

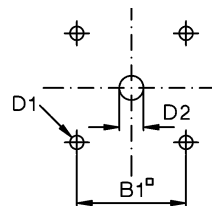


Base mounting VH3, VHN3  
N40 - N200

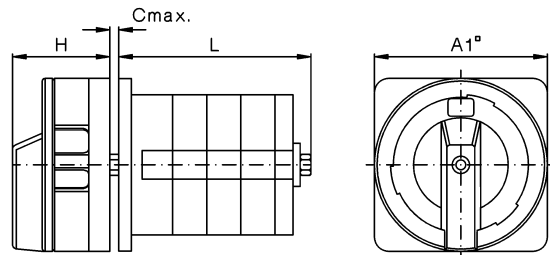


Bohrplan

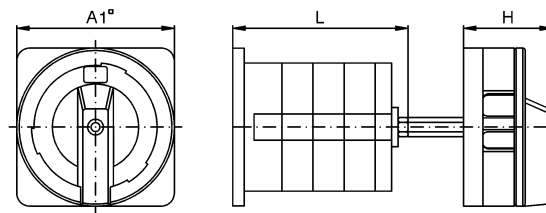
| Type | A   | B   | B1  | C | D1 | D2 | Dimension L with ... cells |      |      |
|------|-----|-----|-----|---|----|----|----------------------------|------|------|
|      |     |     |     |   |    |    | 1                          | 2    | 3    |
| N40  | 102 | 128 | 68  | 5 | 6  | 12 | 52,5                       | 70,5 | 88,5 |
| N60  | 102 | 128 | 68  | 5 | 6  | 12 | 64                         | 93,5 | 123  |
| N80  | 102 | 128 | 68  | 5 | 6  | 12 | 64                         | 93,5 | 123  |
| N100 | 132 | 160 | 110 | 8 | 7  | 16 | 88                         | 118  | 148  |
| N200 | 132 | 160 | 110 | 8 | 7  | 16 | 96                         | 136  | 176  |



Panel mounting EH4, EHN4  
N20 - N80

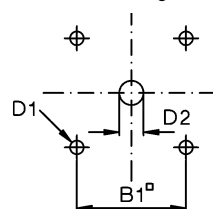


Base mounting VH4, VHN4  
N20 - N80



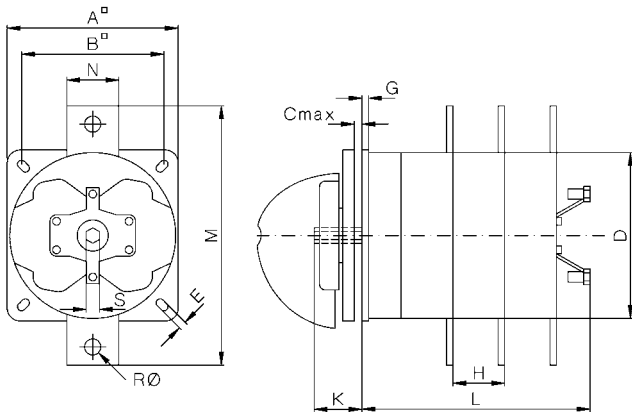
| Type | A1 | B1 | C | D1 | D2 | H  | Dimension L with ... cells |      |      |
|------|----|----|---|----|----|----|----------------------------|------|------|
|      |    |    |   |    |    |    | 1                          | 2    | 3    |
| M10H | 64 | 48 | 5 | 5  | 12 | 36 | 36,5                       | 46   | 55,5 |
| N20  | 64 | 48 | 5 | 5  | 12 | 36 | 40,5                       | 53   | 65,5 |
| N33F | 64 | 48 | 5 | 5  | 12 | 36 | 44                         | 59,5 | 75   |
| N40  | 88 | 68 | 7 | 6  | 20 | 43 | 52,5                       | 70,5 | 88,5 |
| N60  | 88 | 68 | 7 | 6  | 20 | 43 | 64                         | 93,5 | 123  |
| N80  | 88 | 68 | 7 | 6  | 20 | 43 | 64                         | 93,5 | 123  |

Mounting holes

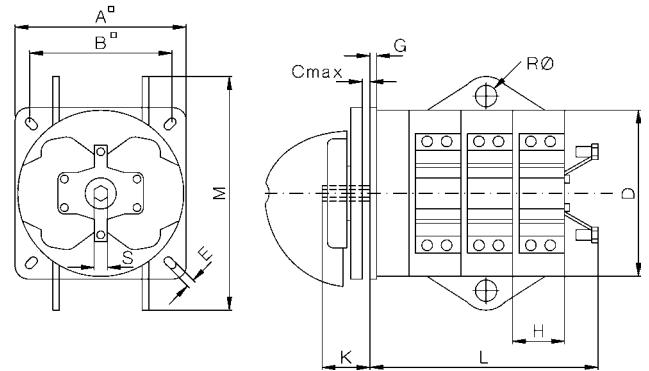


Load Switches

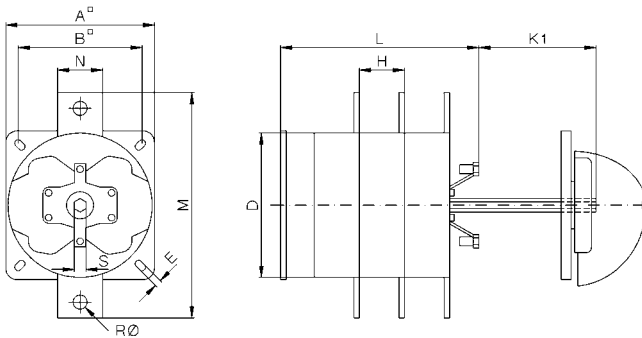
Panel mounting E  
L100 - 400, L800, L1200



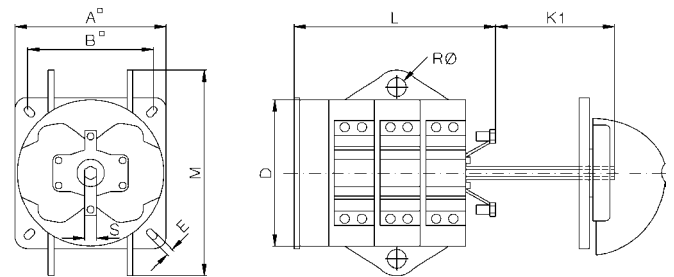
L600



Base mounting V  
L100 - 400, L800, L1200

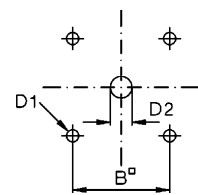


L600



| Type  | A   | B   | C | D   | D1 | D2 | E   | G   | H    | K    | K1   | M   | N  | R    | S    |
|-------|-----|-----|---|-----|----|----|-----|-----|------|------|------|-----|----|------|------|
| L100  | 86  | 68  | 7 | 80  | 6  | 12 | 5,2 | 3,5 | 18   | 24,5 | 38,5 | 103 | 27 | -    | SW9  |
| L160  | 86  | 68  | 7 | 80  | 6  | 12 | 5,2 | 3,5 | 29,5 | 24,5 | 38,5 | 115 | -  | 8,5  | SW9  |
| L400  | 132 | 110 | 9 | 128 | 7  | 16 | 6,2 | 5   | 40   | 37   | 104  | 200 | 40 | 12,5 | SW12 |
| L600  | 132 | 110 | 9 | 128 | 7  | 16 | 6,2 | 5   | 40   | 37   | 104  | 180 | -  | 16,5 | SW12 |
| L800  | 132 | 110 | 9 | 128 | 7  | 16 | 6,2 | 5   | 40   | 37   | 104  | 240 | 40 | 16,5 | SW12 |
| L1200 | 132 | 110 | 9 | 128 | 7  | 16 | 6,2 | 5   | 40   | 37   | 104  | 240 | 40 | 16,5 | SW12 |

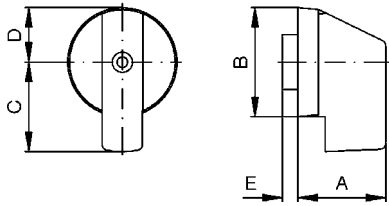
Mounting holes :



| Type  | Dimension L with ... cells |      |      |       |       |       |       |       |       |       |       |       |
|-------|----------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | 1                          | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
| L100  | 52,5                       | 70,5 | 88,5 | 106,5 | 124,5 | 142,5 | 160,5 | 178,5 | 196,5 | 214,5 | 232,5 | 250,5 |
| L160  | 64                         | 93,5 | 123  | 152,5 | 182   | 211,5 | 241   | 270,5 | 300   | 329,5 | 359   | 388,5 |
| L400  | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   |
| L600  | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   |
| L800  | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   |
| L1200 | 96                         | 136  | 176  | 216   | 256   | 296   | 336   | 376   | 416   | 456   | 496   | 536   |

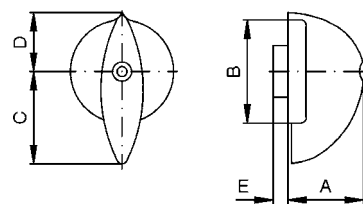
## Operating Knobs and Handles

Instrument knob G.



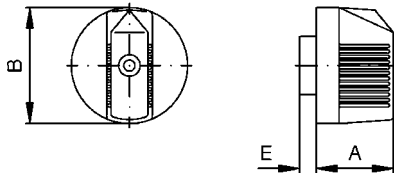
| Type           | A  | B  | C  | D  | E |
|----------------|----|----|----|----|---|
| M10, M10H, M20 | 23 | 28 | 24 | 14 | 4 |
| N20, N33F      | 27 | 36 | 32 | 18 | 3 |

Twist knob R.



| Type                                | A    | B  | C    | D  | E   |
|-------------------------------------|------|----|------|----|-----|
| M10, M10H, M20                      | 20,5 | 28 | 25   | 15 | 4   |
| N20, N33F                           | 24   | 36 | 29,5 | 19 | 3   |
| N40, N60, N80, L100, L160           | 31   | 49 | 41   | 28 | 3,5 |
| N100, N200, L400, L600, L800, L1200 | 50   | 75 | 62   | 41 | 2,5 |

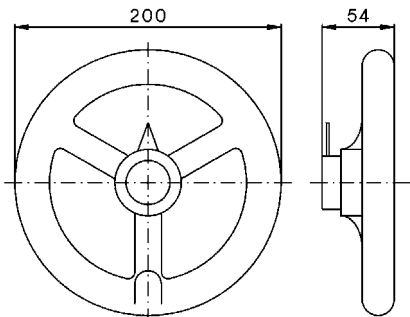
Toggle knob K.



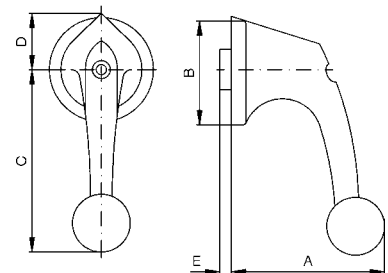
| Type           | A    | B  | E |
|----------------|------|----|---|
| M10, M10H, M20 | 18,5 | 28 | 4 |
| N20, N33F      | 24   | 36 | 3 |

Hand wheel HR

N100, N200,  
L400, L600, L800, L1200



Ball type handle B.



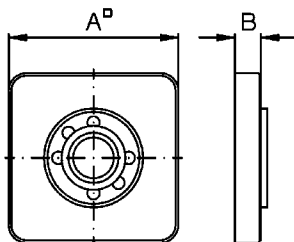
| Type                                | A  | B    | C   | D  | E   |
|-------------------------------------|----|------|-----|----|-----|
| N20, N33F                           | 53 | 36,5 | 64  | 21 | 3   |
| N40, N60, N80, L100, L160           | 62 | 49   | 82  | 31 | 3,5 |
| N100, N200, L400, L600, L800, L1200 | 63 | 75   | 110 | 45 | 2,5 |

Code number for colour

|                |    |            |    |
|----------------|----|------------|----|
| grey           | .1 | white      | .5 |
| black          | .2 | blue       | .6 |
| red            | .3 | yellow     | .7 |
| cream-coloured | .4 | euro-white | .8 |

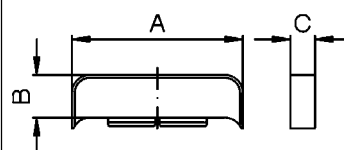
## Escutcheon plates

Escutcheon plate



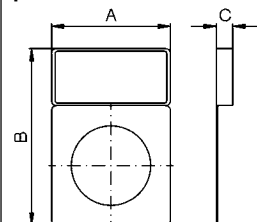
| Type                                | A   | B   |
|-------------------------------------|-----|-----|
| M10, M10H, M20                      | 48  | 7,5 |
| N20, N33F                           | 64  | 7,5 |
| N40, N60, N80, L100, L160           | 88  | 8   |
| N100, N200, L400, L600, L800, L1200 | 132 | 9   |

Rectangular additional plate SRE



| Type                                | A   | B  | C   |
|-------------------------------------|-----|----|-----|
| M10, M10H, M20                      | 48  | 12 | 7,5 |
| N20, N33F                           | 64  | 14 | 7,5 |
| N40, N60, N80, L100, L160           | 88  | 22 | 8   |
| N100, N200, L400, L600, L800, L1200 | 132 | 31 | 9   |

Big rectangular additional plate SRE2



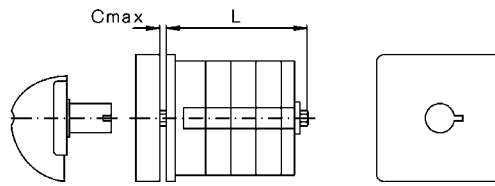
| Type           | A  | B  | C |
|----------------|----|----|---|
| M10, M10H, M20 | 48 | 69 | 6 |
| N20, N33F      | 64 | 91 | 6 |

**Special drives**

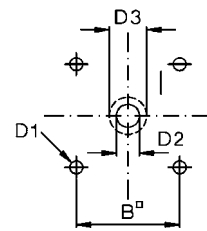
**Removable knob drive STGR, STGR2  
M10H - N33F**

| Type      | B  | C | D1 | D2 | D3 |
|-----------|----|---|----|----|----|
| M10H, M20 | 36 | 5 | 5  | 12 | 18 |
| N20, N33F | 48 | 5 | 5  | 12 | 18 |

Replace dimension D2 with dimension D3 for STGR2  
Dimension L see page 77



**Mounting holes**

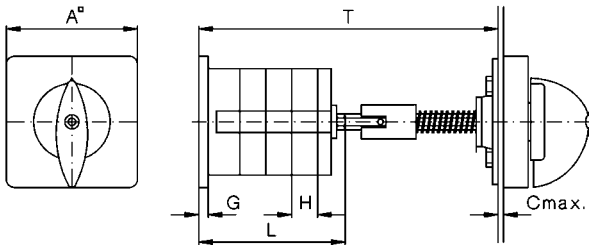




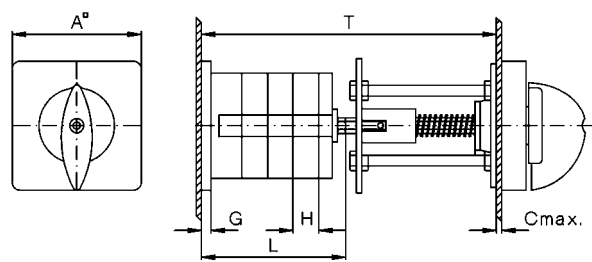
## Door couplings

Dimension T is a minimum value. In case of order the dimension T is necessary.

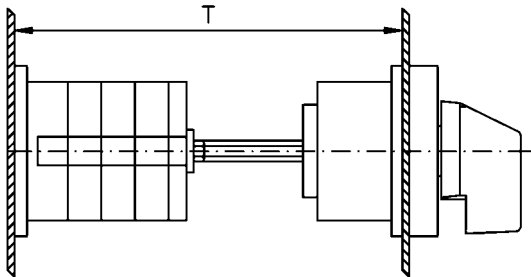
### Door coupling TK, TKFR N40 - L1200



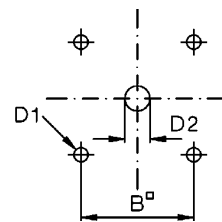
### Door coupling, lockable TK2, TK2FR N40 - L1200



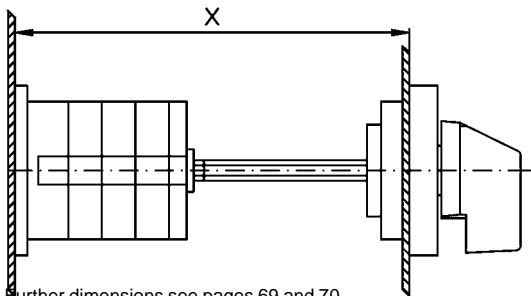
### Door coupling TKE, TK2E M10H, M20, N20, N33F



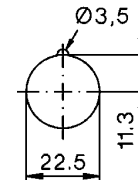
Mounting holes:  
TK, TKFR, TK2, TK2FR  
TKE, TK2E



### Door coupling, lockable TK2Z M10H, M20, N20, N33F



Mounting holes:  
TKZ



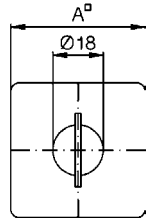
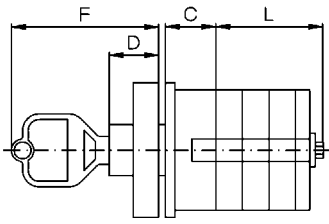
Further dimensions see pages 69 and 70.

Dimension T is a minimum value dependent on switch Type and number of cells. For ordering dimension T is necessary

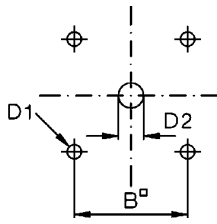
| Type         | A   | B   | C | D1 | D2 | Minimum dimension T with .. cells |       |       |       |       |       |       |       |
|--------------|-----|-----|---|----|----|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|
|              |     |     |   |    |    | 1                                 | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
| <b>M10H</b>  | 48  | 36  | 5 | 5  | 8  | 108                               | 117,5 | 127   | 136,5 | 146   | 155,5 | 165   | 174,5 |
| <b>M20</b>   | 48  | 36  | 5 | 5  | 8  | 100                               | 112,5 | 125   | 137,5 | 150   | 162,5 | 175   | 187,5 |
| <b>N20</b>   | 64  | 48  | 5 | 5  | 10 | 100                               | 112,5 | 125   | 137,5 | 150   | 162,5 | 175   | 187,5 |
| <b>N33F</b>  | 64  | 48  | 5 | 5  | 10 | 103                               | 118,5 | 134   | 149,5 | 165   | 180,5 | 196   | 211,5 |
| <b>N40</b>   | 88  | 48  | 7 | 6  | 12 | 134                               | 152   | 170   | 188   | 206   | 224   | 242   | 260   |
| <b>N60</b>   | 88  | 48  | 7 | 6  | 12 | 145,5                             | 175   | 245,5 | 234   | 263,5 | 293   | 322,5 | 352   |
| <b>N80</b>   | 88  | 48  | 7 | 6  | 12 | 145,5                             | 175   | 245,5 | 234   | 263,5 | 293   | 322,5 | 352   |
| <b>N100</b>  | 132 | 110 | 9 | 7  | 15 | 202                               | 232   | 262   | 292   | 322   | 352   | 382   | 412   |
| <b>N200</b>  | 132 | 110 | 9 | 7  | 15 | 212                               | 252   | 292   | 332   | 372   | 412   | 452   | 492   |
| <b>L100</b>  | 88  | 48  | 7 | 6  | 12 | -                                 | 152   | -     | 188   | -     | 224   | -     | 260   |
| <b>L160</b>  | 88  | 48  | 7 | 6  | 12 | 145,5                             | 175   | 245,5 | 234   | 263,5 | 293   | 322,5 | 352   |
| <b>L400</b>  | 132 | 110 | 9 | 7  | 15 | 212                               | 252   | 292   | 332   | 372   | 412   | 452   | 492   |
| <b>L600</b>  | 132 | 110 | 9 | 7  | 15 | -                                 | -     | 292   | -     | -     | 412   | -     | -     |
| <b>L800</b>  | 132 | 110 | 9 | 7  | 15 | -                                 | 252   | -     | 332   | -     | 412   | 452   | 492   |
| <b>L1200</b> | 132 | 110 | 9 | 7  | 15 | -                                 | -     | 292   | -     | -     | 412   | -     | -     |

Key operated switches SA

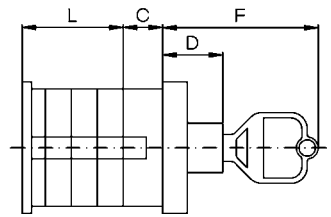
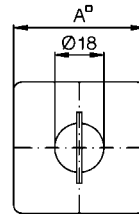
Panel mounting E  
M10 - N60



Mounting holes



Base mounting V  
M10 - N60



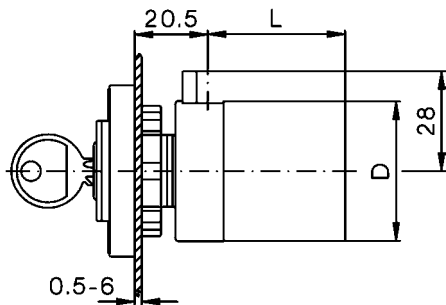
| Type      | A  | B  | C    | D    | D1 | D2   | F    |
|-----------|----|----|------|------|----|------|------|
| M10H, M20 | 48 | 36 | 18   | 17,5 | 5  | 18,5 | 52,5 |
| N20, N33F | 64 | 48 | 10   | 17,5 | 5  | 18,5 | 52,5 |
| N40, N60  | 88 | 68 | 23,5 | 15   | 6  | 18,5 | 50   |

| Type      | A  | C  | D  | F  |
|-----------|----|----|----|----|
| M10H, M20 | 48 | 18 | 22 | 57 |
| N20, N33F | 64 | 8  | 22 | 57 |
| N40, N60  | 88 | 15 | 15 | 50 |

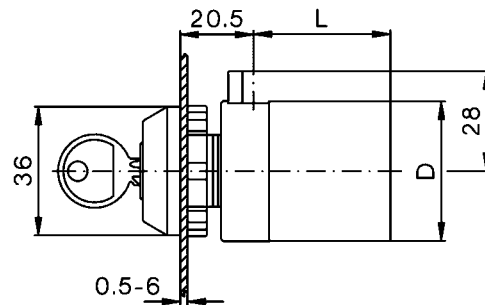
Dimension L see page 77

Dimension L see page 78

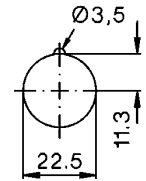
Central fixing Z  
M10H Z ... + SA  
M20 Z ... + SA



Central fixing without escutcheon plate ZO  
M10H ZO ... + SA  
M20 ZO ... + SA

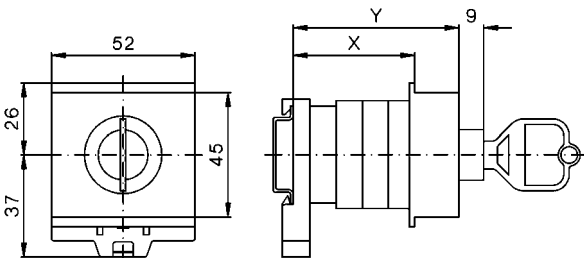


Mounting holes:



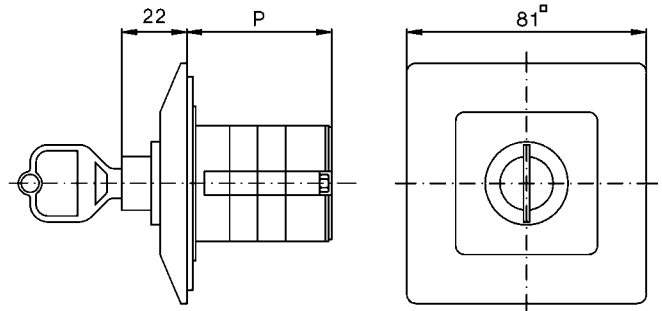
Further dimensions see page 77

DIN rail mounting SMA  
M10H, M20



| Type | Dimension X with .. cells |    |    |    | Dimension Y with .. cells |    |    |     |
|------|---------------------------|----|----|----|---------------------------|----|----|-----|
|      | 1                         | 2  | 3  | 4  | 1                         | 2  | 3  | 4   |
| M10H | 44                        | 75 | 75 | 91 | 60                        | 90 | 90 | 107 |
| M20  | 59                        | 75 | 75 | 91 | 75                        | 90 | 90 | 107 |

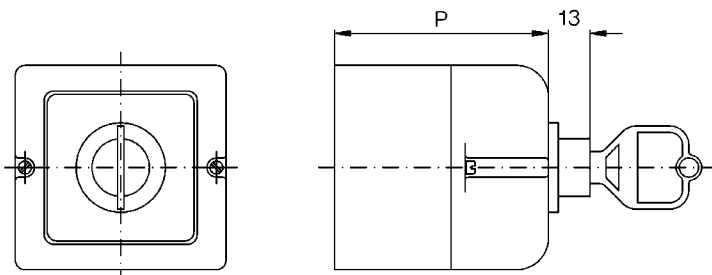
Flush mounting UP  
M10



| Type | Dimension P with .. cells |    |
|------|---------------------------|----|
| Type | 1                         | 2  |
| M10  | 47,5                      | 57 |

Plastic enclosed switches P, PF  
M10, N20, N33F, N40, N60

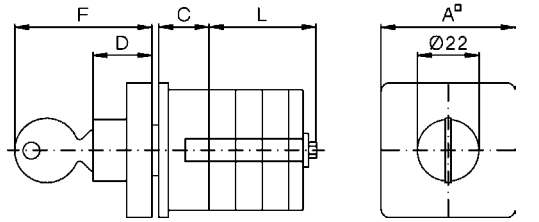
| Type | Dimension P with .. cells |     |     |     |
|------|---------------------------|-----|-----|-----|
|      | 1                         | 2   | 3   | 4   |
| M10  | 62                        | 71  | 81  | 90  |
| N20  | 66                        | 80  | 94  | 108 |
| N33F | 92                        | 110 | 110 | 128 |
| N40  | 92                        | 110 | -   | -   |
| N60  | 110                       | -   | -   | -   |



Further dimensions see page 79

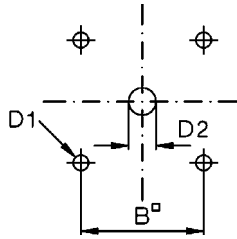
Key operated switches

Key operated switch SAK  
Panel mounting E M10H, M20

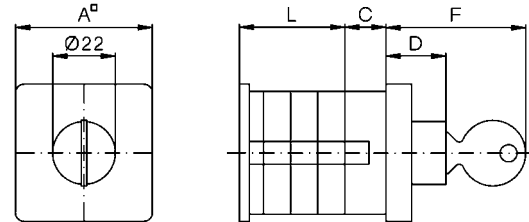


| Type      | A  | B  | C  | D  | D1 | D2   | F  |
|-----------|----|----|----|----|----|------|----|
| M10H, M20 | 48 | 36 | 25 | 21 | 5  | 22,5 | 49 |

Mounting holes

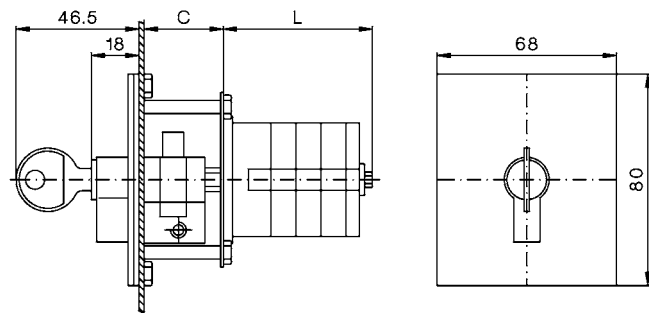


Key operated switch SAK  
Base mounting V M10H, M20

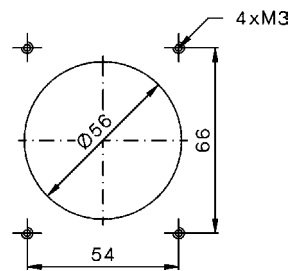


| Type      | A  | C  | D  | F  |
|-----------|----|----|----|----|
| M10H, M20 | 48 | 25 | 21 | 49 |

Key operated switch SASI  
Panel mounting E M10, M20



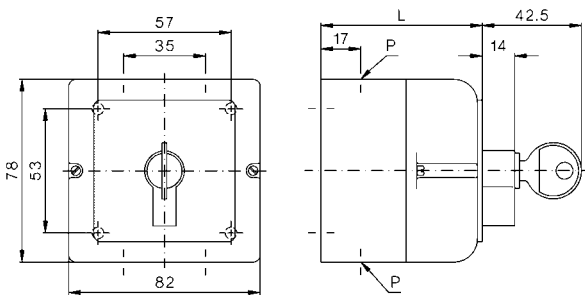
Mounting holes M10, M20



| Type | M10 | M20 |
|------|-----|-----|
| C    | 20  | 20  |

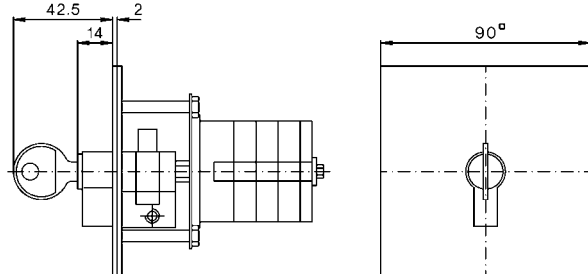
Dimension L see page 77

Key operated switch SASI  
Plastic enclosed P M10, M20

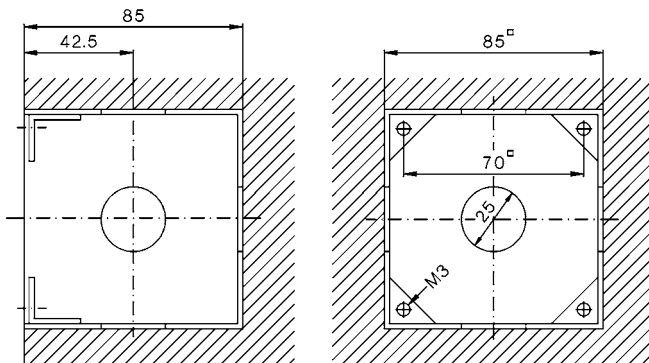


| Typ | Dimension P with .. cells |      |       |       | P     |
|-----|---------------------------|------|-------|-------|-------|
|     | 1                         | 2    | 3     | 4     |       |
| M10 | 67                        | 79,5 | 92    | 104,5 | 2xM20 |
| M20 | 79,5                      | 92   | 104,5 | 117   | 2xM20 |

Key operated switch SASI  
Flush mounting UP M10, M20

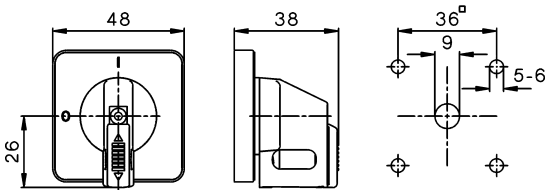


Flush mounting box UP  
N20

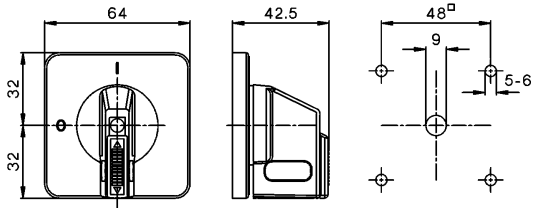


## Padlock devices

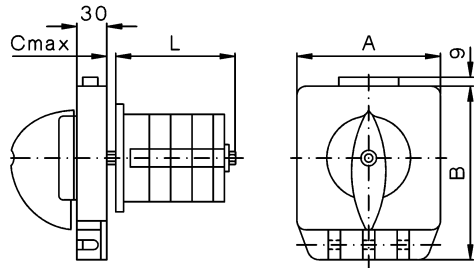
**Padlock device SV1** (max. 2 padlocks with stirrup  $\varnothing 6\text{mm}$ )  
M10H, M20  
**Mounting holes design E, V**



**Padlock device SV164**  
M10H - N33F  
**Mounting holes design E, V**



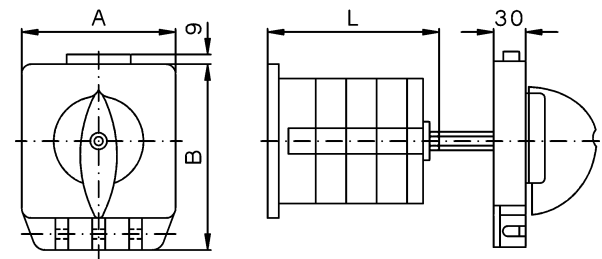
**Padlock device SV3** (max. 3 padlocks with stirrup  $\varnothing 8,5\text{mm}$ )  
**Panel mounting E**  
N20 - N200, L100 - L1200



Further dimensions see page 77

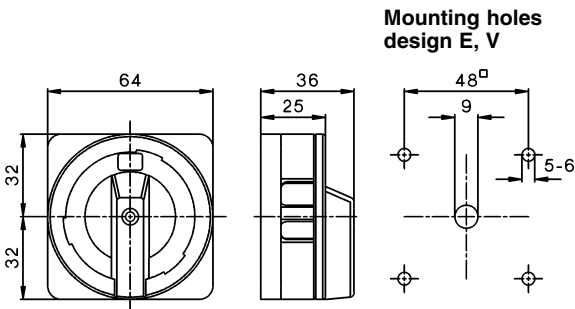
| Type                                | A   | B   | C |
|-------------------------------------|-----|-----|---|
| N20, N33F                           | 102 | 128 | 5 |
| N40, N60, N80, L100, L160           | 102 | 128 | 7 |
| N100, N200, L400, L600, L800, L1200 | 132 | 159 | 9 |

**Base mounting V**  
N20 - N200, L100 - L1200

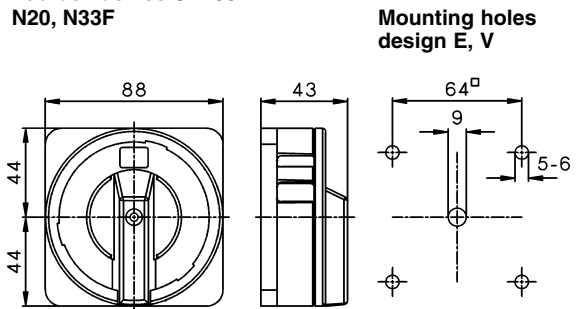


Further dimensions see page 78

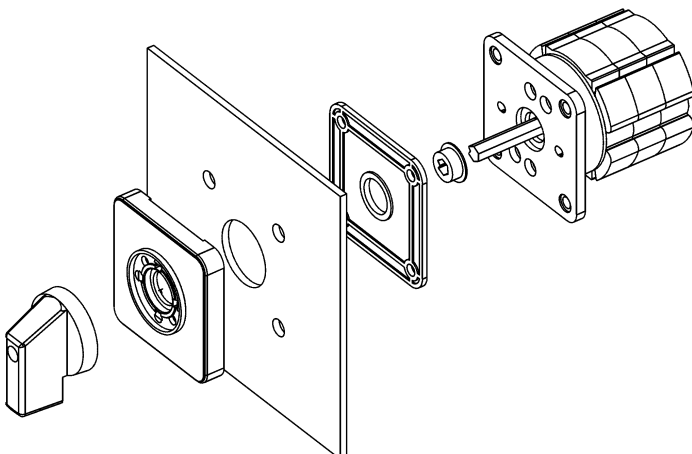
**Padlock device SV4** (max. 3 padlocks with stirrup  $\varnothing 6\text{mm}$ )  
M10H - N33F



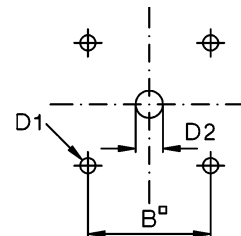
**Padlock device SV4** (max. 3 padlocks with stirrup  $\varnothing 6\text{mm}$ )  
N40 - N80, L100 - L160  
**Padlock device SV488**  
N20, N33F



**Front plate/switch shaft sealing FPWD**  
N20, N33F



**Mounting holes**



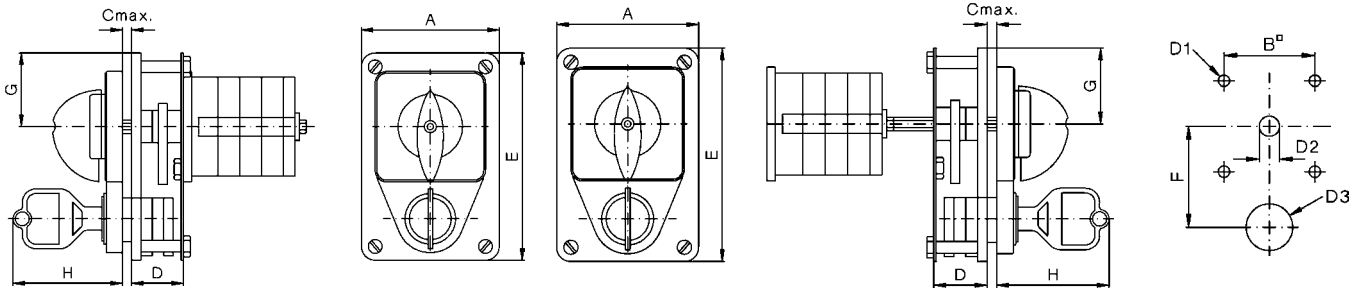
| Typ       | B  | D1 | D2 |
|-----------|----|----|----|
| N20, N33F | 48 | 5  | 17 |

## Interlocks

### Lock switch SZ, SZ2 Panel mounting E

### Base mounting V

### Mounting holes

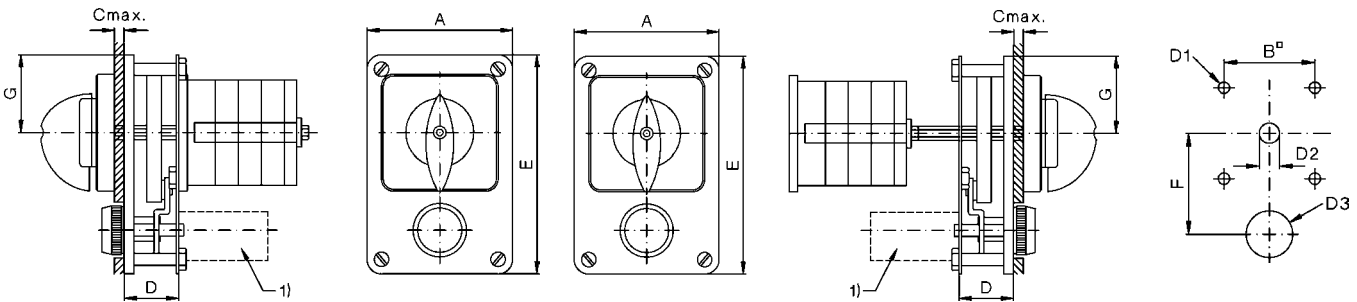


| Type                                | A   | B   | C | D    | D1 | D2 | D3   | E   | F  | G    | H    |
|-------------------------------------|-----|-----|---|------|----|----|------|-----|----|------|------|
| M10H, M20                           | 60  | 36  | 3 | 22,5 | 5  | 8  | 18,5 | 90  | 40 | 32   | 47,5 |
| N20, N33F                           | 60  | 36  | 3 | 22,5 | 5  | 12 | 18,5 | 90  | 45 | 32   | 47,5 |
| N40, N60, N80, L100, L160           | 90  | 68  | 4 | 24   | 6  | 12 | 18,5 | 142 | 61 | 61,5 | 48   |
| N100, N200, L400, L600, L800, L1200 | 140 | 110 | 4 | 27   | 7  | 15 | 18,5 | 180 | 83 | 90,5 | 49   |

### Push-button switch lock DV Switch interlock with electrical contact ET Panel mounting E

### Base mounting V

### Mounting holes

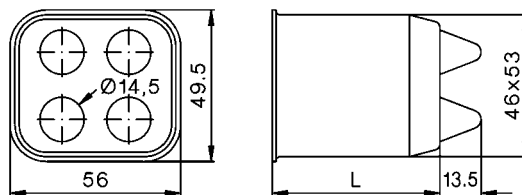


| Type                                | A   | B   | C | D    | D1 | D2 | D3 | E   | F  | G    |
|-------------------------------------|-----|-----|---|------|----|----|----|-----|----|------|
| M10H, M20                           | 60  | 36  | 3 | 22,5 | 5  | 8  | 26 | 90  | 40 | 32   |
| N20, N33F                           | 60  | 36  | 3 | 22,5 | 5  | 12 | 26 | 90  | 45 | 32   |
| N40, N60, N80, L100, L160           | 90  | 68  | 4 | 25   | 6  | 12 | 29 | 142 | 61 | 61,5 |
| N100, N200, L400, L600, L800, L1200 | 140 | 110 | 4 | 41   | 7  | 15 | 29 | 180 | 83 | 90,5 |

1) only at +ET

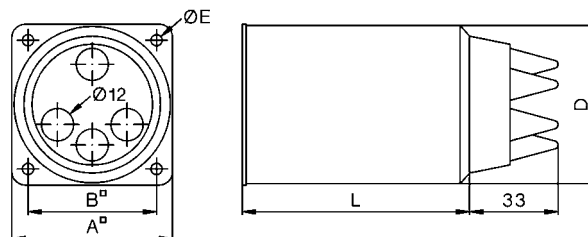
### Moisture proofing caps for panel switches FR M10H

| Type | Dimension L with .. cells |    |    |    |    |     |     |
|------|---------------------------|----|----|----|----|-----|-----|
|      | 1                         | 2  | 3  | 4  | 5  | 6   | 7   |
| M10H | 55                        | 55 | 75 | 75 | 88 | 106 | 106 |



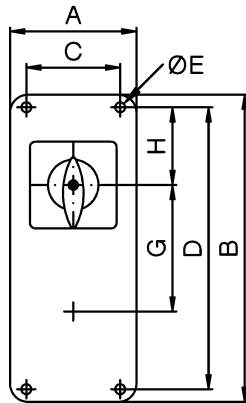
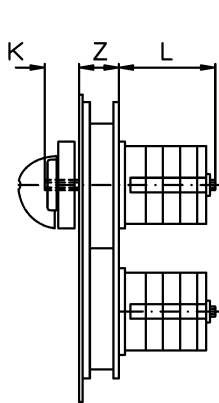
### Moisture proofing caps for panel switches FR N20, N40, N60

| Type | A  | B  | D  | E   | Dimension L with .. cells |    |     |     |    |
|------|----|----|----|-----|---------------------------|----|-----|-----|----|
|      |    |    |    |     | 1                         | 2  | 3   | 4   | 5  |
| N20  | 60 | 48 | 59 | 5,5 | 68                        | 68 | 68  | 91  | 91 |
| N40  | 87 | 68 | 83 | 5,5 | 82                        | 82 | 117 | 117 | -  |

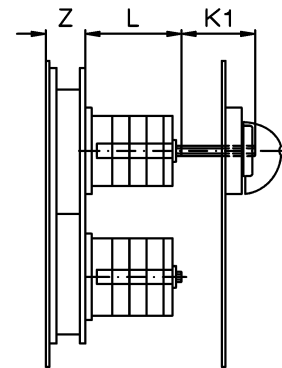
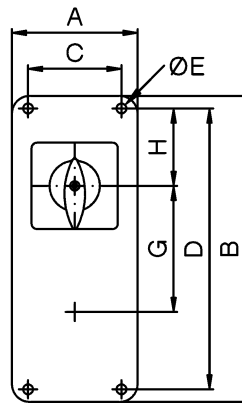


Interlocks

Geared switch with two columns ZK2  
Panel mounting E



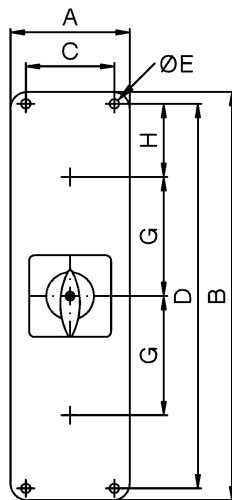
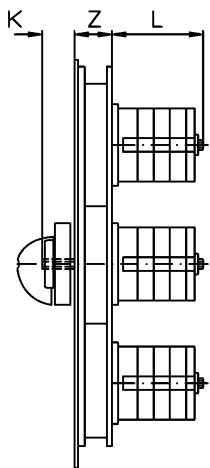
Base mounting V



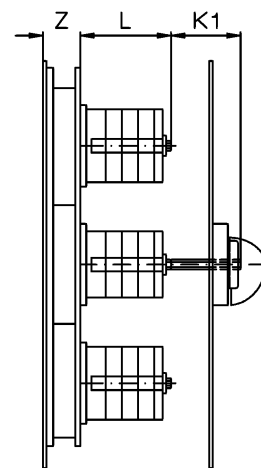
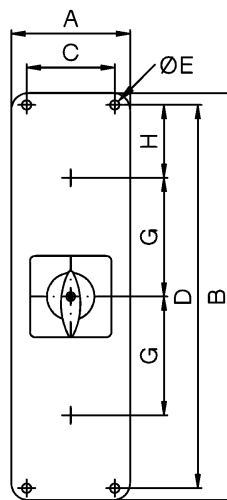
| Type                                | A   | B   | C   | D   | E   | G   | H  | Z  |
|-------------------------------------|-----|-----|-----|-----|-----|-----|----|----|
| M10H, M20                           | 70  | 170 | 52  | 156 | 5,5 | 70  | 43 | 22 |
| N20, N33F                           | 70  | 170 | 52  | 156 | 5,5 | 70  | 43 | 22 |
| N40, N60, N80, L100, L160           | 170 | 190 | 150 | 168 | 6,5 | 100 | 43 | 23 |
| N100, N200, L400, L600, L800, L1200 | 180 | 340 | 150 | 310 | 6,5 | 140 | 80 | 25 |

Further dimensions see pages 77 and 78

Geared switch with tree columns ZK3  
Panel mounting E



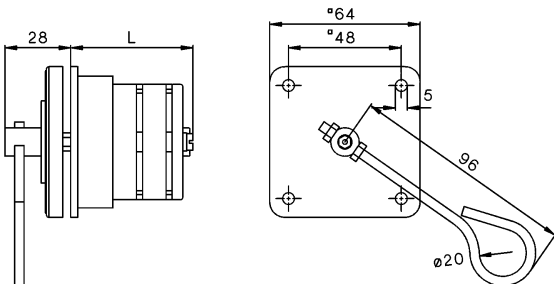
Base mounting V



| Type                                | A   | B   | C   | D   | E   | G   | H  | Z  |
|-------------------------------------|-----|-----|-----|-----|-----|-----|----|----|
| M10H, M20                           | 70  | 240 | 52  | 226 | 5,5 | 70  | 43 | 22 |
| N20, N33F                           | 70  | 240 | 52  | 226 | 5,5 | 70  | 43 | 22 |
| N40, N60, N80, L100, L160           | 170 | 290 | 150 | 269 | 6,5 | 100 | 43 | 23 |
| N100, N200, L400, L600, L800, L1200 | 180 | 490 | 150 | 460 | 6,5 | 140 | 80 | 25 |

Further dimensions see pages 77 and 78

Neon safety switch N20 E .. +FEU, N33F E .. +FEU



Further dimensions see pages 77

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Fax: 422 / 152 571

**Automatech Sp. z o.o.**  
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Fax: 22 / 723 06 06  
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www.automatech.it.pl

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Tel: 919/553 5501  
Fax: 919/553 5565  
sales@bnj-usa.com  
www.bnj-usa.com

### Singapore and Malaysia

+65

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**Mecomb Singapore Ltd.**  
#04-02 Sime Darby Centre  
896 Dunearn Road  
SGP - 589472 Singapore  
Tel: 469 88 33  
Fax: 467 19 05  
pyee@cyberway.com.sg

### South Africa

+27

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**Deebar**  
Mining & Ind. Supplies  
P.O. Box 40325  
RSA - 2022 Cleveland  
Tel: 021 / 873 43 32  
Fax: 021 / 825 69 84  
sales@deebar.co.za

**Electric Assemblies**  
Unit 2A Simplex Ind. Park  
Engine Road,  
RSA - 7441 Cape Town  
Tel: 021 / 52 3023  
Fax: 021 / 52 2704  
davecpt@mweb.co.za

### Taiwan

+886

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**Vinmajor Enterprise Co., Ltd.**  
8F-2, No. 306, Section 1  
Ta-Tung Road, Hsi-Chih  
Taipei Hsien, Taiwan  
R.O.C.  
Tel: 02 / 2643 6183  
Fax: 02 / 8691 6288  
vin.major@msa.hinet.net

### USA

+1

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**B&J USA Inc.**  
120-101 North Tech Drive  
Post Office Box 877  
Clayton, N.C. 27528  
Tel: 919/553 5501  
Fax: 919/553 5565  
sales@bnj-usa.com  
www.bnj-usa.com

### Zimbabwe

+263

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**Star Delta Electrix**  
Cnr 11th Ave and Fife Str.  
P.O. Box 3592  
ZW - Bulawayo  
Tel: 9 / 715 24  
Fax: 9 / 776 18  
stardb@mweb.co.zw

**Star Delta Electrix**  
Graniteside Way, Harare  
P.O. Box 2753  
ZW - Harare  
Tel: 4 / 754 792/8-28  
Fax: 4 / 754 790  
stardh@mweb.co.zw



**Order sheet** D399E

|                    |       |
|--------------------|-------|
| <b>Switch Type</b> |       |
| M4H                |       |
| M10                |       |
| M10H               |       |
| M20                |       |
| N20                |       |
| N33F               | L100  |
| N40                | L160  |
| N60                | L400  |
| N80                | L600  |
| N100               | L800  |
| N200               | L1200 |

|                   |     |
|-------------------|-----|
| <b>Design</b>     |     |
| Panel mounting    | E   |
| Central fixing    | Z   |
|                   | ZO  |
| Base mounting     | V   |
| Snap-on mount.    | SM  |
|                   | SMA |
| Plastic enclosure | P   |
| IP54              | PF  |
| Cast enclosure    | G   |
| IP54              | GF  |

|                        |  |
|------------------------|--|
| <b>Optional extras</b> |  |
|                        |  |
|                        |  |
|                        |  |
|                        |  |
| <b>Circular switch</b> |  |
| <b>Key removeable</b>  |  |

**Cam switches with special switching program**  
**Benedict GmbH**

A-1220, Vienna, Lieblgasse 7  
Tel.: 251 51-0 Fax: 251 51-88

**Customer:**

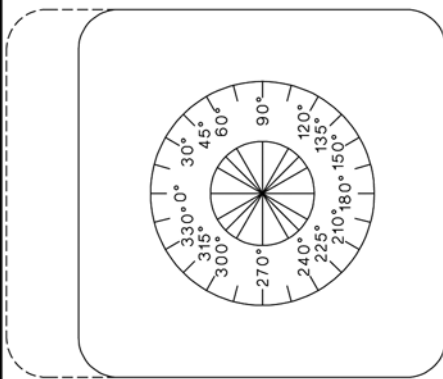
**Explanations:**

~~XXXX~~  
**Contact closed over several positions**  
**Spring return from pos.**

**Handles**

|                  |                            |                      |                     |
|------------------|----------------------------|----------------------|---------------------|
| Instrument knob  | <b>G</b> (standard)        | <b>Handle colour</b> | black (standard)    |
| Twist knob       | <b>R</b> (standard N40 ->) |                      | red                 |
| Toggle knob      | <b>K</b> (standard SMA)    |                      | grey (standard SMA) |
| Ball type handle | <b>B</b>                   |                      | white               |
| Hand wheel       | <b>HR</b>                  |                      | cream-coloured      |
|                  |                            |                      | yellow              |
|                  |                            |                      | blue                |

Connect.



Terminals

Terminals

Connect.

Marking for switch positions

Degree

