EAO – Your Expert Partner for
**Human Machine Interfaces**

# EAO Product Information

Series 61

eao

61-8615.11
61-8430.22/25

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## Product Information

**General notes**
The indicators, illuminated pushbuttons, selector-, keylock switches or emergency-stop switches with spray-water protection at the front (IP 65) are modular and consist of an actuator and switching element.
In addition to the standard switching elements (gold-plated silver contact or silver contact with universal soldering terminals), forced-opening, slow-make switching elements with gold or silver contacts with soldering terminals are available. EAO can also offer screw terminals on its slow make elements. Switching elements with soldering terminals can also be fitted with flat receptacle 2.8 x 0.5 mm.
The front dimensions of the units in this series are 24 x 24 mm, 24 mm dia., 18 x 24 mm, 18 x 18 mm or 18 mm dia. For flush mounting the dimensions 25 mm dia., 24 x 30 mm or 24 x 24 mm can be supplied.

**Mounting**
All switch actuators are mounted from the front by pushing them through the mounting hole in the front panel. They are then fixed from the back with a fixing nut and the mounting tool Typ-Nr. 01-907. Max. tightening torque 50 Ncm.
The preassembled switching element with the connecting wires in a single plane can be clipped on afterwards. A range of assembly and service tools are available.
PCB mounting adaptors are available for universal solder terminal switching elements.
All raised profile actuators are provided with an anti-twist device.

**Lenses**
The flat or concave lenses are available in various colours and a transparent or translucent version. The lens surface is non-reflecting (mat). Round lenses for devices 24 mm dia. or 25 mm dia. can also be supplied in aluminium.
Anodized aluminium parts can have visible variations due production-technical reasons.

**Marking**
For further information about engraving, hot stamping and film inserts see part Marking.

**Illumination**
T1 $^{3}/_{4}$ midget groove LED's in red, blue, green, yellow and white or filament lamps give superb illumination and can be supplied in 6, 12, 24, or 48 V.
Luminosity and wave length scattering caused by the technology used in the LED manufacturing processes may lead to visual differences in our products.

**Position indication**
The status of a maintained action switch can be determinded by the position of the lens.

**Keylock switch**
Standard lock (Index D). Standard lock number is 311. If the lock number is not specified, we will supply standard number 311.
An additional 134 special locks (Index X) are available on request.
Master keys for lock numbers 311 ... 445 may be ordered by quoting Typ-Nr. 31-989.300. Two keys are supplied with each keylock switch.
Spare keys (Index D) for standard locks may be ordered by quoting Typ-Nr. 31-989.xxx (please state the lock number).

**Emergency-stop pushbutton, foolproof with key to release**
KABA safety lock. Standard lock number is 1001. Other lock numbers are available on request. Spare keys for KABA safety lock may be ordered under Typ-Nr. 14-987.xxx (please state the lock number).

**Specimen order**

Indicator :

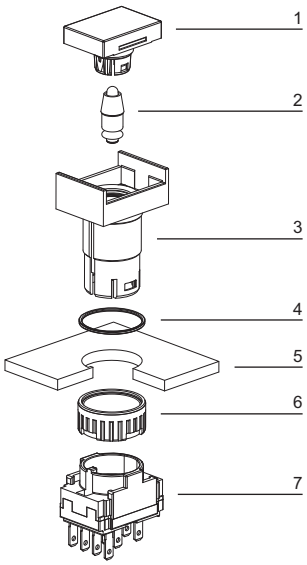
- Indicator complete, flush mounting, 24 x 24 mm — 61-0000.02

Essential accessories :

- Lens plastic colourless transparent flush, 24 x 24 mm — 61-9671.7
- Single-LED T1 $^{3}/_{4}$ MG, 24 VAC/DC, white diffuse — 10-2J12.1069
- Front bezel set for Indicator, flush mounting, plastic black, 24 x 24 mm — 61-9930.0

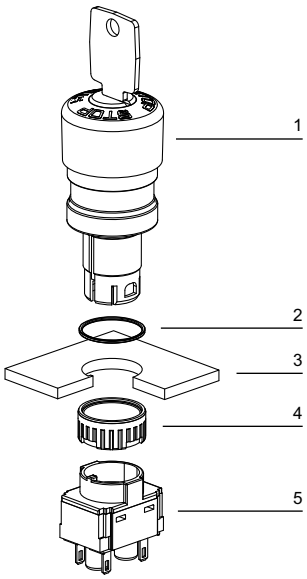
*We reserve the right to modify technical data*
*All dimensions in mm*

## Pushbutton illuminative, raised mounting



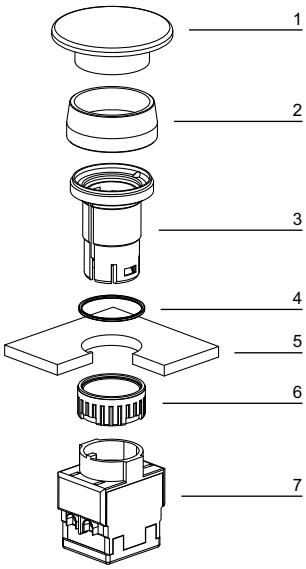

1 Lens
2 LED
3 Actuator housing
4 Sealing
5 Front plate
6 Fixing nut
7 Switching element

## Emergency-stop pushbutton



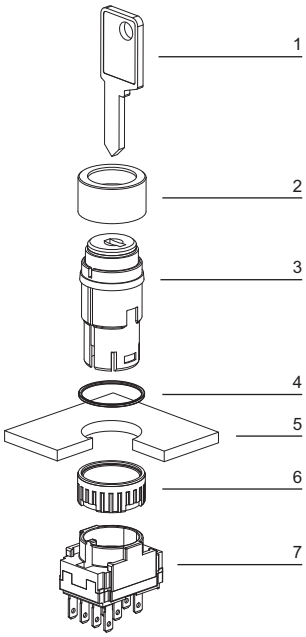

1 Emergency-stop pushbutton actuator
2 Sealing
3 Front plate
4 Fixing nut
5 Switching element

## Mushroom-head pushbutton, raised mounting



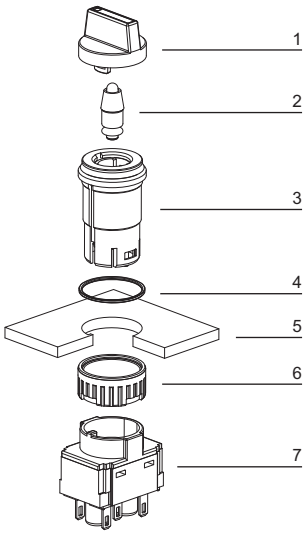

1 Mushroom-head cap
2 Front ring
3 Actuator housing
4 Sealing
5 Front plate
6 Fixing nut
7 Switching element

## Keylock switch, raised mounting



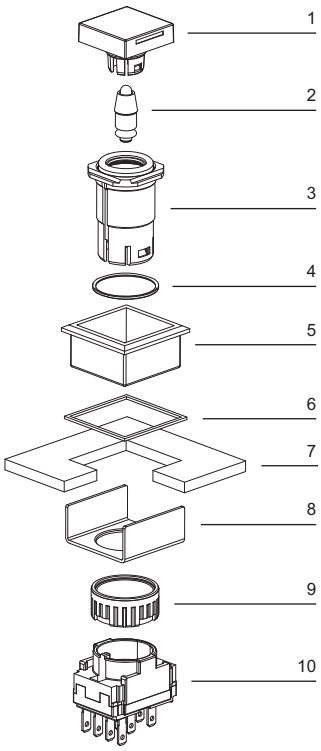

1 Key
2 Keylock front bezel
3 Keylock switch actuator
4 Sealing
5 Front plate
6 Fixing nut
7 Switching element

## Selector switch illuminative, raised mounting



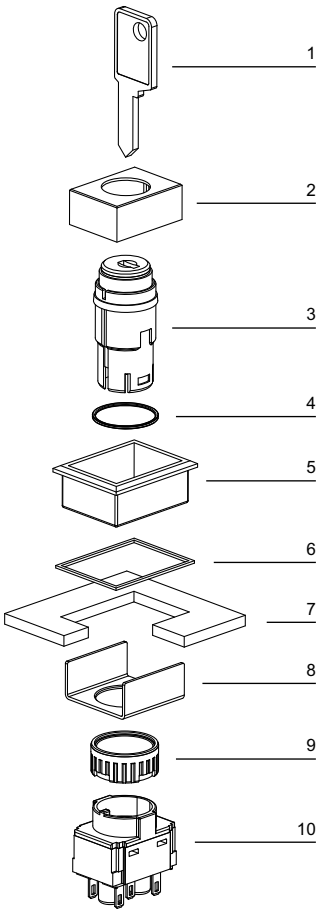

1 Lever
2 LED
3 Selector switch actuator
4 Sealing
5 Front plate
6 Fixing nut
7 Switching element

## Pushbutton illuminative, flush mounting



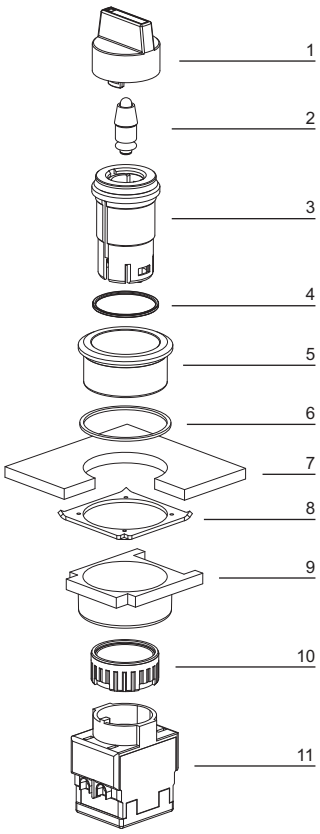

1 Lens
2 LED
3 Actuator housing
4 Sealing
5 Front bezel
6 Sealing
7 Front panel
8 Fixing bracket
9 Fixing nut
10 Switching element

## Keylock switch, flush mounting




1 Key
2 Keylock front bezel
3 Keylock switch actuator
4 Sealing
5 Front bezel
6 Sealing
7 Front plate
8 Fixing bracket
9 Fixing nut
10 Switching element

## Selector switch illuminative, flush mounting

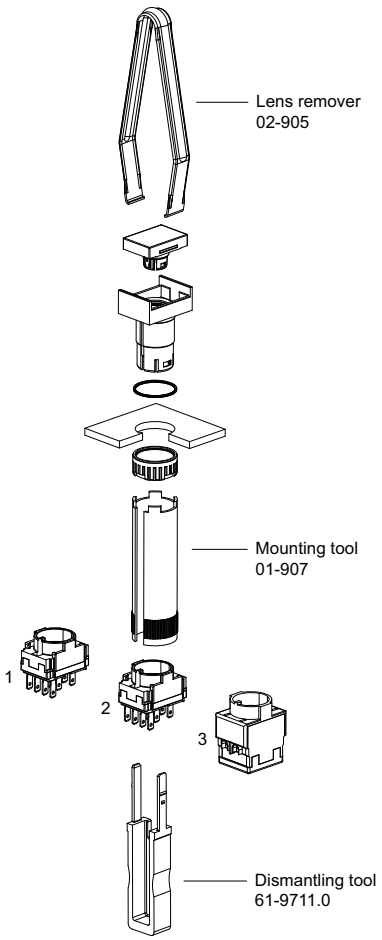



1 Lever
2 LED
3 Selector switch actuator
4 Sealing
5 Front bezel
6 Sealing
7 Front plate
8 Anti-twist ring
9 Thrust piece
10 Fixing nut
11 Switching element

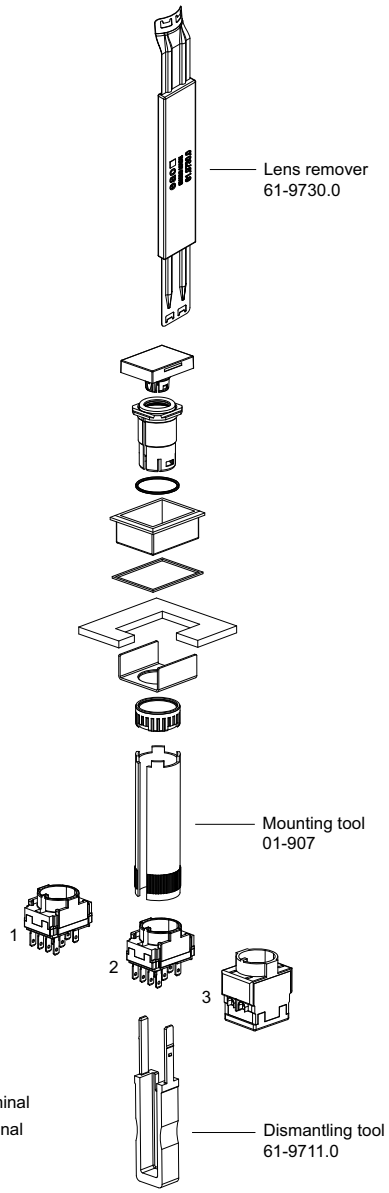
## Tool set

Lens remover, Mounting tool, Dismantling tool with Lamp- and LED remover are part of the Tool set K61-999.100

raised mounting



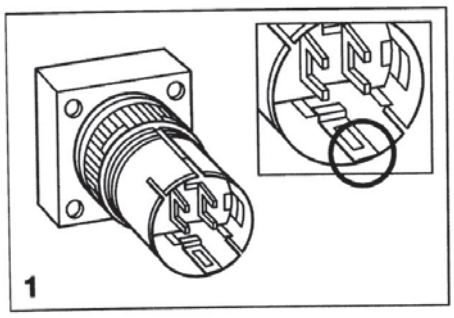

flush mounting



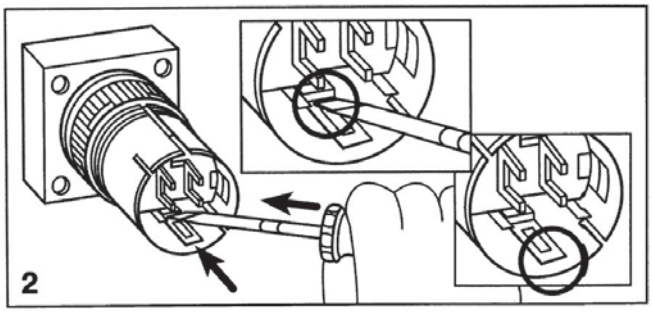

1 Snap-action switching element with soldering terminal
2 Slow-make switching element with soldering terminal
3 Slow-make switching element with screw terminal

## Conversion from momentary to maintained action

Conversion is not reversible !




1 Momentary action




2 Maintained action

push carefully the metallic part with a screwdriver till the end of its travel.

## Indicator complete

**Essential Accessories:**

- Front ring, raised mounting page 31
- Lens plastic, raised mounting page 25
- Single-LED page 39

| | Front protection | Terminals | ⍞ 24 x 24 mm Typ-Nr. | ⍞ 18 x 18 mm Typ-Nr. | ⍈ 18 x 24 mm Typ-Nr. | Ø 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator complete** Actuator housing black | IP 65 | S1 | **61-0050.02** | **61-0020.02** | **61-0030.02** | **61-0040.02** | **61-0010.02** | 3 | 3 | 4 | 0.005 |

Front ring required only for actuator Ø 24 mm
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Indicator actuator

**Essential Accessories:**

- Front ring, raised mounting page 31
- Lamp element page 33
- Lens plastic, raised mounting page 25
- Single-LED page 39

| | Front protection | ⍞ 24 x 24 mm Typ-Nr. | ⍞ 18 x 18 mm Typ-Nr. | ⍈ 18 x 24 mm Typ-Nr. | Ø 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator actuator** Actuator housing black | IP 65 | **61-0059.0** | **61-0029.0** | **61-0039.0** | **61-0049.0** | **61-0019.0** | 3 | 14 | 4 | 0.005 |

Front ring required only for actuator Ø 24 mm
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Illuminated pushbutton actuator

**Essential Accessories:**

- Front ring, raised mounting page 31
- Lens plastic, raised mounting page 25
- Single-LED page 39
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35

| | Front protection | Switching action | ⍞ 24 x 24 mm Typ-Nr. | ⍞ 18 x 18 mm Typ-Nr. | ⍈ 18 x 24 mm Typ-Nr. | Ø 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Illuminated pushbutton actuator** Actuator housing black | IP 65 | MA | **61-1250.0** | **61-1220.0** | **61-1230.0** | **61-1240.0** | **61-1210.0** | 3 | 16 | 6 | 0.005 |
| | | M | **61-1150.0** | **61-1120.0** | **61-1130.0** | **61-1140.0** | **61-1110.0** | 3 | 16 | 13 | 0.005 |
| | | M-MA | **61-1350.0** | **61-1320.0** | **61-1330.0** | | **61-1310.0** | 3 | 16 | 13 | 0.005 |

Front ring required only for actuator Ø 24 mm
M-MA convertible from Momentary to Maintained action
Switching action: MA = Maintained action, M = Momentary action, M-MA = Momentary action-Maintained action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5

Application as per DIN EN ISO 13850 and EN 60204-1

**Essential Accessories:**

Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36

| | Front protection | Switching action | Mushroom had cap | Marking | Ø 27 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|
| **Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5**<br>Position indication ring black<br>Key to unlock clockwise<br>Standard lock 1001 | IP 65 | MA | Plastic red | Stop | **61-5441.4/K** | 1 | 19 | 5 | 0.033 |
| Position indication ring black<br>Twist to unlock clockwise | IP 65 | MA | Plastic red | Arrows | **61-3440.4/1** | 1 | 19 | 5 | 0.020 |
| | | | | Stop + Arrows | **61-3440.4/2** | 1 | 19 | 5 | 0.020 |
| Position indication ring black<br>Twist to unlock clockwise<br>with adaptor for mosaic | IP 65 | MA | Plastic red | Arrows | **61-3440.4/1S** | 1 | 19 | 5 | 0.021 |
| Position indication ring black<br>Twist to unlock clockwise<br>with metal Fixing nut | IP 65 | MA | Plastic red | Arrows | **61-3440.4/D** | 1 | 19 | 5 | 0.020 |
| Position indication ring green<br>Twist to unlock clockwise | IP 65 | MA | Plastic red | Arrows | **61-3440.4/5** | 1 | 19 | 5 | 0.020 |

Other lock numbers on request
Switching action: MA = Maintained action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Stop pushbutton actuator, foolproof

**Essential Accessories:**

- Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36
- Switching element for Stop pushbutton, foolproof page 37

| | Front protection | Switching action | Mushroom had cap | Marking | Ø 27 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|
| **Stop pushbutton actuator, foolproof**<br>Position indication ring black<br>Key to unlock clockwise<br>Standard lock 1001 | IP 65 | MA | Plastic black | without | **61-5441.0/KA** | 1 | 19 | 5 | 0.033 |
| Position indication ring black<br>Twist to unlock clockwise | IP 65 | MA | Plastic grey | Arrows | **61-3440.4/8** | 1 | 19 | 5 | 0.020 |

Other lock numbers on request
Switching action: MA = Maintained action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Mushroom-head pushbutton actuator

**Essential Accessories:**

- Front ring, raised mounting page 31
- Mushroom-head cap page 27
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35

| | Front protection | Switching action | Ø 32 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|
| **Mushroom-head pushbutton actuator**<br>Actuator housing black | IP 65 | MA | **61-1240.0** | 1 | 15 | 2 | 0.005 |
| | | M | **61-1140.0** | 1 | 15 | 3 | 0.005 |

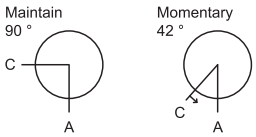
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Keylock switch actuator 2 positions

if mounted with anti-twist device, the lug is on the left side
Actuators usable for front dimensions: ⍞ 24 x 24 mm | ⍞ 18 x 18 mm | ⍞ 18 x 24 mm | 24 mm dia. | 18 mm dia.

**Essential Accessories:**

- Anti-twist ring page 41
- Keylock front bezel for keylock switch, raised mounting page 27
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35




| | Front protection | Switching action | Key remove | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|
| **Keylock switch actuator 2 positions**<br>Position A: Basic position<br>Position C: Maintained action<br>Standard lock 311 | IP 65 | MA | A | **61-2201.0/D** | 3 | 17 | 17 | 0.065 |
| | | | C | **61-2203.0/D** | 3 | 17 | 17 | 0.065 |
| | | | C + A | **61-2205.0/D** | 3 | 17 | 17 | 0.065 |
| Position A: Basic position<br>Position C: Momentary action<br>Standard lock 311 | IP 65 | M | A | **61-2101.0/D** | 3 | 17 | 16 | 0.065 |

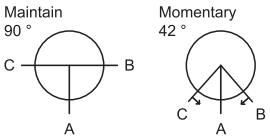
Other lock numbers on request
Anti-twist ring (not needed by using anti-twist device)
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Keylock switch actuator 3 positions

if mounted with anti-twist device, the lug is on the left side
Actuators usable for front dimensions: ⍞ 24 x 24 mm | ⍞ 18 x 18 mm | ⍞ 18 x 24 mm | 24 mm dia. | 18 mm dia.

**Essential Accessories:**

- Anti-twist ring page 41
- Keylock front bezel for keylock switch, raised mounting page 27
- Switching element for Keylock- and Selector switch 3 positions page 36




| | Front protection | Switching action | Key remove | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|
| **Keylock switch actuator 3 positions**<br>Pos. C: Maintained action<br>Pos. A: Basic position<br>Pos. B: Maintained action<br>Standard lock 311 | IP 65 | MA-0-MA | A | **61-2601.0/D** | 3 | 17 | 19 | 0.065 |
| | | | A + B | **61-2604.0/D** | 3 | 17 | 19 | 0.065 |
| | | | B | **61-2602.0/D** | 3 | 17 | 19 | 0.065 |
| | | | C | **61-2603.0/D** | 3 | 17 | 19 | 0.065 |
| | | | C + A | **61-2605.0/D** | 3 | 17 | 19 | 0.065 |
| | | | C + A + B | **61-2607.0/D** | 3 | 17 | 19 | 0.065 |
| | | | C + B | **61-2606.0/D** | 3 | 17 | 19 | 0.065 |
| Pos. C: Maintained action<br>Pos. A: Basic position<br>Pos. B: Momentary action<br>Standard lock 311 | IP 65 | MA-0-M | A | **61-2701.0/D** | 3 | 17 | 18 | 0.065 |
| | | | C | **61-2703.0/D** | 3 | 17 | 18 | 0.065 |
| | | | C + A | **61-2705.0/D** | 3 | 17 | 18 | 0.065 |
| Pos. C: Momentary action<br>Pos. A: Basic position<br>Pos. B: Maintained action<br>Standard lock 311 | IP 65 | M-0-MA | A + B | **61-2804.0/D** | 3 | 17 | 15 | 0.065 |
| | | | B | **61-2802.0/D** | 3 | 17 | 15 | 0.065 |
| Pos. C: Momentary action<br>Pos. A: Basic position<br>Pos. B: Maintained action<br>Standard lock 311 | IP 65 | M-0-MA | A | **61-2801.0/D** | 3 | 17 | 15 | 0.065 |
| Pos. C: Momentary action<br>Pos. A: Basic position<br>Pos. B: Momentary action<br>Standard lock 311 | IP 65 | M-0-M | A | **61-2501.0/D** | 3 | 17 | 14 | 0.065 |

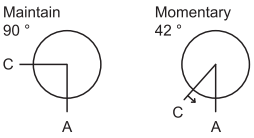
Anti-twist ring (not needed by using anti-twist device)
Other lock numbers on request
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Selector switch actuator 2 positions

illuminative
if mounted with anti-twist device, the lug is on the left side
Actuators usable for front dimensions: ⍁ 26 x 26 mm | ⍁ 24 x 24 mm | 18 mm dia.

**Essential Accessories:**

- Anti-twist ring page 41
- Front bezel square for selector switch, raised mounting page 29
- Lever, raised mounting page 28
- Single-LED page 39
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35




| | Front protection | Switching action | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | [kg] |
|---|---|---|---|---|---|---|---|
| **Selector switch actuator 2 positions**<br>Position C: Maintained action<br>Position A: Basic position | IP 65 | MA | **61-4210.0** | 3 | 18 | 8 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position | IP 65 | M | **61-4110.0** | 3 | 18 | 7 | 0.006 |

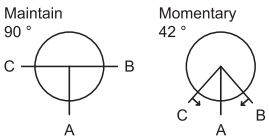
Anti-twist ring (not needed by using anti-twist device)
Frontbezel only necessarily for front dimensions 26 x 26 mm and 24 x 24 mm
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Selector switch actuator 3 positions

illuminative
if mounted with anti-twist device, the lug is on the left side
Actuators usable for front dimensions: ⍁ 26 x 26 mm | ⍁ 24 x 24 mm | 18 mm dia.

**Essential Accessories:**

- Anti-twist ring page 41
- Front bezel square for selector switch, raised mounting page 29
- Lever, raised mounting page 28
- Single-LED page 39
- Switching element for Keylock- and Selector switch 3 positions page 36




| | Front protection | Switching action | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|
| **Selector switch actuator 3 positions**<br>Position C: Maintained action<br>Position A: Basic position<br>Position B: Maintained action | IP 65 | MA-0-MA | **61-4610.0** | 3 | 18 | 12 | 0.006 |
| Position C: Maintained action<br>Position A: Basic position<br>Position B: Momentary action | IP 65 | MA-0-M | **61-4710.0** | 3 | 18 | 11 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position<br>Position B: Maintained action | IP 65 | M-0-MA | **61-4810.0** | 3 | 18 | 10 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position<br>Position B: Momentary action | IP 65 | M-0-M | **61-4510.0** | 3 | 18 | 9 | 0.006 |

Anti-twist ring (not needed by using anti-twist device)
Frontbezel only necessarily for front dimensions 26 x 26 mm and 24 x 24 mm
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Indicator complete, flush mounting

Actuators usable for front dimensions: ⍈ 24 x 24 mm | ⍇ 24 x 30 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Indicators and Illuminated pushbutton, flush mounting page 29
- Lens plastic, flush mounting page 25
- Single-LED page 39

| | Front protection | Terminals | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | ⍁ |
|---|---|---|---|---|---|---|---|
| **Indicator complete, flush mounting** | IP 65 | S1 | **61-0000.02** | 4 | 4 | 4 | 0.006 |

Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Indicator actuator, flush mounting

Actuators usable for front dimensions: ⍈ 24 x 24 mm | ⍇ 24 x 30 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Indicators and Illuminated pushbutton, flush mounting page 29
- Lamp element page 33
- Lens plastic, flush mounting page 25
- Single-LED page 39

| | Front protection | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | ⍁ |
|---|---|---|---|---|---|---|
| **Indicator actuator, flush mounting** | IP 65 | **61-0009.0** | 4 | 21 | 4 | 0.005 |

Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Illuminated pushbutton actuator, flush mounting

Actuators usable for front dimensions: ⍁ 24 x 24 mm | ⍁ 24 x 30 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Indicators and Illuminated pushbutton, flush mounting page 29
- Lens plastic, flush mounting page 25
- Single-LED page 39
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35

| | Front protection | Switching action | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|
| **Illuminated pushbutton actuator, flush mounting** | IP 65 | MA | **61-1200.0** | 4 | 20 | 2 | 0.005 |
| | | M | **61-1100.0** | 4 | 20 | 3 | 0.005 |
| | | M-MA | **61-1300.0** | 4 | 20 | 3 | 0.005 |

M-MA convertible from Momentary to Maintained action
Switching action: MA = Maintained action, M = Momentary action, M-MA = Momentary action-Maintained action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Mushroom-head pushbutton actuator, flush mounting

**Essential Accessories:**

- Front bezel set for Mushroom-head pushbutton, flush mounting page 30
- Mushroom-head cap page 27
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35

| | Front protection | Switching action | Ø 32 mm Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|
| **Mushroom-head pushbutton actuator, flush mounting** | IP 65 | MA | **61-1200.0** | 2 | 24 | 2 | 0.005 |
| | | M | **61-1100.0** | 2 | 24 | 3 | 0.005 |
| | | M-MA | **61-1300.0** | 2 | 24 | 3 | 0.005 |

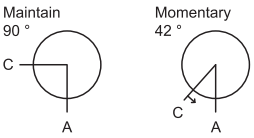
M-MA convertible from Momentary to Maintained action
Switching action: MA = Maintained action, M = Momentary action, M-MA = Momentary action-Maintained action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Keylock switch actuator 2 positions, flush mounting

Actuators usable for front dimensions: ⍞ 24 x 24 mm | ⍈ 24 x 30 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Keylock switch, flush mounting page 30
- Keylock front bezel for keylock switch, flush mounting page 27
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35




| | Front protection | Switching action | Key remove | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|
| **Keylock switch actuator 2 positions, flush mounting** | IP 65 | MA | A | **61-2201.0/D** | 4 | 22 | 17 | 0.065 |
| Position A: Basic position | | | C | **61-2203.0/D** | 4 | 22 | 17 | 0.065 |
| Position C: Maintained action | | | C + A | **61-2205.0/D** | 4 | 22 | 17 | 0.065 |
| Standard lock 311 | | | | | | | | |
| Position A: Basic position | IP 65 | M | A | **61-2101.0/D** | 4 | 22 | 16 | 0.065 |
| Position C: Momentary action | | | | | | | | |
| Standard lock 311 | | | | | | | | |

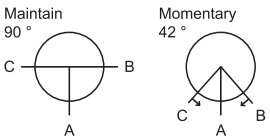
Other lock numbers on request
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Keylock switch actuator 3 positions, flush mounting

Actuators usable for front dimensions: ⍞ 24 x 24 mm | ⍞ 24 x 30 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Keylock switch, flush mounting page 30
- Keylock front bezel for keylock switch, flush mounting page 27
- Switching element for Keylock- and Selector switch 3 positions page 36




| | Front protection | Switching action | Key remove | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|
| **Keylock switch actuator 3 positions, flush mounting** | IP 65 | MA-0-MA | A | **61-2601.0/D** | 4 | 22 | 19 | 0.065 |
| Pos. C: Maintained action | | | A + B | **61-2604.0/D** | 4 | 22 | 19 | 0.065 |
| Pos. A: Basic position | | | B | **61-2602.0/D** | 4 | 22 | 19 | 0.065 |
| Pos. B: Maintained action | | | C | **61-2603.0/D** | 4 | 22 | 19 | 0.065 |
| Standard lock 311 | | | C + A | **61-2605.0/D** | 4 | 22 | 19 | 0.065 |
| | | | C + A + B | **61-2607.0/D** | 4 | 22 | 19 | 0.065 |
| | | | C + B | **61-2606.0/D** | 4 | 22 | 19 | 0.065 |
| Pos. C: Maintained action | IP 65 | MA-0-M | A | **61-2701.0/D** | 4 | 22 | 18 | 0.065 |
| Pos. A: Basic position | | | C | **61-2703.0/D** | 4 | 22 | 18 | 0.065 |
| Pos. B: Momentary action | | | C + A | **61-2705.0/D** | 4 | 22 | 18 | 0.065 |
| Standard lock 311 | | | | | | | | |
| Pos. C: Momentary action | IP 65 | M-0-MA | A + B | **61-2804.0/D** | 4 | 22 | 15 | 0.065 |
| Pos. A: Basic position | | | B | **61-2802.0/D** | 4 | 22 | 15 | 0.065 |
| Pos. B: Maintained action | | | | | | | | |
| Standard lock 311 | | | | | | | | |
| Pos. C: Momentary action | IP 65 | M-0-MA | A | **61-2801.0/D** | 4 | 22 | 15 | 0.065 |
| Pos. A: Basic position | | | | | | | | |
| Pos. B: Maintained action | | | | | | | | |
| Standard lock 311 | | | | | | | | |
| Pos. C: Momentary action | IP 65 | M-0-M | A | **61-2501.0/D** | 4 | 22 | 14 | 0.065 |
| Pos. A: Basic position | | | | | | | | |
| Pos. B: Momentary action | | | | | | | | |
| Standard lock 311 | | | | | | | | |

Other lock numbers on request
Switching action: MA = Maintained action, M = Momentary action
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

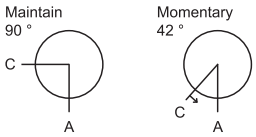
## Selector switch actuator 2 positions, flush mounting

illuminative

Actuators usable for front dimensions: ⍞ 24 x 24 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Selector switch, flush mounting page 31
- Lever, flush mounting page 28
- Single-LED page 39
- Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35




| | Front protection | Switching action | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | ⍞ |
|---|---|---|---|---|---|---|---|
| **Selector switch actuator 2 positions, flush mounting**<br>Position C: Maintained action<br>Position A: Basic position | IP 65 | MA | **61-4210.0** | 4 | 23 | 8 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position | IP 65 | M | **61-4110.0** | 4 | 23 | 7 | 0.006 |

Switching action: MA = Maintained action, M = Momentary action

Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

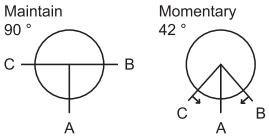
## Selector switch actuator 3 positions, flush mounting

illuminative

Actuators usable for front dimensions: ⍁ 24 x 24 mm | 25 mm dia.

**Essential Accessories:**

- Front bezel set for Selector switch, flush mounting page 31
- Lever, flush mounting page 28
- Single-LED page 39
- Switching element for Keylock- and Selector switch 3 positions page 36




| | Front protection | Switching action | Typ-Nr. | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|
| **Selector switch actuator 3 positions, flush mounting**<br>Position C: Maintained action<br>Position A: Basic position<br>Position B: Maintained action | IP 65 | MA-0-MA | **61-4610.0** | 4 | 23 | 12 | 0.006 |
| Position C: Maintained action<br>Position A: Basic position<br>Position B: Momentary action | IP 65 | MA-0-M | **61-4710.0** | 4 | 23 | 11 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position<br>Position B: Maintained action | IP 65 | M-0-MA | **61-4810.0** | 4 | 23 | 10 | 0.006 |
| Position C: Momentary action<br>Position A: Basic position<br>Position B: Momentary action | IP 65 | M-0-M | **61-4510.0** | 4 | 23 | 9 | 0.006 |

Switching action: MA = Maintained action, M = Momentary action

Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Potentiometer, flush mounting

| | Front protection | Front bezel | Terminals | ⍁ 24 x 24 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Component layout | Mounting dimensions | Technical drawing | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **Potentiometer, flush mounting**<br>10 k Ω (linear), 1 W, mechanical travel 300 ° | IP 65 | Plastic black | FR | **61-4970.13** | | 40 | 4 | 9 | 1 | 0.023 |
| | | | | | **61-4970.10** | 40 | 4 | 9 | 1 | 0.016 |

Cable length 300 mm

Terminals: FR = Flat ribbon cable

Component layout from page 53, Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

## Front

### Lens plastic, raised mounting

mat

| | Lens | ⍞ 24 x 24 mm Typ-Nr. | ⍞ 18 x 18 mm Typ-Nr. | ⍈ 18 x 24 mm Typ-Nr. | Ø 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | kg |
|---|---|---|---|---|---|---|---|
| **Lens plastic, raised mounting** flush, illuminative | blue transparent | **61-9351.6** | **61-9321.6** | **61-9331.6** | **61-9642.6** | **61-9311.6** | 0.002 |
| | colourless transparent | **61-9351.7** | **61-9321.7** | **61-9331.7** | **61-9642.7** | **61-9311.7** | 0.002 |
| | green transparent | **61-9351.5** | **61-9321.5** | **61-9331.5** | **61-9642.5** | **61-9311.5** | 0.002 |
| | orange transparent | **61-9351.3** | **61-9321.3** | **61-9331.3** | **61-9642.3** | **61-9311.3** | 0.002 |
| | red transparent | **61-9351.2** | **61-9321.2** | **61-9331.2** | **61-9642.2** | **61-9311.2** | 0.002 |
| | smoked transparent | **61-9351.1** | **61-9321.1** | **61-9331.1** | **61-9642.1** | **61-9311.1** | 0.002 |
| | yellow transparent | **61-9351.4** | **61-9321.4** | **61-9331.4** | **61-9642.4** | **61-9311.4** | 0.002 |
| flush, non-illuminative | black opaque | **61-9251.0** | **61-9221.0** | **61-9231.0** | | **61-9211.0** | 0.002 |
| | grey opaque | **61-9251.8** | **61-9221.8** | **61-9231.8** | | **61-9211.8** | 0.002 |
| | white translucent | **61-9251.9** | **61-9221.9** | **61-9231.9** | | **61-9211.9** | 0.002 |
| concave, illuminative | blue transparent | | **61-9326.6** | **61-9336.6** | | | 0.002 |
| | colourless transparent | | **61-9326.7** | **61-9336.7** | | | 0.002 |
| | green transparent | | **61-9326.5** | **61-9336.5** | | | 0.002 |
| | orange transparent | | **61-9326.3** | **61-9336.3** | | | 0.002 |
| | red transparent | | **61-9326.2** | **61-9336.2** | | | 0.002 |
| | yellow transparent | | **61-9326.4** | **61-9336.4** | | | 0.002 |
| concave, non-illuminative | black opaque | | **61-9226.0** | **61-9236.0** | | | 0.002 |
| | grey opaque | | **61-9226.8** | **61-9236.8** | | | 0.002 |
| | white translucent | | **61-9226.9** | **61-9236.9** | | | 0.002 |

### Lens plastic, flush mounting

mat

| | Lens | ⍞ 24 x 24 mm Typ-Nr. | ⍈ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | kg |
|---|---|---|---|---|---|
| **Lens plastic, flush mounting** illuminative | blue transparent flush | **61-9671.6** | **61-9681.6** | **61-9642.6** | 0.002 |
| | colourless transparent flush | **61-9671.7** | **61-9681.7** | **61-9642.7** | 0.002 |
| | green transparent flush | **61-9671.5** | **61-9681.5** | **61-9642.5** | 0.002 |
| | orange transparent flush | **61-9671.3** | **61-9681.3** | **61-9642.3** | 0.002 |
| | red transparent flush | **61-9671.2** | **61-9681.2** | **61-9642.2** | 0.002 |
| | smoked transparent flush | **61-9671.1** | **61-9681.1** | **61-9642.1** | 0.002 |
| | yellow transparent flush | **61-9671.4** | **61-9681.4** | **61-9642.4** | 0.002 |
| non-illuminative | black opaque flush | **61-9771.0** | **61-9781.0** | | 0.002 |
| | grey opaque flush | **61-9771.8** | **61-9781.8** | | 0.002 |
| | white translucent flush | **61-9771.9** | **61-9781.9** | | 0.002 |

## Lens plastic with symbol

Lens usable for devices with front dimensions: 24 mm dia., raised mounting | 25 mm dia., flush mounting

| | Symbol | Lens | Typ-Nr. | kg |
|---|---|---|---|---|
| **Lens plastic with symbol**<br>flush - level, illuminative | ON/OFF | blue transparent | **61-9643.602** | 0.002 |
| | | colourless transparent | **61-9643.702** | 0.002 |
| | | green transparent | **61-9643.502** | 0.002 |
| | | red transparent | **61-9643.202** | 0.002 |
| | Ring | blue transparent | **61-9643.601** | 0.002 |
| | | colourless transparent | **61-9643.701** | 0.002 |
| | | green transparent | **61-9643.501** | 0.002 |
| | | orange transparent | **61-9643.301** | 0.002 |
| | | red transparent | **61-9643.201** | 0.002 |
| | | yellow transparent | **61-9643.401** | 0.002 |
| | Stand by | blue transparent | **61-9643.603** | 0.002 |
| | | colourless transparent | **61-9643.703** | 0.002 |
| | | green transparent | **61-9643.503** | 0.002 |
| | | red transparent | **61-9643.203** | 0.002 |

The silvery coat is being applied on the lens (screen print) with an additional protective lacquer.

## Marking plate for lens plastic

can be hot stamped

| | Marking plate | Typ-Nr. | kg |
|---|---|---|---|
| **Marking plate for lens plastic**<br>only applicable with Lens round Typ-Nr. 61-9642.X | Plastic colourless transparent | **61-9707.7** | 0.001 |

## Lens metal with spot

mat

Lens usable for devices with front dimensions: 24 mm dia., raised mounting | 25 mm dia., flush mounting

| | Lens | Typ-Nr. | kg |
|---|---|---|---|
| **Lens metal with spot** | Aluminium black flush | **61-9841.0A** | 0.002 |
| | Aluminium blue flush | **61-9841.6A** | 0.002 |
| | Aluminium gold flush | **61-9841.4A** | 0.002 |
| | Aluminium natural flush | **61-9841.8A** | 0.002 |
| | Aluminium olive-green flush | **61-9841.5A** | 0.002 |
| | Aluminium red flush | **61-9841.2A** | 0.002 |

## Lens metal

mat
Lens usable for devices with front dimensions: 24 mm dia., raised mounting | 25 mm dia., flush mounting

| | Lens | Typ-Nr. | kg |
|---|---|---|---|
| **Lens metal** convex | Aluminium black | **61-9842.0** | 0.003 |
| | Aluminium blue | **61-9842.6** | 0.003 |
| | Aluminium gold | **61-9842.4** | 0.003 |
| | Aluminium natural | **61-9842.8** | 0.003 |
| | Aluminium olive-green | **61-9842.5** | 0.003 |
| | Aluminium red | **61-9842.2** | 0.003 |
| flush | Aluminium black | **61-9841.0** | 0.002 |
| | Aluminium blue | **61-9841.6** | 0.002 |
| | Aluminium gold | **61-9841.4** | 0.002 |
| | Aluminium natural | **61-9841.8** | 0.002 |
| | Aluminium olive-green | **61-9841.5** | 0.002 |
| | Aluminium red | **61-9841.2** | 0.002 |

## Mushroom-head cap

| | Mushroom had cap | Ø 32 mm Typ-Nr. | kg |
|---|---|---|---|
| **Mushroom-head cap** | Plastic black opaque | **61-9593.0** | 0.004 |
| | Plastic green opaque | **61-9593.5** | 0.004 |
| | Plastic red opaque | **61-9593.2** | 0.004 |
| | Plastic yellow opaque | **61-9593.4** | 0.004 |

## Keylock front bezel for keylock switch, raised mounting

| | Keylock front bezel | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 18 x 18 mm Typ-Nr. | ⧠ 18 x 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | kg |
|---|---|---|---|---|---|---|
| **Keylock front bezel for keylock switch, raised mounting** | Plastic black | **61-9250.0** | **61-9220.0** | **61-9230.0** | **61-9210.0** | 0.001 |

## Keylock front bezel for keylock switch, flush mounting

| | Keylock front bezel | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | kg |
|---|---|---|---|---|---|
| **Keylock front bezel for keylock switch, flush mounting** | Plastic black | **61-9220.0** | **61-9230.0** | **61-9210.0** | 0.001 |

## Lever, raised mounting

with bar and marking dot

| | Lever | Bar colour | Typ-Nr. | kg |
|---|---|---|---|---|
| **Lever, raised mounting** illuminative | Plastic black | blue | **52-928.60** | 0.001 |
| | | green | **52-928.50** | 0.001 |
| | | orange | **52-928.30** | 0.001 |
| | | red | **52-928.20** | 0.001 |
| | | yellow | **52-928.40** | 0.001 |
| | Plastic grey | blue | **52-929.60** | 0.001 |
| | | green | **52-929.50** | 0.001 |
| | | orange | **52-929.30** | 0.001 |
| | | red | **52-929.20** | 0.001 |
| | | yellow | **52-929.40** | 0.001 |
| non-illuminative | Plastic black | black | **52-928.0** | 0.001 |
| | | white | **52-928.9** | 0.001 |
| | Plastic grey | grey | **52-929.8** | 0.001 |
| | | white | **52-929.9** | 0.001 |

## Lever, flush mounting

with bar and marking dot

| | Lever | Bar colour | Typ-Nr. | kg |
|---|---|---|---|---|
| **Lever, flush mounting** illuminative | Plastic black | blue | **61-9028.60** | 0.001 |
| | | green | **61-9028.50** | 0.001 |
| | | orange | **61-9028.30** | 0.001 |
| | | red | **61-9028.20** | 0.001 |
| | | yellow | **61-9028.40** | 0.001 |
| | Plastic grey | blue | **61-9029.60** | 0.001 |
| | | green | **61-9029.50** | 0.001 |
| | | orange | **61-9029.30** | 0.001 |
| | | red | **61-9029.20** | 0.001 |
| | | yellow | **61-9029.40** | 0.001 |
| non-illuminative | Plastic black | black | **61-9028.0** | 0.001 |
| | | white | **61-9028.9** | 0.001 |
| | Plastic grey | grey | **61-9029.8** | 0.001 |
| | | white | **61-9029.9** | 0.001 |

## Legend frame

for devices 25 mm dia., flush mounting

| | Typ-Nr. | Technical drawing | kg |
|---|---|---|---|
| **Legend frame** 30 x 50 mm, adhesive, Aluminium black | **61-9980.0** | 10 | 0.001 |

Technical drawing from page 59

## Legend plate insert

for Legend frame 61-9980.0

| | Typ-Nr. | kg |
|---|---|---|
| **Legend plate insert**<br>14.5 x 23.5 mm, adhesive, Aluminium black | **704.968.1** | 0.001 |
| 14.5 x 23.5 mm, adhesive, Aluminium natural | **704.968.0** | 0.001 |

## Front bezel square for selector switch, raised mounting

| | Front bezel | Typ-Nr. | kg |
|---|---|---|---|
| **Front bezel square for selector switch, raised mounting**<br>24 x 24 mm, for Selector switch | Plastic black | **52-950.0** | 0.001 |
| 26 x 26 mm, for Selector switch | Plastic black | **52-952.0** | 0.001 |

## Front bezel set for Indicators and Illuminated pushbutton, flush mounting

| | Front bezel | ⍞ 24 x 24 mm Typ-Nr. | ⍞ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | kg |
|---|---|---|---|---|---|---|
| **Front bezel set for Indicators and Illuminated pushbutton, flush mounting** | Plastic black | **61-9930.0** | **61-9931.0** | **61-9933.10** | 4 | 0.008 |
| | Plastic silver | **61-9930.4** | **61-9931.4** | | 4 | 0.008 |
| | Aluminium black | | | **61-9933.1** | 4 | 0.006 |
| | Aluminium blue | | | **61-9933.6** | 4 | 0.006 |
| | Aluminium gold | | | **61-9933.4** | 4 | 0.006 |
| | Aluminium natural | | | **61-9933.0** | 4 | 0.006 |
| | Aluminium olive-green | | | **61-9933.5** | 4 | 0.006 |
| | Aluminium red | | | **61-9933.2** | 4 | 0.006 |

Mounting dimensions from page 58

## Front bezel set for Mushroom-head pushbutton, flush mounting

| | Front bezel | Ø 40 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | kg |
|---|---|---|---|---|---|
| **Front bezel set for Mushroom-head pushbutton, flush mounting** | Aluminium natural | **61-9934.8** | | 2 | 0.013 |
| | Aluminium black | | **61-9933.1** | 2 | 0.006 |
| | Aluminium blue | | **61-9933.6** | 2 | 0.006 |
| | Aluminium gold | | **61-9933.4** | 2 | 0.006 |
| | Aluminium natural | | **61-9933.0** | 2 | 0.006 |
| | Aluminium olive-green | | **61-9933.5** | 2 | 0.006 |
| | Aluminium red | | **61-9933.2** | 2 | 0.006 |
| | Plastic black | | **61-9933.10** | 2 | 0.008 |

Mounting dimensions from page 58

## Front bezel set for Keylock switch, flush mounting

| | Front bezel | ⍞ 24 x 24 mm Typ-Nr. | ⍈ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | kg |
|---|---|---|---|---|---|---|
| **Front bezel set for Keylock switch, flush mounting** | Plastic black | **61-9930.0** | **61-9931.0** | **61-9932.10** | 4 | 0.008 |
| | Plastic silver | **61-9930.4** | **61-9931.4** | | 4 | 0.008 |
| | Aluminium black | | | **61-9932.1** | 4 | 0.006 |
| | Aluminium blue | | | **61-9932.6** | 4 | 0.006 |
| | Aluminium gold | | | **61-9932.4** | 4 | 0.006 |
| | Aluminium natural | | | **61-9932.0** | 4 | 0.006 |
| | Aluminium olive-green | | | **61-9932.5** | 4 | 0.006 |
| | Aluminium red | | | **61-9932.2** | 4 | 0.006 |

With the round front bezel sets Ø25 mm the anti-twist ring is part of the sales-package.
Mounting dimensions from page 58

## Front bezel set for Selector switch, flush mounting

| | Front bezel | ⧠ 24 x 24 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | kg |
|---|---|---|---|---|---|
| **Front bezel set for Selector switch, flush mounting** | Plastic black | **61-9936.0** | | 4 | 0.007 |
| | Aluminium black | | **61-9932.1** | 4 | 0.006 |
| | Aluminium blue | | **61-9932.6** | 4 | 0.006 |
| | Aluminium gold | | **61-9932.4** | 4 | 0.006 |
| | Aluminium natural | | **61-9932.0** | 4 | 0.006 |
| | Aluminium olive-green | | **61-9932.5** | 4 | 0.006 |
| | Aluminium red | | **61-9932.2** | 4 | 0.006 |
| | Plastic black | | **61-9932.10** | 4 | 0.008 |

With the round front bezel sets Ø25 mm the anti-twist ring is part of the sales-package.
Mounting dimensions from page 58

## Front ring, raised mounting

| | Front ring | Typ-Nr. | kg |
|---|---|---|---|
| **Front ring, raised mounting** for Actuator 24 mm dia. | Aluminium black | **61-9600.0** | 0.003 |
| | Aluminium natural | **61-9600.1** | 0.003 |

## Front protective cap

for flush - level lenses only for protection IP 68



| | Front protective cap | Typ-Nr. | kg |
|---|---|---|---|
| **Front protective cap** for front bezel set 24 x 30 mm, flush mounting | Silicone natural transparent | **61-9927.2** | 0.001 |
| for front bezel set round, flush mounting | Silicone natural transparent | **84-9103.7** | 0.001 |

ATTENTION
when using the front protection cover for push buttons the external sealing in the front bezel set and the silicone bellows in the actuator are to be removed !

## Protective cover, raised mounting

| | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 18 x 18 mm Typ-Nr. | ⧠ 18 x 24 mm Typ-Nr. | Technical drawing | kg |
|---|---|---|---|---|---|
| **Protective cover, raised mounting** hinged, transparent, with means not for sealing | **61-9920.0** | | | 5 | 0.004 |
| hinged, transparent, with means for sealing | | **51-920** | | 1 | 0.002 |
| | | | **51-925** | 2 | 0.002 |

Technical drawing from page 59

## Protective cover, flush mounting

| | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | Technical drawing | kg |
|---|---|---|---|---|---|---|
| **Protective cover, flush mounting** hinged, transparent, with means for sealing | **61-9921.0** | | | 4 | 6 | 0.006 |
| | | **61-9922.0** | | 4 | 7 | 0.006 |
| slide by side, with means not for sealing | | | **61-9924.0** | 4 | 8 | 0.006 |

Mounting dimensions from page 58, Technical drawing from page 59

## Blind plug, raised mounting

| | Blind plug | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 18 x 18 mm Typ-Nr. | ⧠ 18 x 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | Mounting dimensions | kg |
|---|---|---|---|---|---|---|---|
| **Blind plug, raised mounting** | Plastic black | **61-9450.0** | **51-948.0** | **51-947.0** | **51-949.0** | 3 | 0.003 |

Mounting dimensions from page 58

## Blind plug, flush mounting

| | Blind plug | ⧠ 24 x 24 mm Typ-Nr. | ⧠ 24 x 30 mm Typ-Nr. | Ø 25 mm Typ-Nr. | Mounting dimensions | Technical drawing | kg |
|---|---|---|---|---|---|---|---|
| **Blind plug, flush mounting** | Plastic black | **61-9451.0** | **61-9452.0** | | 4 | | 0.006 |
| | | | | **61-9453.0** | 4 | 13 | 0.006 |

Mounting dimensions from page 58, Technical drawing from page 59

## Master key

| | Typ-Nr. | kg |
|---|---|---|
| **Master key** Lock numbers 311 ... 445 (DOM) | **31-989.300** | 0.006 |

## Spare key

| | Typ-Nr. | kg |
|---|---|---|
| **Spare key**<br>Emergency-stop, standard lock 1001 (KABA) | **14-987.1001** | 0.006 |
| Key lock switch, standard lock 311 (DOM) | **31-989.311** | 0.006 |

Other lock numbers on request

## EMC Key protection cap

| | Typ-Nr. | kg |
|---|---|---|
| **EMC Key protection cap**<br>Plastic black, for lock type DOM | **31-985.0** | 0.005 |

# Backside

## Lamp element

| | Terminals | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|
| **Lamp element** | ST | **61-8006.01** | 31 | 4 | 0.005 |
| | S1 | **61-8006.02** | 3 | 4 | 0.005 |

Terminals: ST = Screw terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 53, Circuit drawing from page 66

## Diode element

| | Terminals | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|
| **Diode element**<br>1 Diode | S1 | **61-8101.02** | 1 | 20 | 0.007 |
| 2 Diodes | S1 | **61-8102.02** | 2 | 21 | 0.008 |

Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Component layout from page 53, Circuit drawing from page 66

## Flasher element

only for Indicator actuator

| | Terminals | Typ-Nr. | Component layout | kg |
|---|---|---|---|---|
| **Flasher element**<br>Operation voltage : 12 ... 28 VAC/DC ±10 % | S | **61-8000.05** | 30 | 0.005 |

Further information in the Technical Data and Typical Applications
Terminals: S = Soldering terminal
Component layout from page 53

## Switching element for Pushbutton | Keylock- and Selector switch 2 positions

| | Diode (1N 4007) | Switch rating | Switching system | Contacts | Terminals | Contact material | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **Switching element for Pushbutton \| Keylock- and Selector switch 2 positions** with lamp terminal | 2 D | 250 VAC, 5 A | SA | 1 NO | S1 | Au-Ag | **61-8212.22** | 36 | 28 | 0.007 |
| | | | | | | Ag | **61-8212.12** | 36 | 28 | 0.007 |
| | - | 250 VAC, 5 A | SM | 1 NC | ST | Ag | **61-8640.11** | 23 | 22 | 0.008 |
| | | | | | S1 | Ag | **61-8640.17** | 14 | 23 | 0.008 |
| | | | | 1 NC + 1 NO | S1 | Ag | **61-8670.17** | 13 | 30 | 0.008 |
| | | | | 1 NO | ST | Ag | **61-8610.11** | 22 | 27 | 0.008 |
| | | | | | S1 | Ag | **61-8610.17** | 11 | 27 | 0.008 |
| | | | | 2 NC | S1 | Ag | **61-8650.17** | 15 | 24 | 0.008 |
| | | | | 2 NO | S1 | Ag | **61-8620.17** | 12 | 34 | 0.008 |
| | | | SA | 1 NC | S1 | Au-Ag | **61-8440.22** | 4 | 23 | 0.007 |
| | | | | | | Ag | **61-8440.12** | 4 | 23 | 0.007 |
| | | | | 1 NC + 1 NO | S1 | Au-Ag | **61-8470.22** | 34 | 30 | 0.007 |
| | | | | | | Ag | **61-8470.12** | 34 | 30 | 0.007 |
| | | | | 1 NC + 2 NO | S1 | Au-Ag | **61-8490.22** | 35 | 32 | 0.007 |
| | | | | | | Ag | **61-8490.12** | 35 | 32 | 0.007 |
| | | | | 1 NO | S1 | Au-Ag | **61-8410.22** | 28 | 27 | 0.007 |
| | | | | | | Ag | **61-8410.12** | 28 | 27 | 0.007 |
| | | | | 2 NC | S1 | Au-Ag | **61-8450.22** | 5 | 24 | 0.007 |
| | | | | | | Ag | **61-8450.12** | 5 | 24 | 0.007 |
| | | | | 2 NC + 1 NO | S1 | Au-Ag | **61-8480.22** | 7 | 31 | 0.007 |
| | | | | | | Ag | **61-8480.12** | 7 | 31 | 0.007 |
| | | | | 2 NO | S1 | Au-Ag | **61-8420.22** | 32 | 34 | 0.007 |
| | | | | | | Ag | **61-8420.12** | 32 | 34 | 0.007 |
| | | | | 3 NC | S1 | Au-Ag | **61-8460.22** | 6 | 25 | 0.007 |
| | | | | | | Ag | **61-8460.12** | 6 | 25 | 0.007 |
| | | | | 3 NO | S1 | Au-Ag | **61-8430.22** | 33 | 35 | 0.007 |
| | | | | | | Ag | **61-8430.12** | 33 | 35 | 0.007 |
| | | 42 VAC, 100 mA | SM | 1 NC | S1 | Au | **61-8640.37** | 14 | 23 | 0.008 |
| | | | | 1 NC + 1 NO | S1 | Au | **61-8670.37** | 13 | 30 | 0.008 |
| | | | | 1 NO | S1 | Au | **61-8610.37** | 11 | 27 | 0.008 |
| | | | | 2 NC | S1 | Au | **61-8650.37** | 15 | 24 | 0.008 |
| | | | | 2 NO | S1 | Au | **61-8620.37** | 12 | 34 | 0.008 |
| without lamp terminal | - | 250 VAC, 5 A | SM | 1 NC | ST | Ag | **61-8645.11** | 25 | 22 | 0.008 |
| | | | | 1 NC + 1 NO | ST | Ag | **61-8675.11** | 26 | 29 | 0.008 |
| | | | | 1 NO | ST | Ag | **61-8615.11** | 24 | 26 | 0.008 |
| | | | | 2 NC | ST | Ag | **61-8655.11** | 29 | 36 | 0.008 |
| | | | | 2 NO | ST | Ag | **61-8625.11** | 27 | 33 | 0.008 |

We offer a Dismantling tool Typ-Nr. 61-9711.0 for dismantling of the Switching element
Diode (1N 4007): D = Diode, - = without
Switching system: SA = Snap-action switching element, SM = Slow-make switching element
Contacts: NO = Normally open, NC = Normally closed
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm), ST = Screw terminal
Contact material: Au-Ag = Gold-Silver, Ag = Silver, Au = Gold
Component layout from page 53, Circuit drawing from page 66

## Switching element for Keylock- and Selector switch 3 positions

| | Switch rating | Switching system | Contacts | Terminals | Contact material | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|
| **Switching element for Keylock- and Selector switch 3 positions** with lamp terminal | 250 VAC, 5 A | SM | 1 NC + 1 NO | S1 | Ag | **61-8770.17** | 16 | 30 | 0.008 |
| | | | 2 NC | S1 | Ag | **61-8750.17** | 18 | 24 | 0.008 |
| | | | 2 NO | S1 | Ag | **61-8720.17** | 17 | 34 | 0.008 |
| | | SA | 1 NC + 1 NO | S1 | Au-Ag | **61-8574.22** | 10 | 30 | 0.008 |
| | | | | | Ag | **61-8574.12** | 10 | 30 | 0.008 |
| | | | 2 NC | S1 | Au-Ag | **61-8550.22** | 8 | 24 | 0.008 |
| | | | | | Ag | **61-8550.12** | 8 | 24 | 0.008 |
| | | | 2 NO | S1 | Au-Ag | **61-8520.22** | 9 | 34 | 0.008 |
| | | | | | Ag | **61-8520.12** | 9 | 34 | 0.008 |
| | 42 VAC, 100 mA | SM | 1 NC + 1 NO | S1 | Au | **61-8770.37** | 16 | 30 | 0.008 |
| | | | 2 NC | S1 | Au | **61-8750.37** | 8 | 24 | 0.008 |
| | | | 2 NO | S1 | Au | **61-8720.37** | 9 | 34 | 0.008 |
| without lamp terminal | 250 VAC, 5 A | SM | 1 NC + 1 NO | ST | Ag | **61-8775.11** | 26 | 37 | 0.008 |
| | | | 2 NC | ST | Ag | **61-8755.11** | 29 | 36 | 0.008 |
| | | | 2 NO | ST | Ag | **61-8725.11** | 27 | 33 | 0.008 |

We offer a Dismantling tool Typ-Nr. 61-9711.0 for dismantling of the Switching element
Switching system: SM = Slow-make switching element, SA = Snap-action switching element
Contacts: NC = Normally closed, NO = Normally open
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm), ST = Screw terminal
Contact material: Ag = Silver, Au-Ag = Gold-Silver, Au = Gold
Component layout from page 53, Circuit drawing from page 66

## Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5

| | Switch rating | Switching system | Contacts | Terminals | Contact material | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|
| **Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** | 250 VAC, 5 A | SM | 1 NC | ST | Ag | **61-8745.11** | 25 | 38 | 0.008 |
| | | | | S1 | Ag | **61-8745.17** | 20 | 38 | 0.008 |
| | | | 1 NC + 1 NO | ST | Ag | **61-8775.11** | 26 | 37 | 0.008 |
| | | | | S1 | Ag | **61-8775.17** | 19 | 37 | 0.008 |
| | | | 2 NC | ST | Ag | **61-8755.11** | 29 | 36 | 0.008 |
| | | | | S1 | Ag | **61-8755.17** | 21 | 36 | 0.008 |

General specifications for Switching element for Emergency-stop pushbutton : If not otherwise stated, certified according to EN IEC 60947-5-5. Further specifications in the Technical data
Switching system: SM = Slow-make switching element
Contacts: NC = Normally closed, NO = Normally open
Terminals: ST = Screw terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Contact material: Ag = Silver
Component layout from page 53, Circuit drawing from page 66

## Switching element for Stop pushbutton, foolproof

| | Switch rating | Switching system | Contacts | Terminals | Contact material | Typ-Nr. | Component layout | Circuit drawing | kg |
|---|---|---|---|---|---|---|---|---|---|
| **Switching element for Stop pushbutton, foolproof** | 42 VAC, 100 mA | SM | 1 NC | S1 | Au | **61-8745.37** | 20 | 38 | 0.008 |
| | | | 1 NC + 1 NO | S1 | Au | **61-8775.37** | 19 | 37 | 0.008 |
| | | | 2 NC | S1 | Au | **61-8755.37** | 21 | 36 | 0.008 |

Switching system: SM = Slow-make switching element
Contacts: NC = Normally closed, NO = Normally open
Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)
Contact material: Au = Gold
Component layout from page 53, Circuit drawing from page 66

## PCB plug-in base

| | Terminals | Typ-Nr. | Component layout | kg |
|---|---|---|---|---|
| **PCB plug-in base**<br>13.1 dia. x 12.8 mm for Indicator complete | P | **61-9820.1** | 37 | 0.002 |
| 15 x 23 x 9.4 mm for Snap-action Switching element, Indicator- and Diode element, Pins axial | P | **61-9821.1** | 38 | 0.003 |
| 17.7 x 23.6 x 10.9 mm for Slow-make Switching element, Pins axial | P | **61-9823** | 39 | 0.002 |

Terminals: P = PCB terminal
Component layout from page 53

## Multi-plug housing

| | Typ-Nr. | kg |
|---|---|---|
| **Multi-plug housing**<br>for Snap-action Switching element, max. 6 connections possible | **61-9830** | 0.002 |

## Flat receptacle

| | Typ-Nr. | kg |
|---|---|---|
| **Flat receptacle**<br>2.8 x 0.5 mm for Multi-plug housing | **51-943.1** | 0.001 |
| 2.8 x 0.5 mm for Plug-in terminal | **31-946** | 0.001 |

## Insulation sleeve

| | Typ-Nr. | kg |
|---|---|---|
| **Insulation sleeve**<br>for Flat receptacles 31-946 | **31-929** | 0.001 |

## Terminal cover

| | Typ-Nr. | kg |
|---|---|---|
| **Terminal cover**<br>for Indicator complete | **61-9831.2** | 0.001 |
| for Snap-action Switching element with soldering terminal | **61-9830.2** | 0.002 |

# Illumination

## Filament lamp

| | Socket | Operating voltage/-current | Typ-Nr. | kg |
|---|---|---|---|---|
| **Filament lamp** | T1 $^{3}/_{4}$ MG | 12 VAC/DC, 75 mA | **10-1309.1309** | 0.001 |
| | | 14 VAC/DC, 80 mA | **10-1310.1319** | 0.001 |
| | | 18 VAC/DC, 40 mA | **10-1311.1249** | 0.001 |
| | | 24 VAC/DC, 35 mA | **10-1312.1229** | 0.001 |
| | | 28 VAC/DC, 30 mA | **10-1313.1209** | 0.001 |
| | | 28 VAC/DC, 40 mA | **10-1313.1249** | 0.001 |
| | | 36 VAC/DC, 20 mA | **10-1316.1179** | 0.001 |
| | | 36 VAC/DC, 30 mA | **10-1316.1209** | 0.001 |
| | | 48 VAC/DC, 20 mA | **10-1319.1179** | 0.001 |
| | | 48 VAC/DC, 25 mA | **10-1319.1199** | 0.001 |
| | | 6 VAC/DC, 120 mA | **10-1306.1349** | 0.001 |
| | | 6.3 VAC/DC, 200 mA | **10-1307.1369** | 0.001 |

## Single-LED

| | Socket | Light colour | Operating voltage/-current | Typ-Nr. | kg |
|---|---|---|---|---|---|
| **Single-LED** | T1 $^{3}/_{4}$ MG | blue | 12 VAC/DC, 7/14 mA | **10-2J09.1066** | 0.002 |
| | | | 24 VAC/DC, 7/14 mA | **10-2J12.1066** | 0.002 |
| | | | 28 VAC/DC, 7/14 mA | **10-2J13.1066** | 0.002 |
| | | | 48 VAC/DC, 4/8 mA | **10-2J19.1046** | 0.002 |
| | | | 6 VDC, 15 mA | **10-2J06.3146** | 0.002 |
| | | green | 12 VAC/DC, 4/7 mA | **10-2J09.1065** | 0.002 |
| | | | 24 VAC/DC, 4/7 mA | **10-2J12.1065** | 0.002 |
| | | | 28 VAC/DC, 4/7 mA | **10-2J13.1065** | 0.002 |
| | | | 48 VAC/DC, 2/4 mA | **10-2J19.1045** | 0.002 |
| | | | 6 VDC, 7 mA | **10-2J06.3145** | 0.002 |
| | | red | 12 VAC/DC, 7/14 mA | **10-2J09.1062** | 0.002 |
| | | | 24 VAC/DC, 7/14 mA | **10-2J12.1062** | 0.002 |
| | | | 28 VAC/DC, 7/14 mA | **10-2J13.1062** | 0.002 |
| | | | 48 VAC/DC, 4/8 mA | **10-2J19.1042** | 0.002 |
| | | | 6 VDC, 15 mA | **10-2J06.3142** | 0.002 |
| | | white diffuse | 12 VAC/DC, 7/14 mA | **10-2J09.1069** | 0.002 |
| | | | 24 VAC/DC, 7/14 mA | **10-2J12.1069** | 0.002 |
| | | | 28 VAC/DC, 7/14 mA | **10-2J13.1069** | 0.002 |
| | | | 48 VAC/DC, 4/8 mA | **10-2J19.1049** | 0.002 |
| | | | 6 VDC, 15 mA | **10-2J06.3149** | 0.002 |
| | | yellow | 12 VAC/DC, 7/14 mA | **10-2J09.1064** | 0.002 |
| | | | 24 VAC/DC, 7/14 mA | **10-2J12.1064** | 0.002 |
| | | | 28 VAC/DC, 7/14 mA | **10-2J13.1064** | 0.002 |
| | | | 48 VAC/DC, 4/8 mA | **10-2J19.1044** | 0.002 |
| | | | 6 VDC, 15 mA | **10-2J06.3144** | 0.002 |

Note:
AC operation through halve-wave rectifier possible, slight flickering can occure.

## Terminal plate empty

for fitting with series resistors

| | Typ-Nr. | kg |
|---|---|---|
| **Terminal plate empty**<br>10 spaces 125 x 60 x 15 mm | **02-912.2** | 0.045 |
| 15 spaces 187.5 x 60 x 15 mm | **02-912.3** | 0.090 |
| 20 spaces 250 x 60 x 15 mm | **02-912.4** | 0.095 |
| 5 spaces 62.5 x 60 x 15 mm | **02-912.1** | 0.025 |

## Emergency-stop pushbutton

## Emergency-stop label

Mounting hole size 16 mm dia.

| | Marking | Typ-Nr. | kg |
|---|---|---|---|
| **Emergency-stop label**<br>43 mm dia., yellow | ARRET-D´URGENCE | **61-9970.3** | 0.002 |
| | EMERGENCY-STOP | **61-9970.2** | 0.002 |
| | NOT-AUS | **61-9970.1** | 0.002 |
| | NOT-HALT | **61-9970.6** | 0.002 |
| | without marking | **61-9970.0** | 0.002 |

## Emergency-stop protective shroud

| | Typ-Nr. | Technical drawing | kg |
|---|---|---|---|
| **Emergency-stop protective shroud**<br>Aluminium anodized, yellow varnished | **61-9965** | 11 | 0.036 |

The protection ring is not suitable for a proper use of Emergency-stop pushbutton. It can obstruct a spontaneous operation of the Emergency-stop pushbutton.
Technical drawing from page 59

## Emergency-stop enclosures

Bottom grey similar RAL 7035; cover lead-sealable, yellow similar RAL 1004

| | Dimension | Typ-Nr. | Technical drawing | kg |
|---|---|---|---|---|
| **Emergency-stop enclosures**<br>with mounting hole size 16 mm dia., without anti- twist device | L 65 mm, W 65 mm, H 57 mm | **61-9480.5** | 12 | 0.099 |

Openings for cable gland M16 or M20.
Protection class IP 66.
Technical drawing from page 59

## Cable gland

| | Typ-Nr. | kg |
|---|---|---|
| **Cable gland**<br>M16, Plastic grey | **61-9481.6** | 0.007 |
| M20, Plastic grey | **704.945.6** | 0.011 |

with traction relief; protection degree IP 68.

# Assembling

## Fixing nut

| | Typ-Nr. | kg |
|---|---|---|
| **Fixing nut**<br>Metal, specifically for keylock switches | **31-991** | 0.005 |
| Plastic, standard delivery | **61-9915.0** | 0.002 |

## Anti-twist ring

| | Typ-Nr. | kg |
|---|---|---|
| **Anti-twist ring**<br>Mounting hole size 16 mm dia. | **51-910** | 0.001 |
| Mounting hole size 22.5 mm dia. | **61-9912.0** | 0.002 |

## Reducing ring

without Keylock- and Selector switch

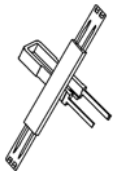
| | Typ-Nr. | kg |
|---|---|---|
| **Reducing ring**<br>only for use of devices with Front size 24 x 24 mm and 24 mm dia., Mounting hole size 22.5 mm dia. to 16.5 mm dia. | **61-9960** | 0.003 |

## Tool set

consists of Lens remover, Lamp-and LED remover, Mounting tool, Dismantling tool

| | Typ-Nr. | kg |
|---|---|---|
| **Tool set** | **K61-999.100** | 0.048 |

for dismantling keep care of the enclosed Packing insert



## Lens remover

| | Typ-Nr. | kg |
|---|---|---|
| **Lens remover**<br>for flush mounting | **61-9730.0** | 0.011 |
| for raised mounting | **02-905** | 0.011 |

## Lamp remover

| | Typ-Nr. | kg |
|---|---|---|
| **Lamp remover** | **61-9740.0** | 0.003 |

CAUTION
A switching process might be released when replacing the lamp/LED !

## Mounting tool

| | Typ-Nr. | kg |
|---|---|---|
| **Mounting tool**<br>for Indicator 16 mm dia. | **01-907** | 0.020 |

## Dismantling tool

| | Typ-Nr. | kg |
|---|---|---|
| **Dismantling tool**<br>for dismantling of the Switching element | **61-9711.0** | 0.004 |

## Flat receptacle remover

| | Typ-Nr. | kg |
|---|---|---|
| **Flat receptacle remover**<br>for removing the Flat receptacle of the Multi-plug in housing | **51-943.9** | 0.001 |

## Enclosure

Grey similar RAL 7035; cover lead-sealable

| | Dimension | Typ-Nr. | Technical drawing | kg |
|---|---|---|---|---|
| **Enclosure**<br>with mounting hole size 16 mm dia., without anti- twist device | L 65 mm, W 65 mm, H 57 mm | **61-9480.6** | 12 | 0.099 |

Openings for cable gland M16 or M20.
Protection class IP 66.
Technical drawing from page 59

## Cable gland

| | Typ-Nr. | kg |
|---|---|---|
| **Cable gland**<br>M16, Plastic grey | **61-9481.6** | 0.007 |
| M20, Plastic grey | **704.945.6** | 0.011 |

with traction relief; protection degree IP 68.

## Actuator with snap-action switching element

### Switching system

Self-cleaning, double-break snap-action switching system with contact opening width 2 x 0.5 mm (switch with small contact opening width as per EN IEC 61058-1).
The switching elements are optionally equipped with the following switching functions :
One to three normally open (NO) or normally closed (NC), or any combination of NO and NC plus connections for T1 $^{3}/_{4}$ LED or lamp.
The number of switching elements cannot exceed three.
The switching elements provided for the 3-position switch actuators are equipped with max. 2 NC or 2 NO or any combination. The number of switching elements cannot exceed two.

### Material

**Lens**
Raised mounting Polymethylmethacrylat (PMMA), as per UL 94 HB, flush mounting Polycarbonat (PC), as per UL 94 V0, or Aluminium anodized

**Front bezel**
Polyetherimid (PEI), as per UL 94 V0, or Aluminium anodized

**Front ring**
Aluminium anodized

**Material of contact**
Silver or silver with gold plating

**Switching element**
Diallylphthalate (DAP), as per UL 94 V0 and Polyamide (PA 66), as per UL 94 V0

**Actuator housing**
Polyetherimide (PEI), as per UL 94 V0, self-extinguishing

### Mechanical characteristics

**Terminals**

| | | | |
|---|---|---|---|
| - Solder | rigid | flexible | superflexible |
| 1 wire | 0.5 ... 1.5 mm² | 0.5 ... 0.75 mm² | 0.5 mm² |
| 2 wires | 0.75 mm² | 0.5 mm² | |

**Actuating torque**

Selector-/ Keylock switch 2.5 ... 10 Ncm

**Actuating force**

Pushbutton 2.7 ... 3.6 N

**Actuating travel**

Pushbutton 3 mm

| | | |
|---|---|---|
| Selector-/ keylock switch | 2 positions | 3 positions |
| Momentary action | approx. 42 ° | approx. 2 x 42 ° |
| Maintained action | approx. 90 ° | approx. 2 x 90 ° |

**Rebound time**
The rebound times apply to normal manual activation

Contact making 3 ms
Contact breaking 5 ms

**Mechanical lifetime**
as per DIN IEC 60512-5-6 and EN IEC 60947-5-1

| | | |
|---|---|---|
| Pushbutton maintained action | 1 million | cycles of operation |
| Pushbutton momentary action | 2 million | cycles of operation |
| Emergency-stop switch | 6 050 | cycles of operation |
| Keylock switch | 50 000 | cycles of operation |
| Selector switch | 100 000 | cycles of operation |

### Electrical characteristics

**Standards**
The devices comply with : EN IEC 61058-1 and EN IEC 60947-5-1

**Rated Operational Voltage $U_e$**
250 VAC/DC as per EN IEC 60947-1

**Rated Insulation Voltage $U_i$**
320 VAC, as per EN IEC 60947-5-1

**Rated Impulse Withstand Voltage $U_{imp}$**
4 kV, as per EN IEC 60947-5-1

**Contact resistance**
New state with silver contact ≤100 mΩ
as per DIN IEC 60512-2-4, measured at 100 mA, 10 V

New state with gold plated contact ≤50 mΩ
as per DIN IEC 60512-2-3, measured at 20 mV, 10 mA

**Electrical life**
≥50.000 cycles of operation at 250 VAC, 5 A, cosϕ 0.95, as per EN IEC 60947-5-1

**Electrostatic discharge (ESD)**

Keylock switch 11 kV

**Conventional free air thermal current $I_{th}$**
5 A, as per EN IEC 60947-5-1
the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

**Switch rating**
Switch rating AC with silver contact or silver contact with gold plating, service category AC-15, as per EN IEC 60947-5-1

| | | |
|---|---|---|
| Voltage | 125 VAC | 250 VAC |
| Current | 2.5 A | 2 A |

Switch rating DC for silver contact or silver contact with gold plating, service category DC-13, as per EN IEC 60947-5-1

| | |
|---|---|
| Voltage | 250 VDC |
| Current | 0.15 A |

**Recommended minimum operational data**

| | | |
|---|---|---|
| Material of contact | Silver | Silver with gold plating |
| Voltage | 20 VAC/DC | 5 VAC/DC |
| Current | 100 mA | 10 mA |

**Electric strength**
2500 VAC, 50 Hz, 1 min., as per DIN IEC 60512-2-11
between all terminals and earth

**Overvoltage category**
III, as per EN IEC 60947-5-1

**Protection class**
Class II, as per EN IEC 61058-1

**Degree of pollution**
3, as per EN IEC 60947-1

## Environmental conditions

**Storage temperature**
-40 °C ... +85 °C

**Operating temperature**
-25 °C ... +55 °C

**Protection degree**
as per EN IEC 60529
Frontside IP 65 | backside IP 40

**Shock resistance**
(semi-sinusoidal)
max. 100 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

**Vibration resistance**
(sinusoidal)
max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

**Climate resistance**
Damp heat, cyclic
96 hours, +25 °C / 97 %, +55 °C / 93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, state
56 days, +40 °C / 93 % relative humidity, as per EN IEC 60068-2-78

Rapid change of temperature
100 cycles, -40 °C ... +80 °C, as per EN IEC 60068-2-14

## Approvals

**Approbations**
CB (IEC 61058)
CB (IEC 60947)
CSA
ENEC (EN 61058)
Germanischer Lloyd
GOST
UL
VDE

**Declaration of conformity**
CE

## Actuator with slow-make switching element

## Switching system

Double-break slow-make system, contact opening width 2 x 1.5 mm, with 2 x 2 contact points per switching element.
NC-contact elements in the slow-make elements fulfill requirements of switches with forced opening as per EN IEC 60947-5-1 2.17
The slow-make elements are optionally obtainable with the following switching functions : 1 NO or 2 NO, 1 NC or 2 NC, 1 NO + 1 NC.

## Material

**Lens**
Raised mounting Polymethylmethacrylat (PMMA), as per UL 94 HB, flush mounting Polycarbonat (PC), as per UL 94 V0, or Aluminium anodized

**Front bezel**
Polyetherimid (PEI), as per UL 94 V0, or Aluminium anodized

**Front ring**
Aluminium anodized

**Material of contact**
Silver or gold (specified for operation for low level switching)

**Switching element**
Diallylphthalate (DAP), as per UL 94 V0 and Polyamide (PA 66), as per UL 94 V0

**Actuator housing**
Polyetherimide (PEI), as per UL 94 V0, self-extinguishing

## Mechanical characteristics

**Terminals**

| | | | |
|---|---|---|---|
| - Solder | rigid | flexible | superflexible |
| 1 wire | 0.5 ... 1.5 mm² | 0.5 ... 0.75 mm² | 0.5 mm² |
| 2 wires | 0.75 mm² | 0.5 mm² | |
| - Screw | | | |
| 1 wire | 0.5 ... 1.5 mm² | 0.5 ... 0.75 mm² | 0.5 mm² |
| 2 wires | 0.75 mm² | 0.5 mm² | 0.5 mm² |

**Actuating torque**

| | |
|---|---|
| Selector-/ Keylock switch | 4 ... 16 Ncm |

**Actuating force**

| | |
|---|---|
| Pushbutton | 3.5 ... 11 N |
| Emergency-stop switch | max. 65 N |

**Actuating travel**

| | | |
|---|---|---|
| Pushbutton | 3 mm | |
| Emergency-stop switch | 10 mm | |
| Selector-/ keylock switch | 2 positions | 3 positions |
| Momentary action | approx. 42 ° | approx. 2 x 42 ° |
| Maintained action | approx. 90 ° | approx. 2 x 90 ° |

**Rebound time**
2 ms, contact making and contact breaking
the rebound times apply to normal manual activation

**Mechanical lifetime**
as per DIN IEC 60512-5-6 and EN IEC 60947-5-1

| | | |
|---|---|---|
| Pushbutton maintained action | 1 million | cycles of operation |
| Pushbutton momentary action | 2 million | cycles of operation |
| Emergency-stop switch | 6 050 | cycles of operation |
| Keylock switch | 50 000 | cycles of operation |
| Selector switch | 100 000 | cycles of operation |

## Electrical characteristics

**Standards**
The devices comply with : EN IEC 61058-1 and EN IEC 60947-5-1, EN IEC 60947-5-5 (Emergency-stop)

**Electrical life**
≥50.000 cycles of operation at 250 VAC, 5 A, cosϕ 0.95, as per EN IEC 60947-5-1
Switching Element of Emergency-stop 6050 cycles of operation, as per EN IEC 60947-5-5

**Electrostatic discharge (ESD)**

| | |
|---|---|
| Keylock switch | 11 kV |

**Electric strength**
4000 VAC, 50 Hz, 1 min., as per DIN IEC 60512-2
between all terminals and earth

**Overvoltage category**
III, as per EN IEC 60947-5-1

**Protection class**
Class II, as per EN IEC 61058-1

**Degree of pollution**
3, as per EN IEC 60947-1

## Electrical characteristics for silver contacts

**Rated Operational Voltage $U_e$**
250 VAC/DC as per EN IEC 60947-1

**Rated Insulation Voltage $U_i$**
320 VAC, as per EN IEC 60947-5-1

**Rated Impulse Withstand Voltage $U_{imp}$**
4 kV, as per EN IEC 60947-5-1

**Contact resistance**
New state ≤50 mΩ, as per DIN IEC 60512-2-4, measured at 100 mA, 10 V

**Conventional free air thermal current $I_{th}$**
5 A, as per EN IEC 60947-5-1
the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

**Switch rating**
Switch rating AC with silver contact and srew terminal, service category AC-15, as per EN IEC 60947-5-1

| | | |
|---|---|---|
| Voltage | 125 VAC | 250 VAC |
| Current | 3 A | 2 A |

Switch rating with silver contact and screw terminal, service category DC-13, as per EN IEC 60947-5-1

| | |
|---|---|
| Voltage | 250 VDC |
| Current | 0.2 A |

**Recommended minimum operational data**
20 VAC/DC, 100 mA

## Electrical characteristics for gold contacts

**Rated Operational Voltage $U_e$**
50 VAC/DC, as per EN IEC 60947-5-1

**Rated Insulation Voltage $U_i$**
$U_i$ = 320 VAC, as per EN IEC 60947-5-1

**Rated Impulse Withstand Voltage $U_{imp}$**
0.8 kV, as per EN IEC 60947-1

**Contact resistance**
New state ≤50 mΩ
as per DIN IEC 60512-2-4, measured at 20 mV, 10 mA

**Conventional free air thermal current $I_{th}$**
3 A, as per EN IEC 60947-5-1
the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

**Switch rating**
Switch rating AC with gold contact, service category AC-15, as per EN IEC 60947-5-1

| | |
|---|---|
| Voltage | 50 VAC |
| Current | 0.5 A |

Switch rating with gold contact, service category DC-13, as per EN IEC 60947-5-1

| | |
|---|---|
| Voltage | 50 VDC |
| Current | 0.1 A |

**Recommended minimum operational data**

| | |
|---|---|
| Voltage | 10 mVAC/DC |
| Current | 2 mA |

## Environmental conditions

**Storage temperature**
-40 °C ... +85 °C

**Operating temperature**
-25 °C ... +55 °C

**Protection degree**
as per EN IEC 60529
Frontside IP 65 | backside IP 40

**Shock resistance**
(semi-sinusoidal)
max. 100 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

**Vibration resistance**
(sinusoidal)
max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

**Climate resistance**
Damp heat, cyclic
96 hours, +25 °C / 97 %, +55 °C / 93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, state
56 days, +40 °C / 93 % relative humidity, as per EN IEC 60068-2-78

Rapid change of temperature
100 cycles, -40 °C ... +80 °C, as per EN IEC 60068-2-14

## Approvals

**Approbations**
CB (IEC 61058)
CB (IEC 60947)
ENEC (EN 61058)
Germanischer Lloyd
GOST
SEV
UL
VDE

**Declaration of conformity**
CE

## Actuator with flasher element

## Material

**Lens**
Raised mounting Polymetylmethacrylat PMMA, as per UL 94 HB, flush mounting Polycarbonat (PC), as per UL 94 V0

**Actuator housing**
Polyetherimide (PEI), as per UL 94 V0, self-extinguishing

**Flasher element**
Polyetherimide (PEI), as per UL 94 V0

## Mechanical characteristics

**Terminals**
Soldering terminal

## Electrical characteristics

**Illumination**

| | | |
|---|---|---|
| Filament lamp | 14 V AC/DC | 28 VAC/DC |
| Power consumption | 80 mA | 44 mA |
| Single-LED | 12 VAC/DC | 28 VAC/DC |
| Power consumption | 15 mA | 18 mA |

**Flashing frequency**
1 Hz ±0.25 Hz

**Pulse duty factor**
approx. 50 %

**Operating voltage**
12 ... 28 VAC/DC ±10 %

## Environmental conditions

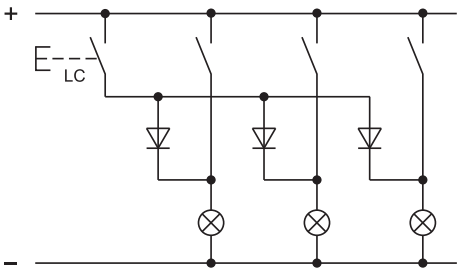
**Operating temperature**
0 °C ... +45 °C

**Protection degree**
as per EN IEC 60529
Frontside IP 65 | backside IP 40

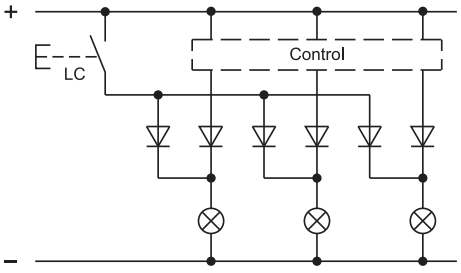
## Diode element

When indicators and illuminated pushbuttons equipped with diodes, the user is able to perform a lamp check or wire an alarm circuit simply with a considerable saving of space.

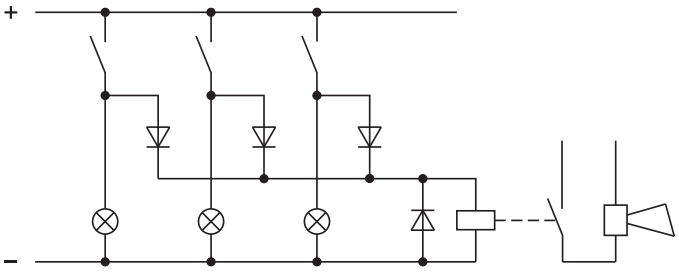
Lamp check



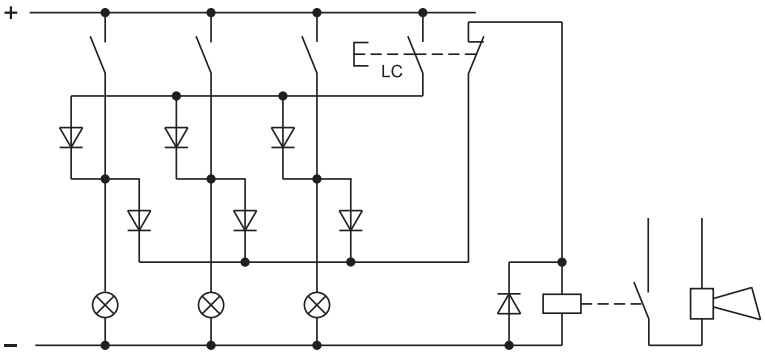

Lamp check with blocking diodes



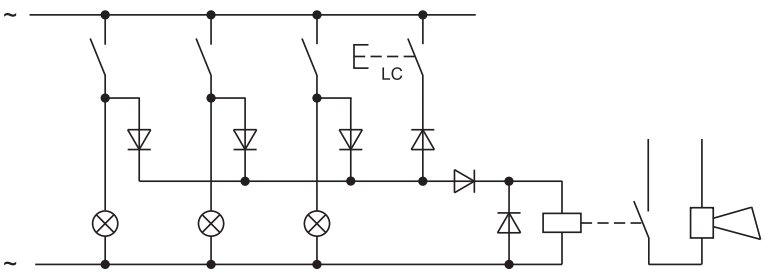

Alarm circuit from fault annunciation system




Lamp check and alarm circuit



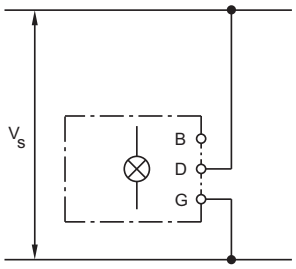

Lamp check and alarm circuit with only one diode and AC voltage



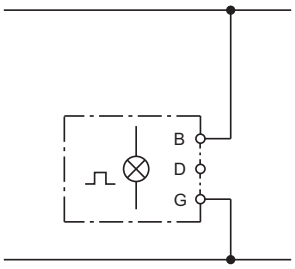

LC = Lamp Check

## Flasher element

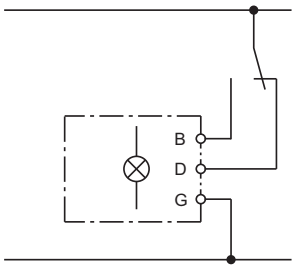
Do not connect terminal B and D simultaneously when powered up. When operating with DC voltage terminal G must have positive polarity.




Continuous light




Flashing light




Flashing- or continuous light

## Suppressor circuits

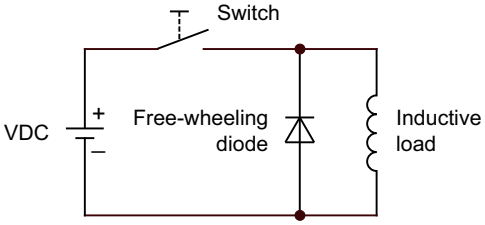
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilovolts in amplitude even when nominal circuit voltages are low (e.g. 12 VDC) see Fig. 2.

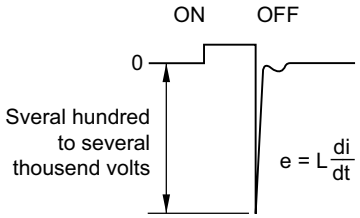
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (VR) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current flowing through the load.

**To get an efficient protection, the free-wheeling diode must be connected as close as possible to the inductive load!**

Switching with inductive load
Fig. 1




Counter emf
over load without free-wheeling diode
Fig. 2



## General notes

**1. Engraving**
In addition to the most commonly used world languages, in DIN 1451-3 close spacing, other typefaces are available as Scandinavian, Slavic, Greek, Russian and Polish.
Red, blue and black lenses are filled with white colour. Other colour lenses are filled in black.
Standard height of letters is 2 mm. If the height is not specified, we will supply 2 mm engraved letters.

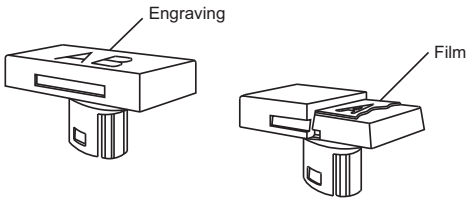
**2. Hot stamping**
For larger series it is worth considering markings by means of hot stamping or laser engraving. We will pleased to advise you.
For letters and figures, typefaces with 2.5 mm, 3 mm and 4 mm are available.

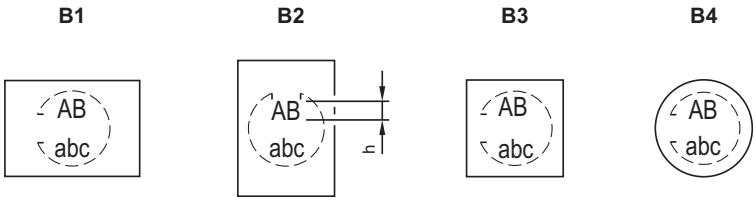
**3. Film inserts**
Instead of using engraving the lenses can be fitted with transparent film inserts, as an alternative.
In the case of use of a smoke-black lens the fitted film becomes readable only if the lamp is on.
The film thickness is 0.2 mm.
For lenses 24 mm and 25 mm dia. with Typ-Nr. 619642.x the marking takes place directly on the text plate Typ-Nr. 61-9707.7, instead of a film insert.
**Important :** Consider pushbutton mounting orientation before specifying engraving characters !

## Lenses for Indicators | Illuminated pushbuttons, flush mounting

All dimensions in mm

| Front size (Lens) | Film insert max. size | Height of letters h | Number of lines | Number of (target value) capital letters per line | Number of (target value) small letters per line | Image |
|---|---|---|---|---|---|---|
| 24 x 24 (18 x 18) | 15.1 x 15.1 | 2 | 4 | 8 - 9 | 9 | B3 |
| | | 3 | 3 | 7 - 8 | 8 | B3 |
| | | 4 | 2 | 4 - 5 | 5 | B3 |
| | | 5 | 2 | 4 | 4 - 5 | B3 |
| | | 6 | 1 | 4 | 4 | B3 |
| | | 8 | 1 | 2 - 3 | 2 - 3 | B3 |
| 24 x 30 (18 x 24) | 15.1 x 21 | 2 | 4 | 12 | 13 | B1 |
| | | | 5 | 8 - 9 | 9 | B2 |
| | | 3 | 3 | 10 - 11 | 11 - 12 | B1 |
| | | | 4 | 7 - 8 | 8 | B2 |
| | | 4 | 2 | 7 | 8 | B1 |
| | | | 3 | 4 - 5 | 5 | B2 |
| | | 5 | 2 | 5 - 6 | 6 | B1 |
| | | | | 4 | 4 - 5 | B2 |
| | | 6 | 1 | 4 - 5 | 5 | B1 |
| | | | 2 | 3 | 3 - 4 | B2 |
| | | 8 | 1 | 3 - 4 | 3 - 4 | B1 |
| | | | | 2 - 3 | 2 - 3 | B2 |
| 25 dia. (19.7 dia.) | Marking plate | 2 | 3 | 6 | 6 | B4 |
| | | 3 | 2 | 5 | 6 | B4 |
| | | 4 | 2 | 3 | 4 | B4 |
| | | 5 | 1 | 2 | 3 | B4 |
| | | 6 | 1 | 2 | 3 | B4 |
| | | 8 | 1 | 2 | 2 | B4 |

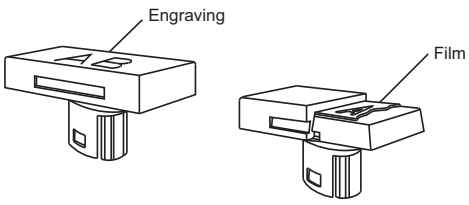


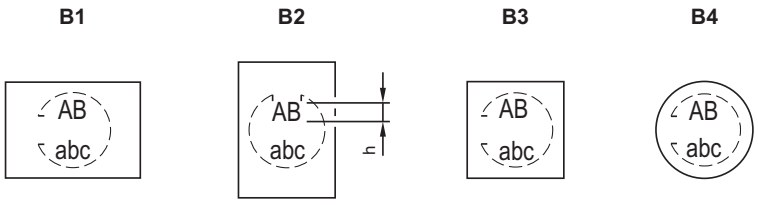



## Lenses for Indicators | Illuminated pushbuttons, raised mounting

All dimensions in mm

| Front size (Lens) | Film insert max. size | Height of letters h | Number of lines | Number of (target value) capital letters per line | Number of (target value) small letters per line | Image |
|---|---|---|---|---|---|---|
| 18 dia. (15.8 dia.) | 12.8 dia. | 2 | | 6 | 6 | B4 |
| | | 3 | 2 | 5 | 6 | B4 |
| | | 4 | 2 | 3 | 4 | B4 |
| | | 5 | 1 | 2 | 3 | B4 |
| | | 6 | 1 | 2 | 3 | B4 |
| | | 8 | 1 | 2 | 2 | B4 |
| 18 x 18 (15.3 x 15.3) | 12.7 x 12.7 | 2 | 4 | 7 - 8 | 8 | B3 |
| | | 3 | 3 | 6 - 7 | 7 | B3 |
| | | 4 | 2 | 4 - 5 | 5 | B3 |
| | | 5 | 2 | 3 - 4 | 4 | B3 |
| | | 6 | 1 | 3 | 3 - 4 | B3 |
| | | 8 | 1 | 2 - 3 | 2 - 3 | B3 |
| 18 x 24 (15.3 x 21.5) | 12.7 x 18.7 | 2 | 4 | 11 | 12 | B1 |
| | | | 5 | 7 - 8 | 8 | B2 |
| | | 3 | 3 | 9 -10 | 10 - 11 | B1 |
| | | | 4 | 6 - 7 | 7 | B2 |
| | | 4 | 2 | 7 | 7 - 8 | B1 |
| | | | 3 | 4 - 5 | 5 | B2 |
| | | 5 | 2 | 5 - 6 | 6 | B1 |
| | | | | 3 - 4 | 4 | B2 |
| | | 6 | 1 | 4 - 5 | 5 | B1 |
| | | | 2 | 3 | 3 - 4 | B2 |
| | | 8 | 1 | 3 - 4 | 3 - 4 | B1 |
| | | | | 2 - 3 | 2 - 3 | B2 |
| 24 dia. (19.7 dia.) | Marking plate | 2 | 3 | 6 | 6 | B4 |
| | | 3 | 2 | 5 | 6 | B4 |
| | | 4 | 2 | 3 | 4 | B4 |
| | | 5 | 1 | 2 | 3 | B4 |
| | | 6 | 1 | 2 | 3 | B4 |
| | | 8 | 1 | 2 | 2 | B4 |
| 24 x 24 (20 x 20) | 16.9 x 16.9 | 2 | 4 | 9 | 10 | B3 |
| | | 3 | 3 | 7 - 8 | 9 | B3 |
| | | 4 | 2 | 4 - 5 | 5 | B3 |
| | | 5 | 2 | 4 | 4 - 5 | B3 |
| | | 6 | 1 | 4 | 4 | B3 |
| | | 8 | 1 | 2 | 2 | B3 |

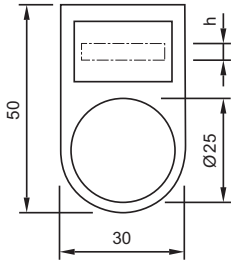


## Engraving legend plates

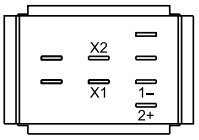
All dimensions in mm

| Height of letters<br>h | Number of lines | Number of (target value)<br>letters per line |
|---|---|---|
| 3.0 | 1 | 11 |
| 3.0 | 2 | 11 |
| 4.0 | 1 | 7 |
| 8.0 | 1 | 4 |

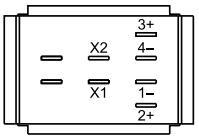


## Component layout

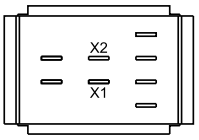
**1 Diode element** page 33



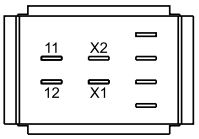

**2 Diode element** page 33



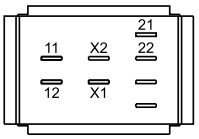

**3 Lamp element** page 33



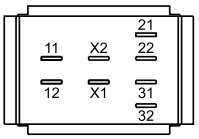

**4 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



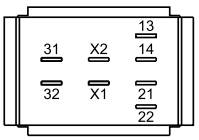

**5 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



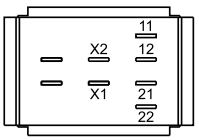

**6 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



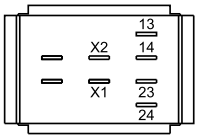

**7 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



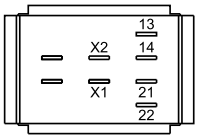

**8 Switching element for Keylock- and Selector switch 3 positions** page 36



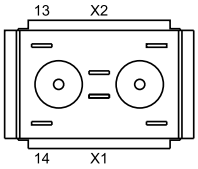
**9 Switching element for Keylock- and Selector switch 3 positions** page 36



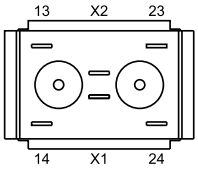

**10 Switching element for Keylock- and Selector switch 3 positions** page 36



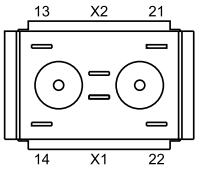

**11 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



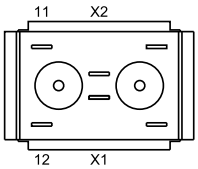

**12 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



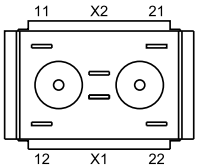

**13 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



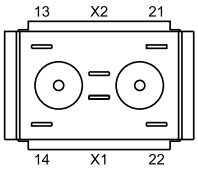

**14 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



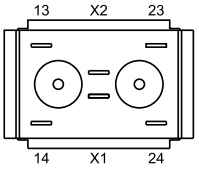

**15 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



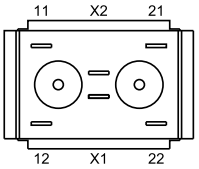

**16 Switching element for Keylock- and Selector switch 3 positions** page 36



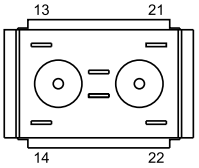
**17 Switching element for Keylock- and Selector switch 3 positions** page 36



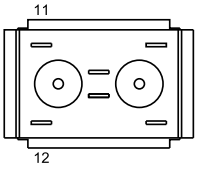

**18 Switching element for Keylock- and Selector switch 3 positions** page 36



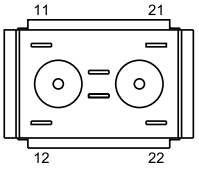

**19 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37



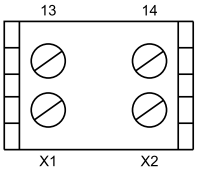

**20 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37



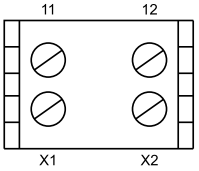

**21 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37



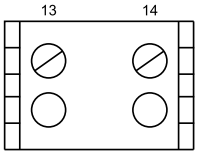

**22 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



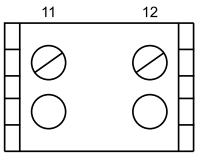

**23 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



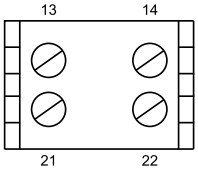
**24 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



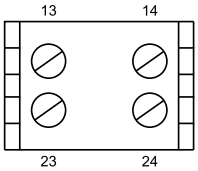

**25 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36



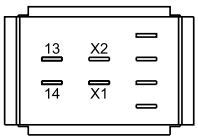

**26 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36 **| Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36



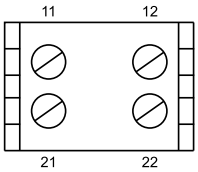

**27 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36



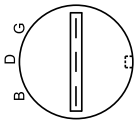

**28 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



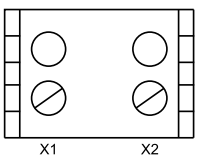

**29 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36 **| Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36



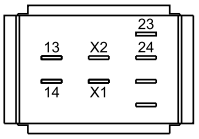

**30 Flasher element** page 34



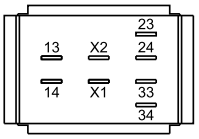

**31 Lamp element** page 33



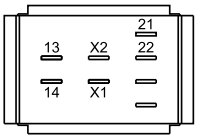
**32 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



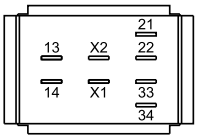

**33 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



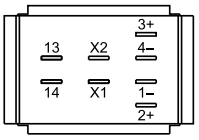

**34 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35




**35 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35

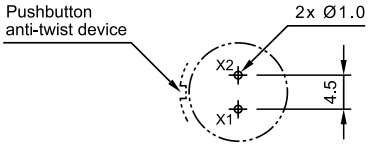



**36 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



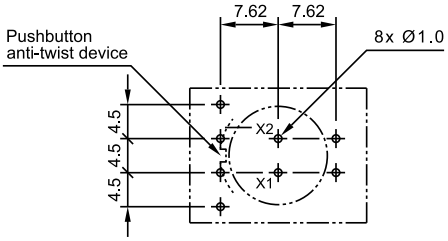

**37 PCB plug-in base** page 37

Drilling plan (Element side)
Through-connection recommended



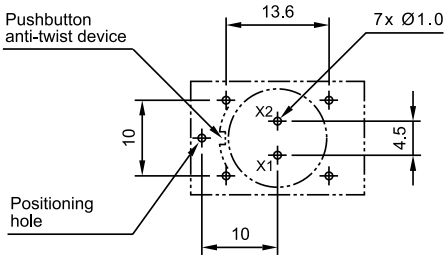

**38 PCB plug-in base** page 37

Drilling plan (Elementside)
Through-connection recommended



**39 PCB plug-in base** page 37

Drilling plan (Elementside)
Trough-connection recommended



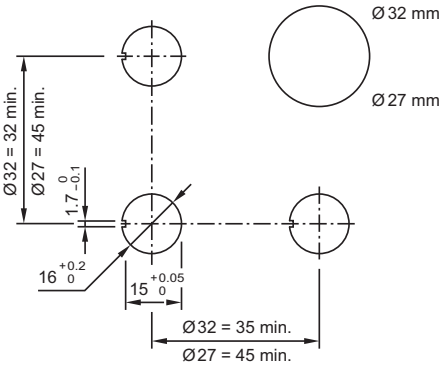

**40 Potentiometer, flush mounting** page 24

Rearview
Potentiometer terminals

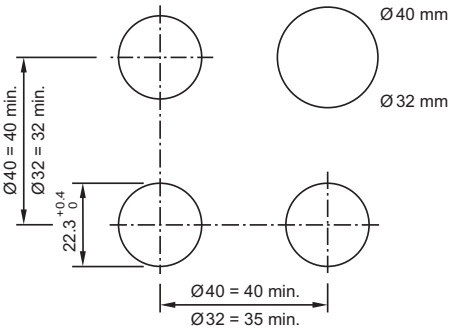
Conductor colour of flat ribbon cable
a = blue, b = red, c = yellow

## Mounting dimensions

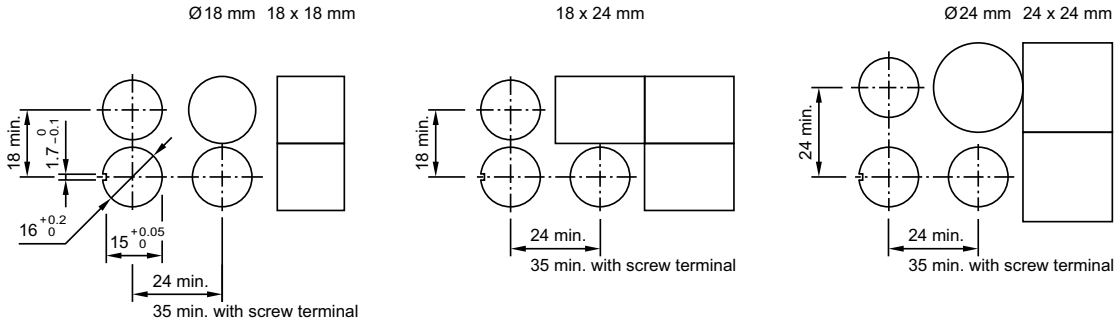
**1 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5** page 13 **| Stop pushbutton actuator, foolproof** page 14 **| Mushroom-head pushbutton actuator** page 14



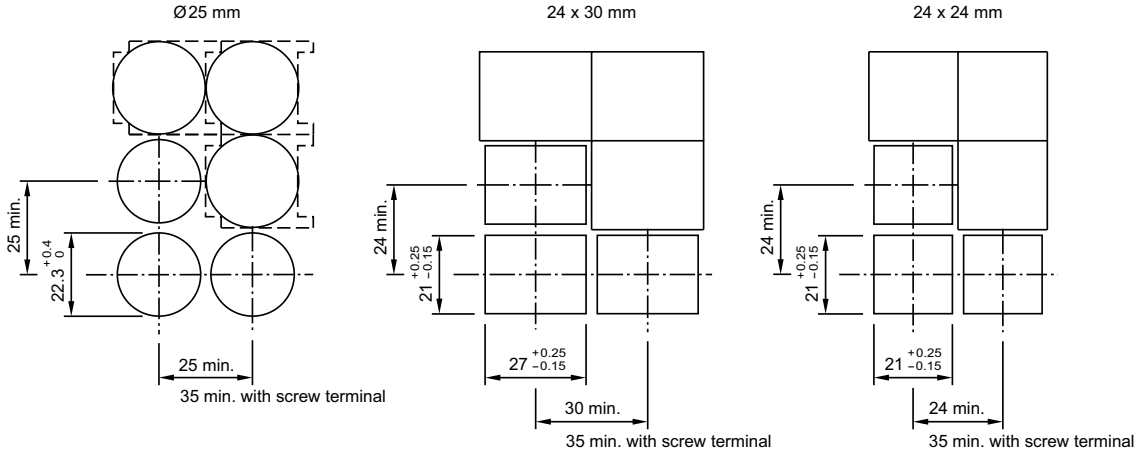

**2 Mushroom-head pushbutton actuator, flush mounting** page 20 **| Front bezel set for Mushroom-head pushbutton, flush mounting** page 30



**3 Indicator complete** page 11 **| Indicator actuator** page 11 **| Illuminated pushbutton actuator** page 12 **| Keylock switch actuator 2 positions** page 15 **| Keylock switch actuator 3 positions** page 16 **| Selector switch actuator 2 positions** page 17 **| Selector switch actuator 3 positions** page 18 **| Blind plug, raised mounting** page 32



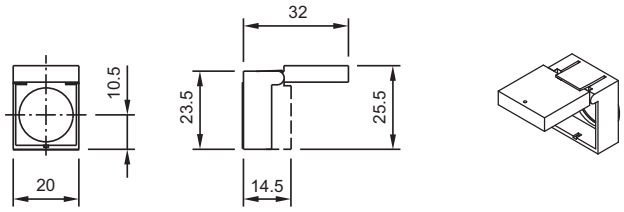

**4 Indicator complete, flush mounting** page 19 **| Indicator actuator, flush mounting** page 19 **| Illuminated pushbutton actuator, flush mounting** page 20 **| Keylock switch actuator 2 positions, flush mounting** page 21 **| Keylock switch actuator 3 positions, flush mounting** page 22 **| Selector switch actuator 2 positions, flush mounting** page 23 **| Selector switch actuator 3 positions, flush mounting** page 24 **| Potentiometer, flush mounting** page 24 **| Front bezel set for Indicators and Illuminated pushbutton, flush mounting** page 29 **| Front bezel set for Keylock switch, flush mounting** page 30 **| Front bezel set for Selector switch, flush mounting** page 31 **| Protective cover, flush mounting** page 32 **| Blind plug, flush mounting** page 32



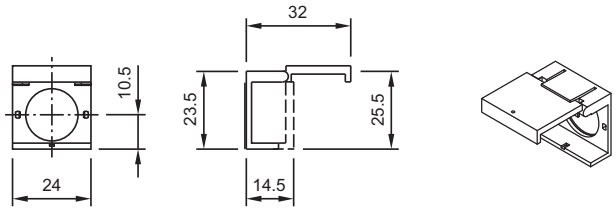

- Hole spacing min. 26 mm / min. 26 mm by using of the round front protective cap 84-9103.7
- Hole spacing min. 31 mm / min. 25 mm by using of the rectangular front protectice cap 61-9927.2

## Technical drawing

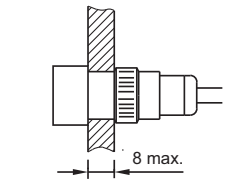
**1 Protective cover, raised mounting** page 31

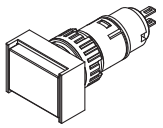


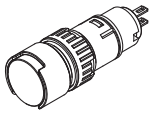

**2 Protective cover, raised mounting** page 31

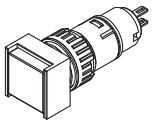


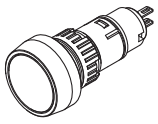
**3 Indicator complete** page 11

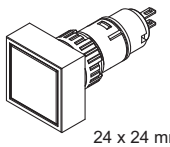


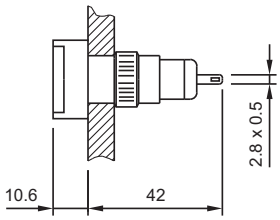


18 x 24 mmm


Ø 18 mm

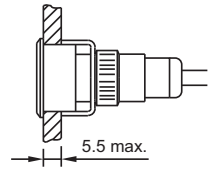

18 x 18 mm

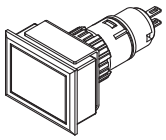

Ø 24 mm


24 x 24 mm




**4 Indicator complete, flush mounting** page 19

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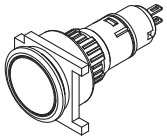
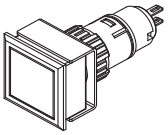
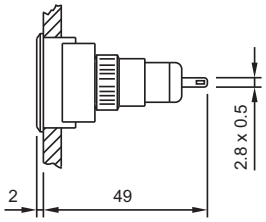
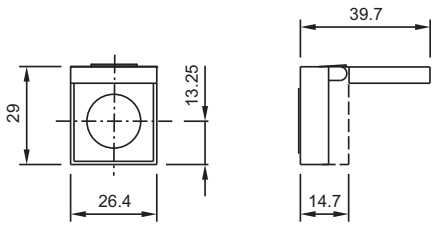
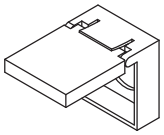

Ø 25 mm


24 x 24 mm

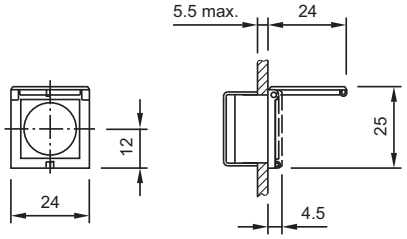


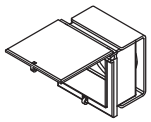

**5 Protective cover, raised mounting** page 31



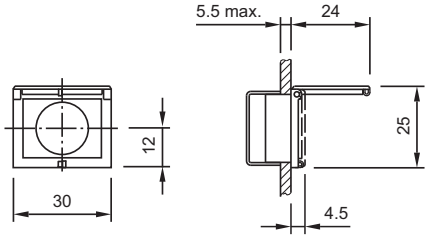



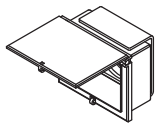
**6 Protective cover, flush mounting** page 32



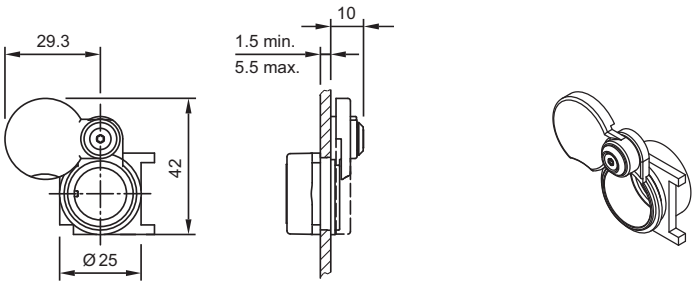



**7 Protective cover, flush mounting** page 32

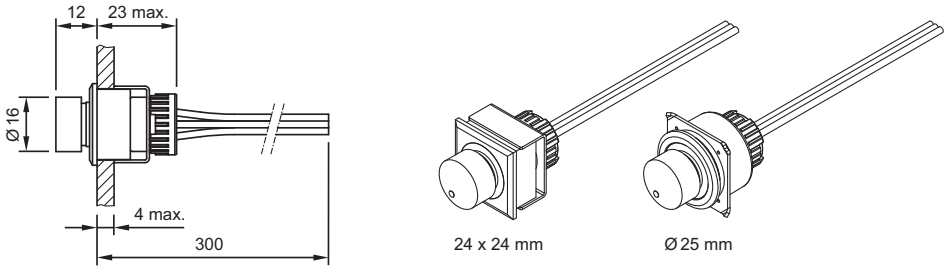


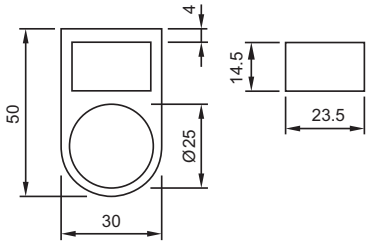
**8 Protective cover, flush mounting** page 32



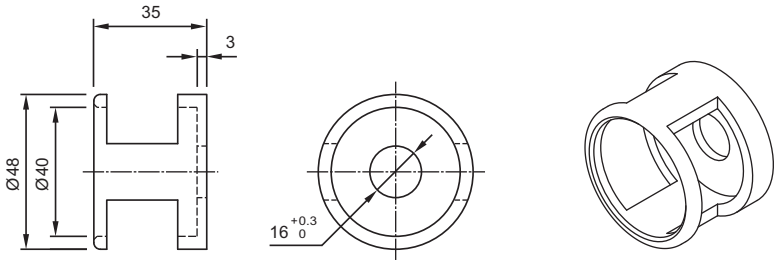

**9 Potentiometer, flush mounting** page 24



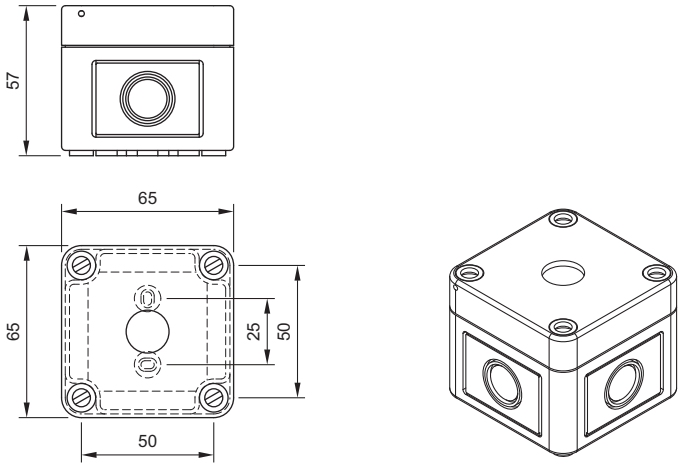

**10 Legend frame** page 28



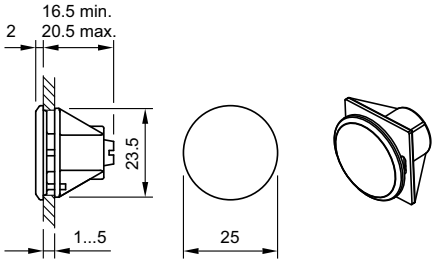

**11 Emergency-stop protective shroud** page 40



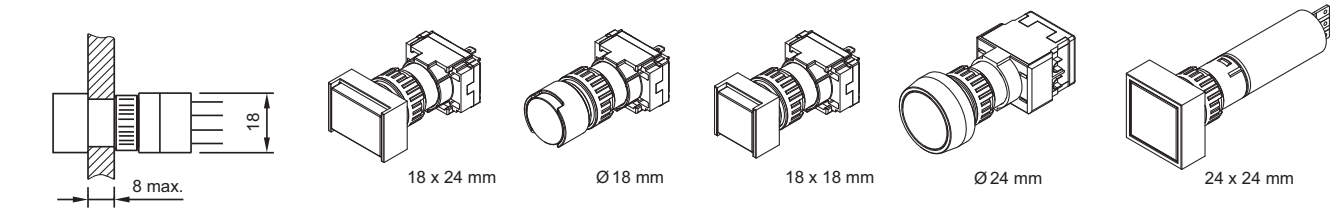

**12 Emergency-stop enclosures** page 40 **| Enclosure** page 42

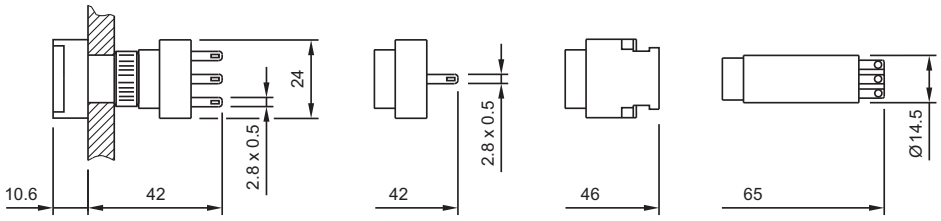


**13 Blind plug, flush mounting** page 32




**14 Indicator actuator** page 11



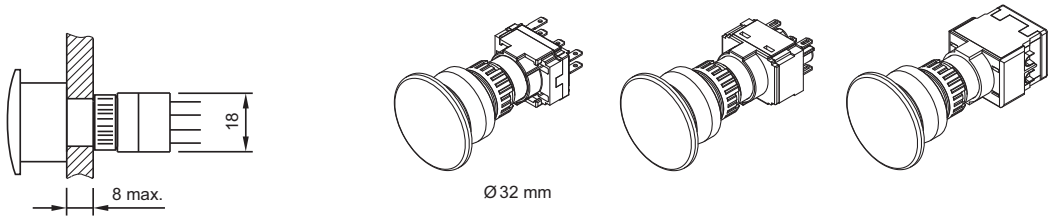

Diode element
Soldering terminal

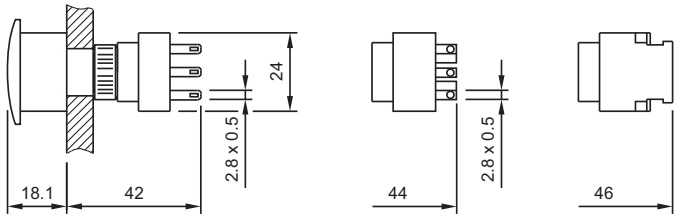
Lamp element
Soldering terminal

Lamp element
Screw terminal

Flasher element
Soldering terminal

**15 Mushroom-head pushbutton actuator** page 14



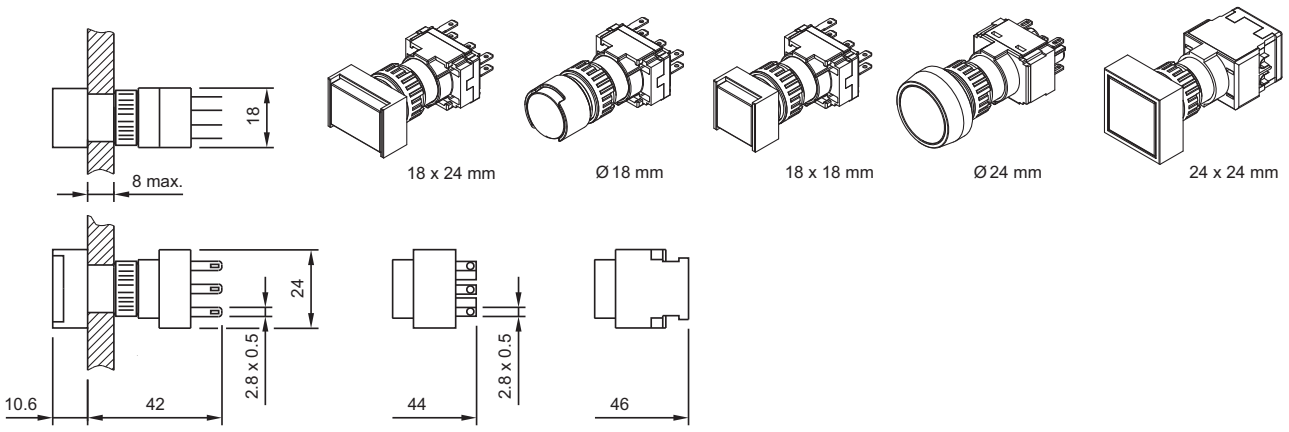




Snap-action switching element
Soldering terminal

Low-make switching element
Soldering terminal

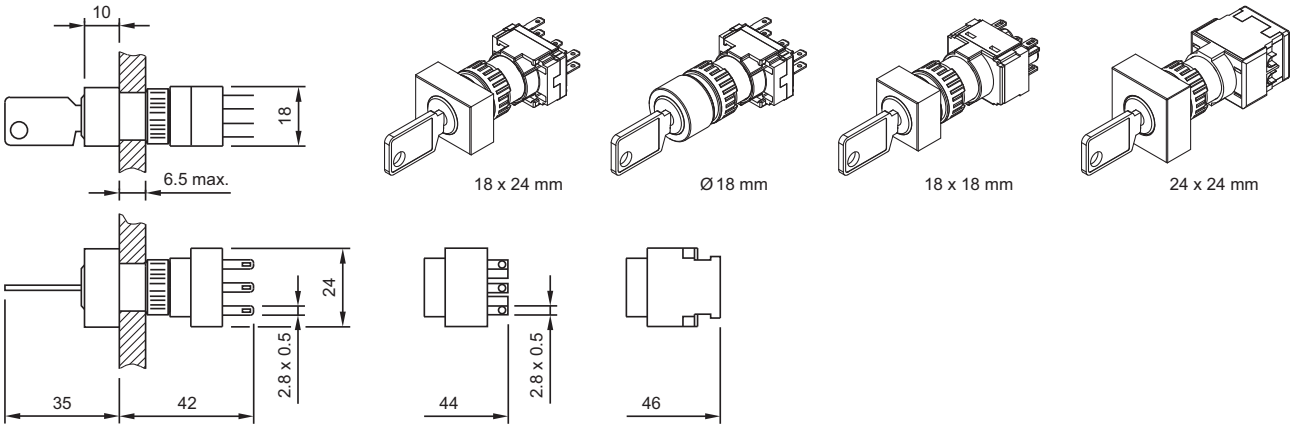
Low-make switching element
Screw terminal

**16 Illuminated pushbutton actuator** page 12



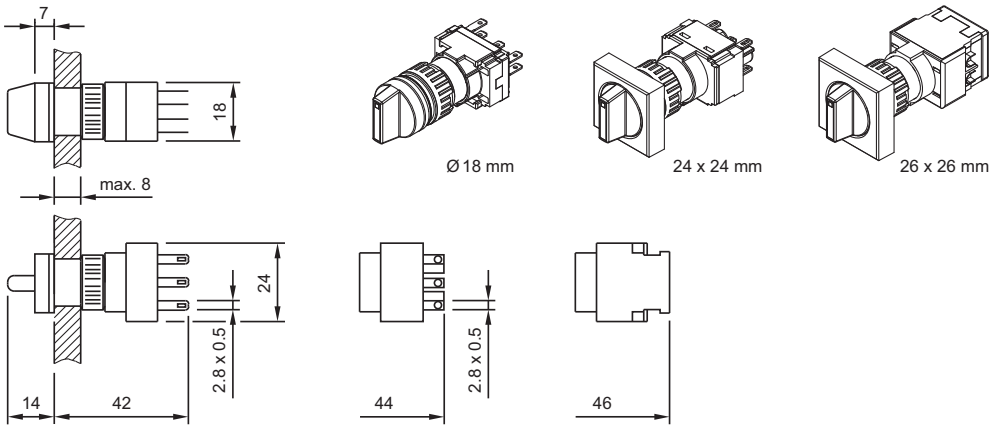

Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

**17 Keylock switch actuator 2 positions** page 15 **| Keylock switch actuator 3 positions** page 16



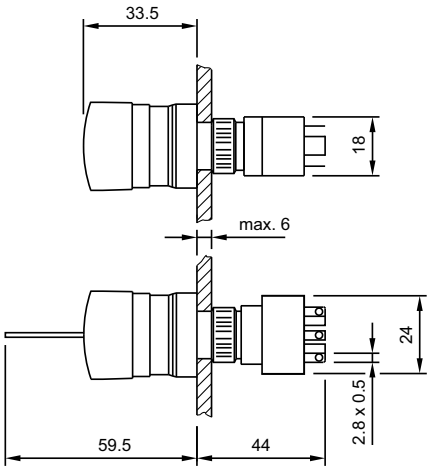

Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

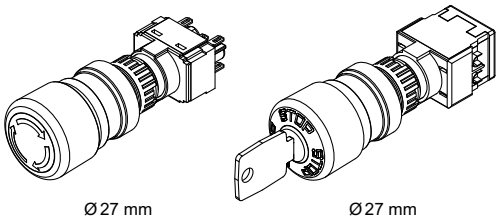
**18 Selector switch actuator 2 positions** page 17 **| Selector switch actuator 3 positions** page 18




Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

**19 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5** page 13 **| Stop pushbutton actuator, foolproof** page 14



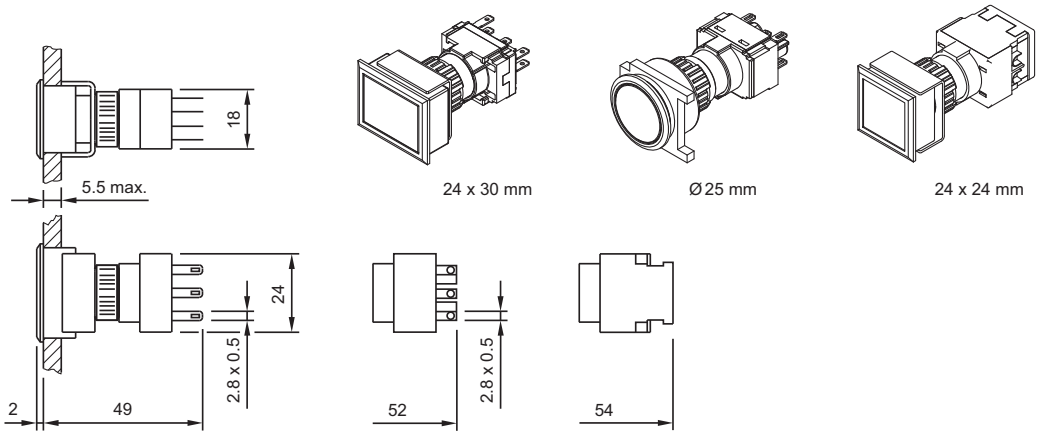




Ø 27 mm Ø 27 mm

Slow-make switching element
Soldering terminal

Slow-make switching element
Screw terminal

**20 Illuminated pushbutton actuator, flush mounting** page 20



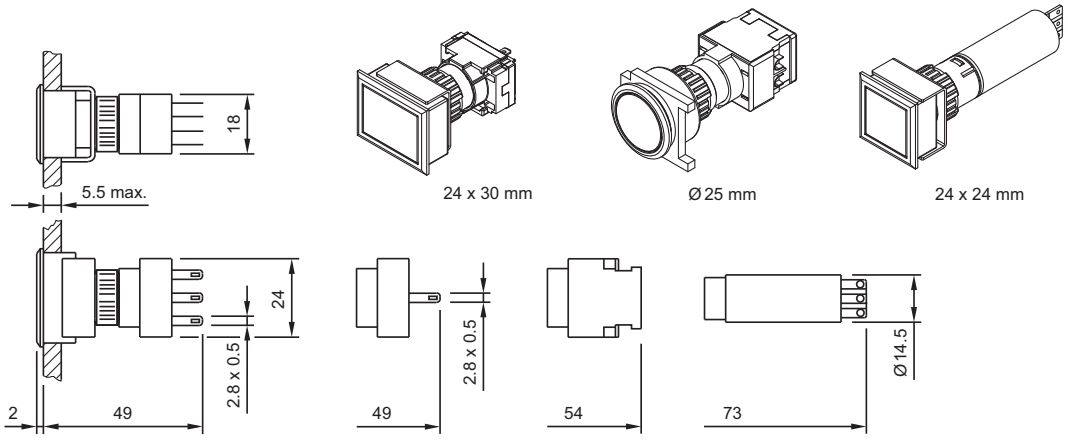

24 x 30 mm Ø 25 mm 24 x 24 mm

Snap-action switching element
Soldering terminal

Slow-make switching element
Soldering terminal

Slow-make switching element
Screw terminal

**21 Indicator actuator, flush mounting** page 19




24 x 30 mm Ø 25 mm 24 x 24 mm

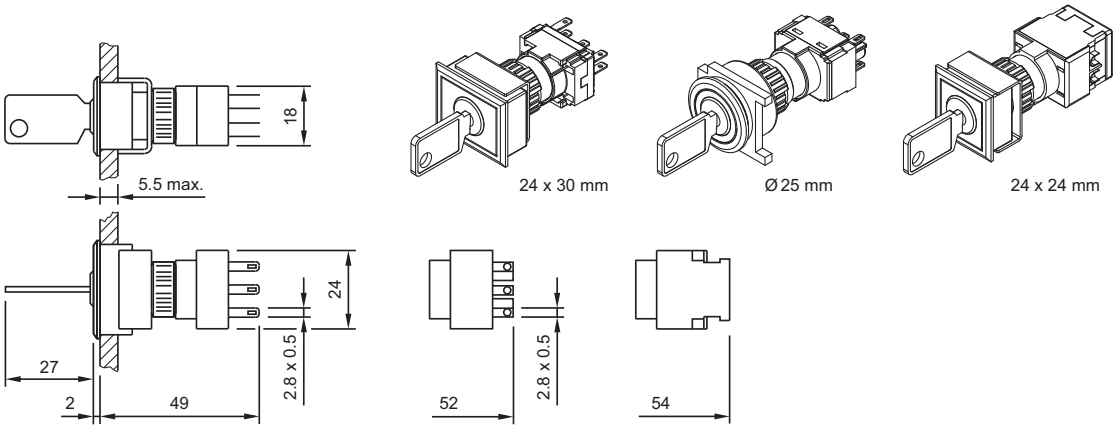
Diode element
Soldering terminal

Lamp element
Soldering terminal

Lamp element
Screw terminal

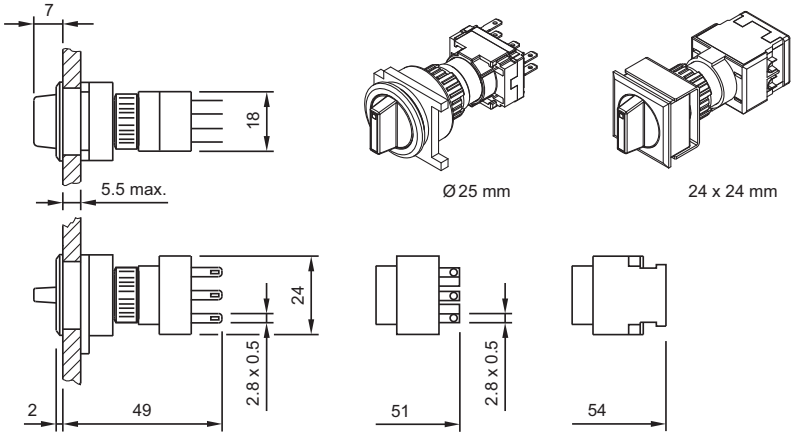
Flasher element
Soldering terminal

**22 Keylock switch actuator 2 positions, flush mounting** page 21 **| Keylock switch actuator 3 positions, flush mounting** page 22



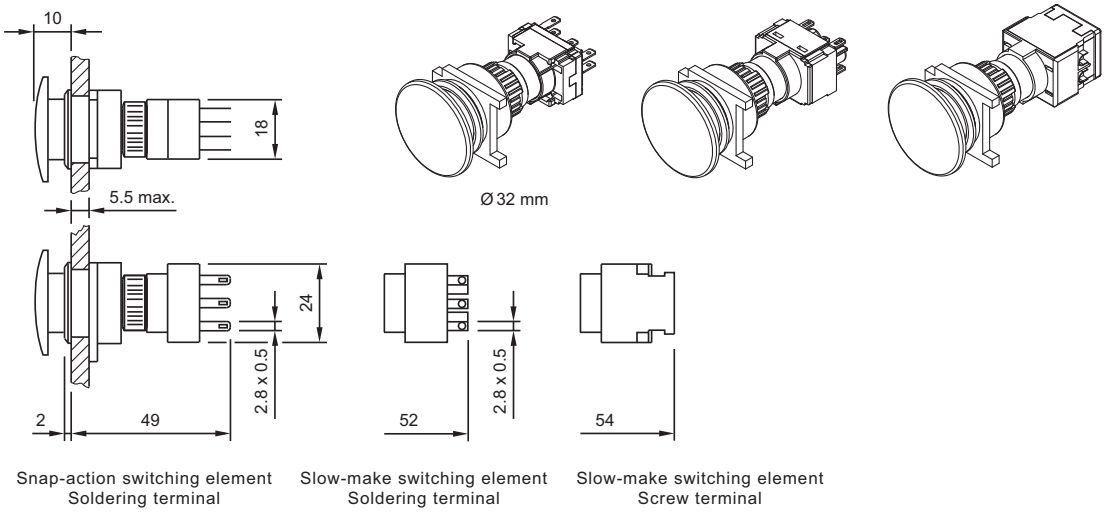

Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

**23 Selector switch actuator 2 positions, flush mounting** page 23 **| Selector switch actuator 3 positions, flush mounting** page 24




Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

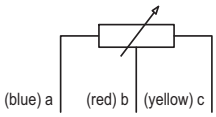
**24 Mushroom-head pushbutton actuator, flush mounting** page 20




Snap-action switching element Soldering terminal | Slow-make switching element Soldering terminal | Slow-make switching element Screw terminal

## Circuit drawing

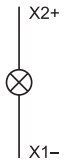
**1 Potentiometer, flush mounting** page 24




**2 Mushroom-head pushbutton actuator** page 14 **| Illuminated pushbutton actuator, flush mounting** page 20 **| Mushroom-head pushbutton actuator, flush mounting** page 20

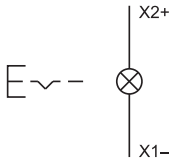
**3 Mushroom-head pushbutton actuator** page 14 **| Illuminated pushbutton actuator, flush mounting** page 20 **| Mushroom-head pushbutton actuator, flush mounting** page 20

**4 Indicator complete** page 11 **| Indicator actuator** page 11 **| Indicator complete, flush mounting** page 19 **| Indicator actuator, flush mounting** page 19 **| Lamp element** page 33

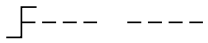



**5 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5** page 13 **| Stop pushbutton actuator, foolproof** page 14

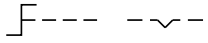
**6 Illuminated pushbutton actuator** page 12




**7 Selector switch actuator 2 positions** page 17 **| Selector switch actuator 2 positions, flush mounting** page 23



**8 Selector switch actuator 2 positions** page 17 **| Selector switch actuator 2 positions, flush mounting** page 23



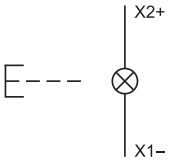
**9 Selector switch actuator 3 positions** page 18 **| Selector switch actuator 3 positions, flush mounting** page 24

**10 Selector switch actuator 3 positions** page 18 **| Selector switch actuator 3 positions, flush mounting** page 24

**11 Selector switch actuator 3 positions** page 18 **| Selector switch actuator 3 positions, flush mounting** page 24

**12 Selector switch actuator 3 positions** page 18 **| Selector switch actuator 3 positions, flush mounting** page 24

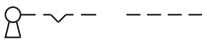
**13 Illuminated pushbutton actuator** page 12




**14 Keylock switch actuator 3 positions** page 16 **| Keylock switch actuator 3 positions, flush mounting** page 22

**15 Keylock switch actuator 3 positions** page 16 **| Keylock switch actuator 3 positions, flush mounting** page 22

**16 Keylock switch actuator 2 positions** page 15 **| Keylock switch actuator 2 positions, flush mounting** page 21

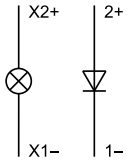


**17 Keylock switch actuator 2 positions** page 15 **| Keylock switch actuator 2 positions, flush mounting** page 21

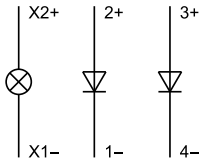
**18 Keylock switch actuator 3 positions** page 16 **| Keylock switch actuator 3 positions, flush mounting** page 22

**19 Keylock switch actuator 3 positions** page 16 **| Keylock switch actuator 3 positions, flush mounting** page 22

**20 Diode element** page 33

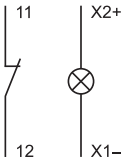



**21 Diode element** page 33

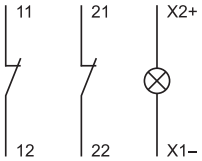



**22 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35

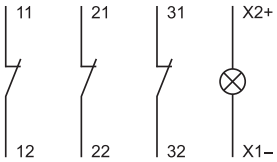
**23 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



**24 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36

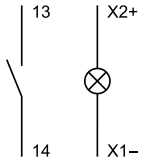



**25 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35

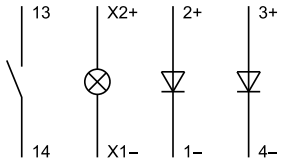



**26 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35

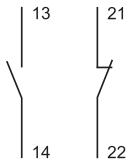
**27 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



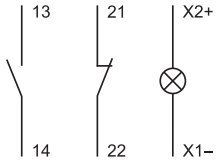

**28 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



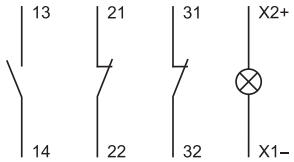

**29 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



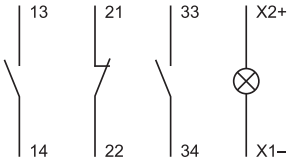

**30 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36



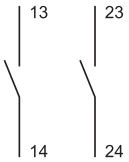

**31 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



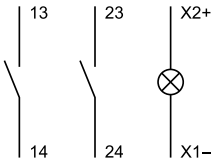
**32 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35



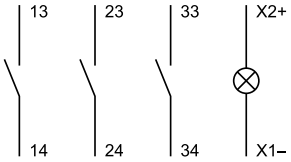

**33 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36



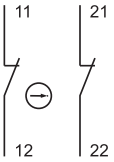

**34 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36



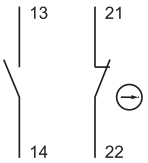

**35 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35




**36 Switching element for Pushbutton | Keylock- and Selector switch 2 positions** page 35 **| Switching element for Keylock- and Selector switch 3 positions** page 36 **| Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37




**37 Switching element for Keylock- and Selector switch 3 positions** page 36 **| Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37




**38 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5** page 36 **| Switching element for Stop pushbutton, foolproof** page 37

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