

EAO – Your Expert Partner for
Human Machine Interfaces



EAO Product Information

Series 61



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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 determined 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 :

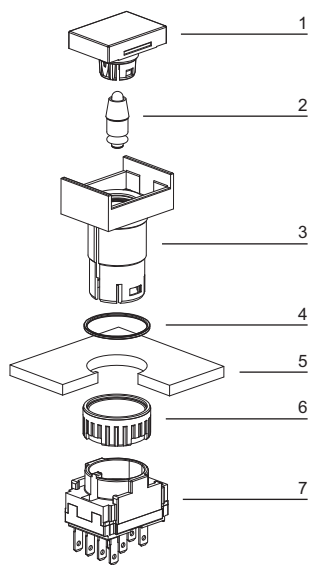
- Indicator complete, flush mounting, 24 x 24 mm 61-0000.02

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

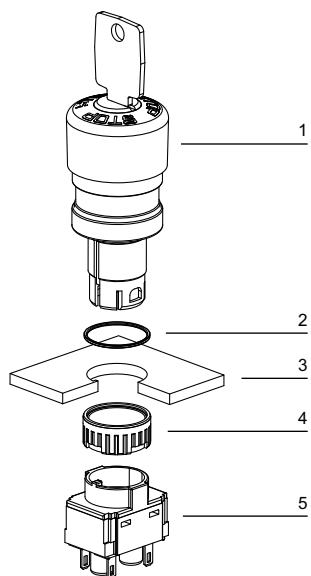
*We reserve the right to modify technical data
All dimensions in mm*

Pushbutton illuminative, raised mounting



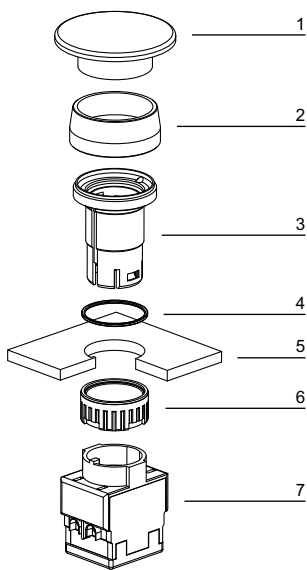
- 1 Lens
- 2 LED
- 3 Actuator housing
- 4 Sealing
- 5 Front plate
- 6 Fixing nut
- 7 Switching element

Emergency-stop pushbutton



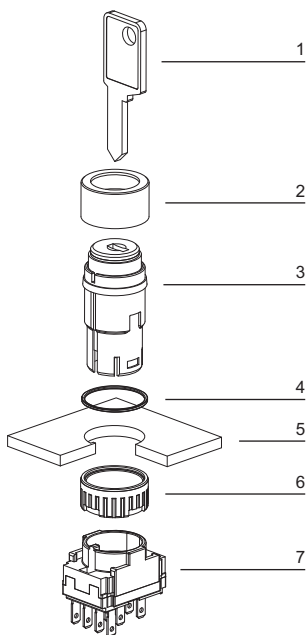
- 1 Emergency-stop pushbutton actuator
- 2 Sealing
- 3 Front plate
- 4 Fixing nut
- 5 Switching element

Mushroom-head pushbutton, raised mounting



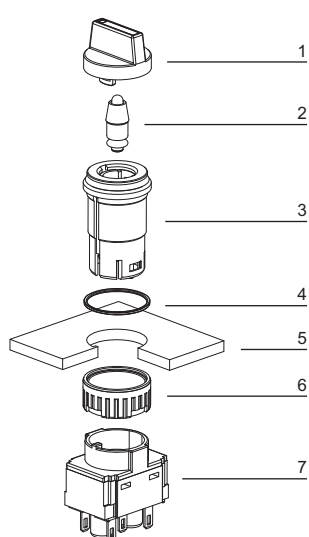
- 1 Mushroom-head cap
- 2 Front ring
- 3 Actuator housing
- 4 Sealing
- 5 Front plate
- 6 Fixing nut
- 7 Switching element

Keylock switch, raised mounting



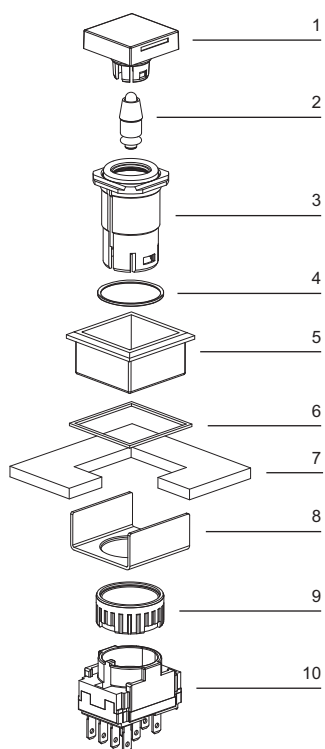
- 1 Key
- 2 Keylock front bezel
- 3 Keylock switch actuator
- 4 Sealing
- 5 Front plate
- 6 Fixing nut
- 7 Switching element

Selector switch illuminative, raised mounting



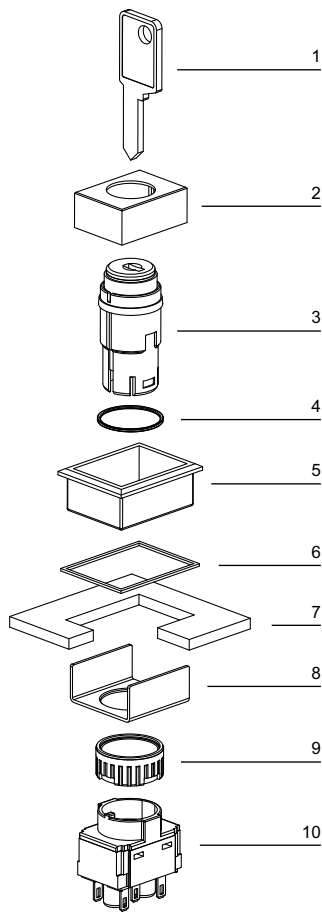
- 1 Lever
- 2 LED
- 3 Selector switch actuator
- 4 Sealing
- 5 Front plate
- 6 Fixing nut
- 7 Switching element

Pushbutton illuminative, flush mounting



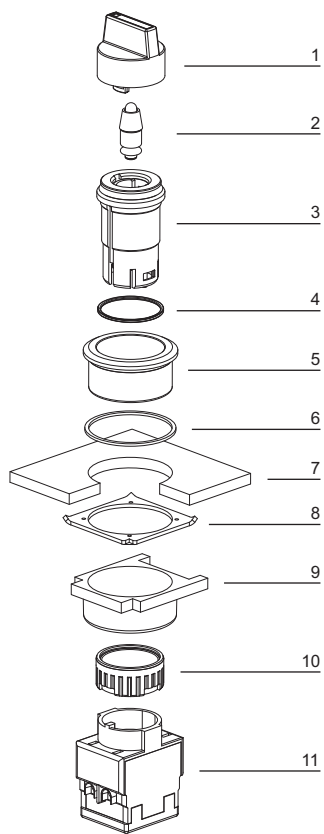
- 1 Lens
- 2 LED
- 3 Actuator housing
- 4 Sealing
- 5 Front bezel
- 6 Sealing
- 7 Front panel
- 8 Fixing bracket
- 9 Fixing nut
- 10 Switching element

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

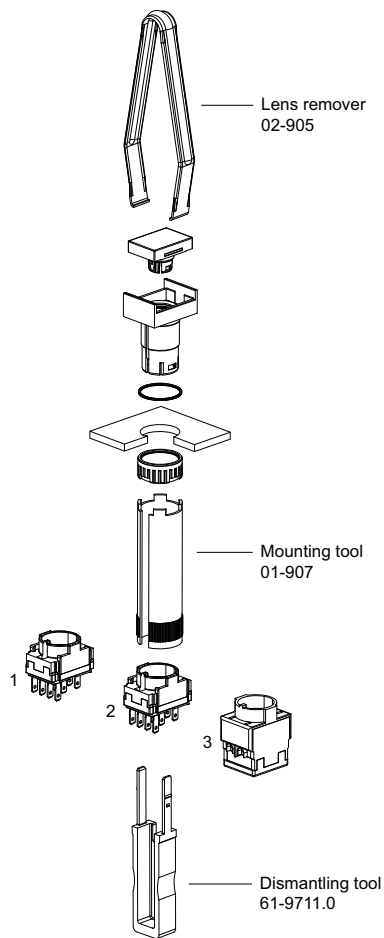


- 1 Lever
- 2 LED
- 3 Selector switch actuator
- 4 Sealing
- 5 Front bezel
- 6 Sealing
- 7 Front plate
- 8 Anti-twist ring
- 9 Thrust piece
- 10 Fixing nut
- 11 Switching element

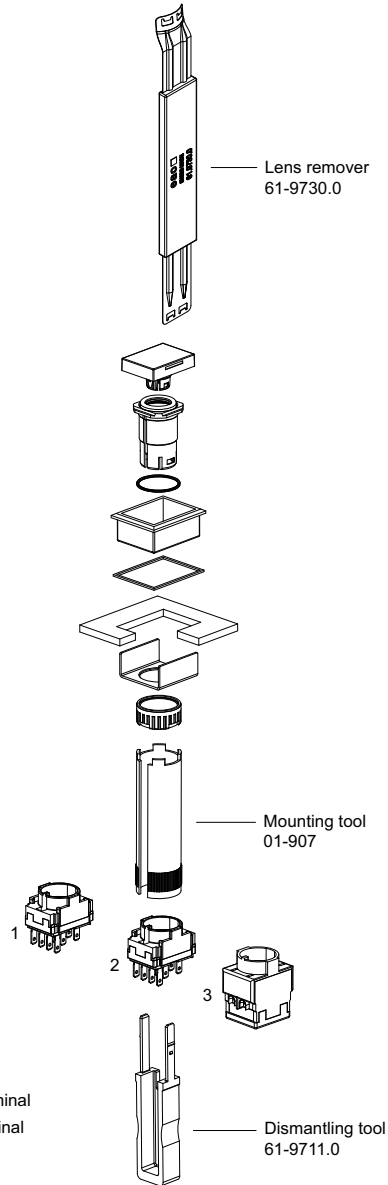
Tool set

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

raised mounting



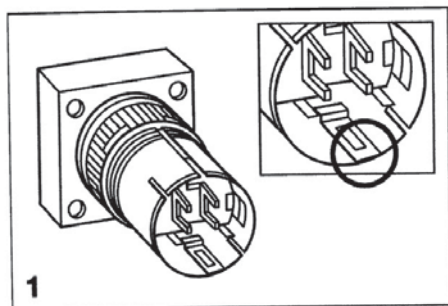
flush mounting



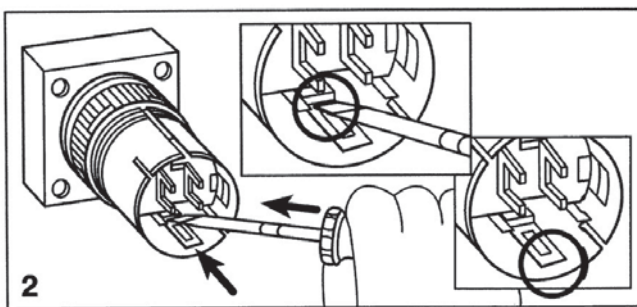
- 1 Snap-action switching element with soldering terminal
- 2 Slow-make switching element with soldering terminal
- 3 Slow-make switching element with screw terminal

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.	∅ 24 mm Typ-Nr.	∅ 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
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 ∅ 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.	∅ 24 mm Typ-Nr.	∅ 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
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 ∅ 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.	∅ 24 mm Typ-Nr.	∅ 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
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 ∅ 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	
Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5 Position indication ring black Key to unlock clockwise Standard lock 1001	IP 65	MA	Plastic red	Stop	61-5441.4/K	1	19	5	0.033
Position indication ring black 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 Twist to unlock clockwise with adaptor for mosaic	IP 65	MA	Plastic red	Arrows	61-3440.4/1S	1	19	5	0.021
Position indication ring black Twist to unlock clockwise with metal Fixing nut	IP 65	MA	Plastic red	Arrows	61-3440.4/D	1	19	5	0.020
Position indication ring green 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 head cap	Marking	Ø 27 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
Stop pushbutton actuator, foolproof Position indication ring black Key to unlock clockwise Standard lock 1001	IP 65	MA	Plastic black	without	61-5441.0/KA	1	19	5	0.033
Position indication ring black 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	
Mushroom-head pushbutton actuator Actuator housing black	IP 65	MA	61-1240.0	1	15	2	0.005
		M	61-1140.0	1	15	3	0.005

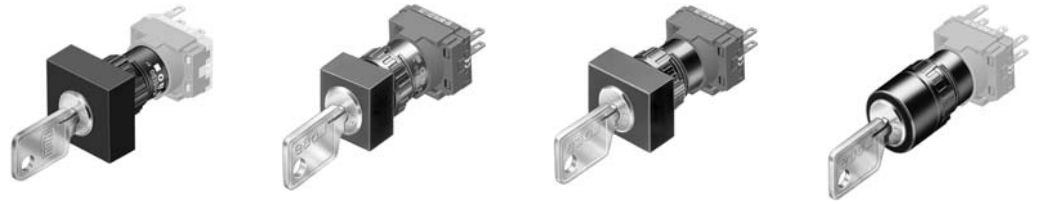
Switching action: MA = Maintained action, M = Momentary action

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




Keylock switch actuator 2 positions

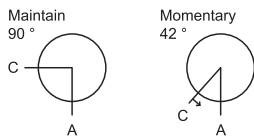
if mounted with anti-twist device, the lug is on the left side


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	
Keylock switch actuator 2 positions Position A: Basic position Position C: Maintained action 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 Position C: Momentary action 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

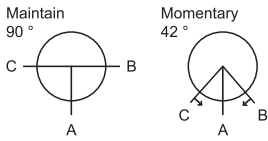
if mounted with anti-twist device, the lug is on the left side

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	
Keylock switch actuator 3 positions Pos. C: Maintained action Pos. A: Basic position Pos. B: Maintained action 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 Pos. A: Basic position Pos. B: Momentary action 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 Pos. A: Basic position Pos. B: Maintained action 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 Pos. A: Basic position Pos. B: Maintained action Standard lock 311	IP 65	M-0-MA	A	61-2801.0/D	3	17	15	0.065
Pos. C: Momentary action Pos. A: Basic position Pos. B: Momentary action 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

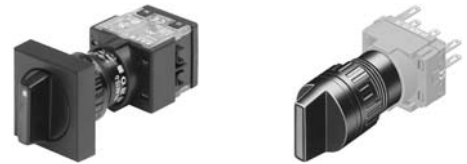
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

Selector switch actuator 2 positions






illuminative

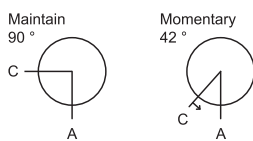
if mounted with anti-twist device, the lug is on the left side

Actuators usable for front dimensions: \square 26 x 26 mm | \square 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	
Selector switch actuator 2 positions Position C: Maintained action Position A: Basic position	IP 65	MA	61-4210.0	3	18	8	0.006
Position C: Momentary action 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

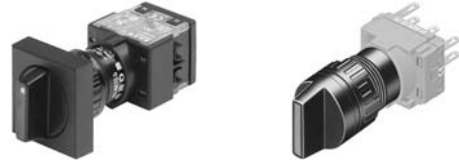
Mounting dimensions from page 58, Technical drawing from page 59, Circuit drawing from page 66

Selector switch actuator 3 positions






illuminative

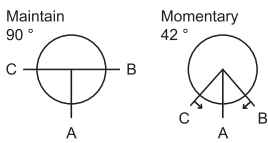
if mounted with anti-twist device, the lug is on the left side


Actuators usable for front dimensions: \square 26 x 26 mm | \square 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	
Selector switch actuator 3 positions Position C: Maintained action Position A: Basic position Position B: Maintained action	IP 65	MA-0-MA	61-4610.0	3 18	12	0.006	
Position C: Maintained action Position A: Basic position Position B: Momentary action	IP 65	MA-0-M	61-4710.0	3 18	11	0.006	
Position C: Momentary action Position A: Basic position Position B: Maintained action	IP 65	M-0-MA	61-4810.0	3 18	10	0.006	
Position C: Momentary action Position A: Basic position 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: \varnothing 24 x 24 mm | \varnothing 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: \varnothing 24 x 24 mm | \varnothing 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: \square 24 x 24 mm | \square 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	
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	\varnothing 32 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
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

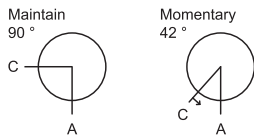
Keylock switch actuator 2 positions, flush mounting

Actuators usable for front dimensions: \varnothing 24 x 24 mm | \square 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	
Keylock switch actuator 2 positions, flush mounting Position A: Basic position Position C: Maintained action Standard lock 311	IP 65	MA	A	61-2201.0/D	4	22	17	0.065
			C	61-2203.0/D	4	22	17	0.065
			C + A	61-2205.0/D	4	22	17	0.065
Position A: Basic position Position C: Momentary action Standard lock 311	IP 65	M	A	61-2101.0/D	4	22	16	0.065

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

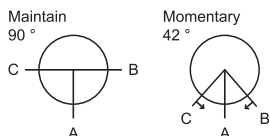
Keylock switch actuator 3 positions, flush mounting


Actuators usable for front dimensions: \square 24 x 24 mm | \square 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	
Keylock switch actuator 3 positions, flush mounting Pos. C: Maintained action Pos. A: Basic position Pos. B: Maintained action Standard lock 311	IP 65	MA-0-MA	A	61-2601.0/D	4	22	19	0.065
			A + B	61-2604.0/D	4	22	19	0.065
			B	61-2602.0/D	4	22	19	0.065
			C	61-2603.0/D	4	22	19	0.065
			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 Pos. A: Basic position Pos. B: Momentary action Standard lock 311	IP 65	MA-0-M	A	61-2701.0/D	4	22	18	0.065
			C	61-2703.0/D	4	22	18	0.065
			C + A	61-2705.0/D	4	22	18	0.065
Pos. C: Momentary action Pos. A: Basic position Pos. B: Maintained action Standard lock 311	IP 65	M-0-MA	A + B	61-2804.0/D	4	22	15	0.065
			B	61-2802.0/D	4	22	15	0.065
Pos. C: Momentary action Pos. A: Basic position Pos. B: Maintained action Standard lock 311	IP 65	M-0-MA	A	61-2801.0/D	4	22	15	0.065
Pos. C: Momentary action Pos. A: Basic position Pos. B: Momentary action Standard lock 311	IP 65	M-0-M	A	61-2501.0/D	4	22	14	0.065

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

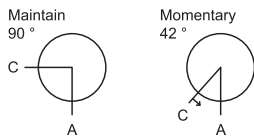
illuminative

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 Position C: Maintained action Position A: Basic position	IP 65	MA	61-4210.0	4	23	8	0.006
Position C: Momentary action 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

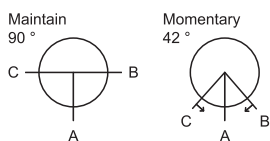
illuminative

Actuators usable for front dimensions: \varnothing 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	
Selector switch actuator 3 positions, flush mounting Position C: Maintained action Position A: Basic position Position B: Maintained action	IP 65	MA-0-MA	61-4610.0	4	23	12	0.006
Position C: Maintained action Position A: Basic position Position B: Momentary action	IP 65	MA-0-M	61-4710.0	4	23	11	0.006
Position C: Momentary action Position A: Basic position Position B: Maintained action	IP 65	M-0-MA	61-4810.0	4	23	10	0.006
Position C: Momentary action Position A: Basic position 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	\varnothing 24 x 24 mm Typ-Nr.	\varnothing 25 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	
Potentiometer, flush mounting 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.	∅ 24 mm Typ-Nr.	∅ 18 mm Typ-Nr.	
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.	∅ 25 mm Typ-Nr.	
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.	
Lens plastic with symbol 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.	
Marking plate for lens plastic 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.	
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.	
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.	
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	Ø 24 x 24 mm Typ-Nr.	Ø 18 x 18 mm Typ-Nr.	Ø 18 x 24 mm Typ-Nr.	Ø 18 mm Typ-Nr.	
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	Ø 24 x 24 mm Typ-Nr.	Ø 24 x 30 mm Typ-Nr.	Ø 25 mm Typ-Nr.	
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.	
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.	
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	
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.	
Legend plate insert 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.	
Front bezel square for selector switch, raised mounting 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	\square 24 x 24 mm Typ-Nr.	\square 24 x 30 mm Typ-Nr.	\circ 25 mm Typ-Nr.	Mounting dimensions	
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	
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	
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	
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.	
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.	
Front protective cap for front bezel set 24 x 30 mm, flush mounting	Silicone natural transparent	61-9927.2	0.001
	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	
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

	Ø 24 x 24 mm Typ-Nr.	Ø 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
slide by side, with means not for sealing		61-9922.0		4	7	0.006
			61-9924.0	4	8	0.006



Mounting dimensions from page 58, Technical drawing from page 59

Blind plug, raised mounting

	Blind plug	Ø 24 x 24 mm Typ-Nr.	Ø 18 x 18 mm Typ-Nr.	Ø 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	Ø 24 x 24 mm Typ-Nr.	Ø 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.	
Spare key 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.	
EMC Key protection cap Plastic black, for lock type DOM	31-985.0	0.005



Backside

Lamp element

	Terminals	Typ-Nr.	Component layout		
			Circuit drawing		
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		
Diode element 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	
Flasher element Operation voltage : 12 ... 28 VAC/DC $\pm 10\%$	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			
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		
					1 NC + 1 NO	S1	Ag	61-8670.17	14	23	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	
	42 VAC, 100 mA	SM	2 NC	S1	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	
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	
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	
PCB plug-in base 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.	
Multi-plug housing for Snap-action Switching element, max. 6 connections possible	61-9830	0.002




Flat receptacle

	Typ-Nr.	
Flat receptacle 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.	
Insulation sleeve for Flat receptacles 31-946	31-929	0.001




Terminal cover

	Typ-Nr.	
Terminal cover 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.	
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

Single-LED	Socket	Light colour	Operating voltage/-current	Typ-Nr.	
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 half-wave rectifier possible, slight flickering can occur.

Terminal plate empty

for fitting with series resistors


	Typ-Nr.	
Terminal plate empty 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.	
Emergency-stop label 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	
Emergency-stop protective shroud 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	
Emergency-stop enclosures 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.	
Cable gland 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.	
Fixing nut Metal, specifically for keylock switches	31-991	0.005
Plastic, standard delivery	61-9915.0	0.002




Anti-twist ring

	Typ-Nr.	
Anti-twist ring 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.	
Reducing ring 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

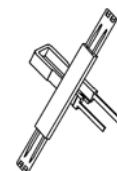


Tool set


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

	Typ-Nr.	
Tool set	K61-999.100	0.048

for dismantling keep care of the enclosed Packing insert




Lens remover

	Typ-Nr.	
Lens remover for flush mounting	61-9730.0	0.011
for raised mounting	02-905	0.011



Lamp remover


	Typ-Nr.	
Lamp remover	61-9740.0	0.003



CAUTION


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

Mounting tool

	Typ-Nr.	
Mounting tool for Indicator 16 mm dia.	01-907	0.020




Dismantling tool

	Typ-Nr.	
Dismantling tool for dismantling of the Switching element	61-9711.0	0.004




Flat receptacle remover

	Typ-Nr.	
Flat receptacle remover 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	
Enclosure 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.	
Cable gland 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

	rigid	flexible	superflexible
1 wire	0.5 ... 1.5 mm ²	0.5 ... 0.75 mm ²	0.5 mm ²
2 wires	0.75 mm ²	0.5 mm ²	

Actuating torque

Selector-/ Keylock switch 2.5 ... 10 Ncm

Actuating force

Pushbutton 2.7 ... 3.6 N

Actuating travel

Pushbutton 3 mm

	2 positions	3 positions
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

Polyetherimid (PEI), as per UL 94 V0, self-extinguishing

Mechanical characteristics

Terminals

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

- Screw

1 wire	0.5 ... 1.5 mm ²	0.5 ... 0.75 mm ²	0.5 mm ²
2 wires	0.75 mm ²	0.5 mm ²	0.5 mm ²

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

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

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 m Ω , 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 screw 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

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

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 m Ω

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

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 Polymethylmethacrylat 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 \pm 0.25 Hz

Pulse duty factor

approx. 50 %

Operating voltage

12 ... 28 VAC/DC \pm 10 %

Environmental conditions

Operating temperature

0 °C ... +45 °C

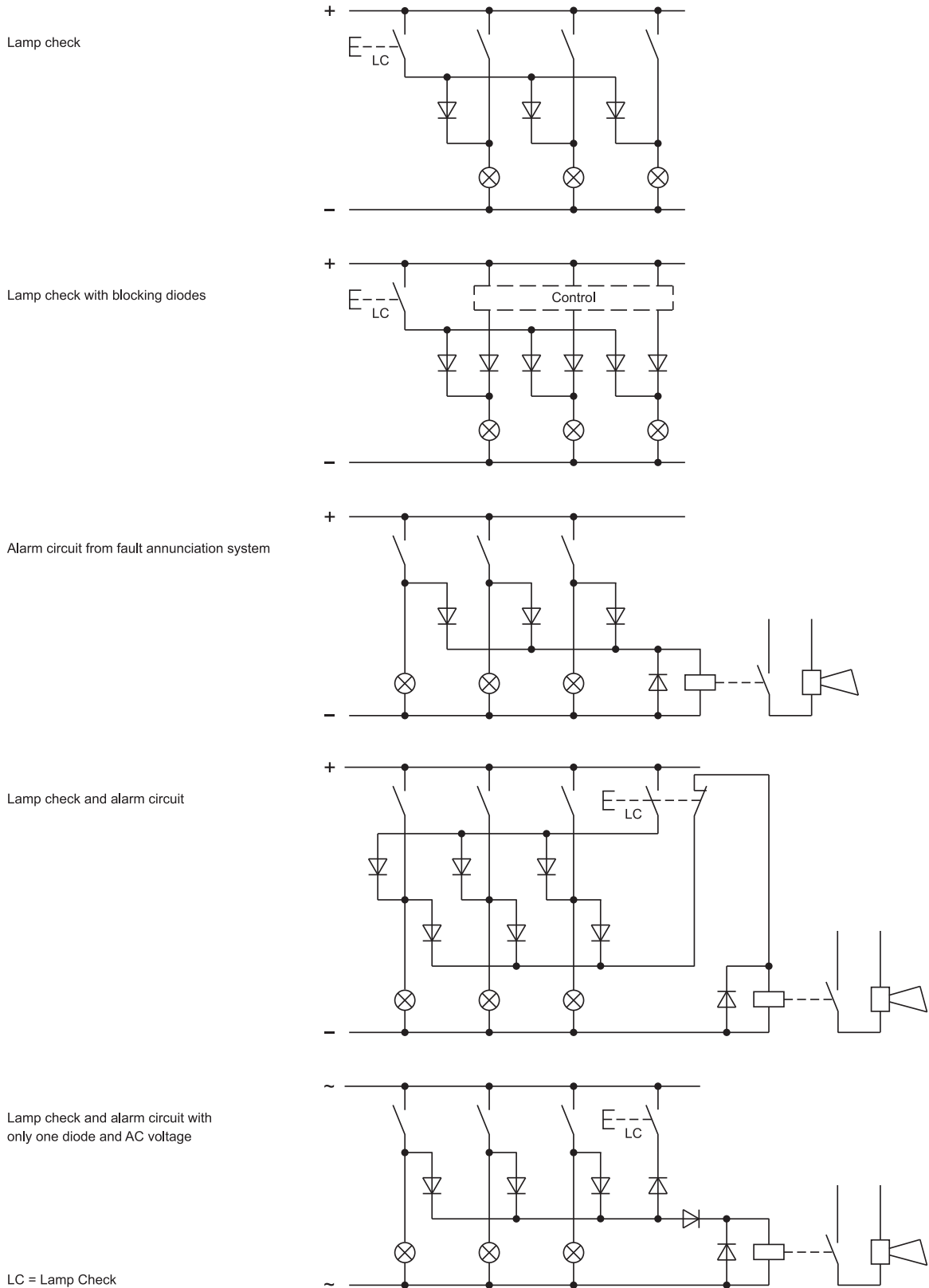
Protection degree

as per EN IEC 60529

Frontside IP 65 | backside IP 40

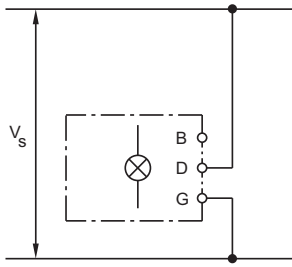
Diode element

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.

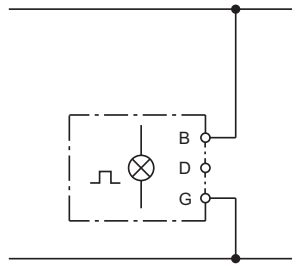


Flasher element

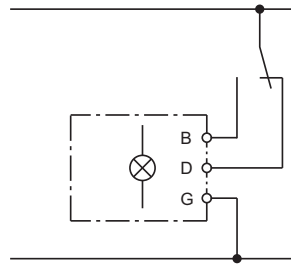
Do not connect terminal B and D simultaneously when powered up. When operating with DC voltage terminal G must have positive polarity.



Continuous light



Flashing light



Flashing- or continuous light

Suppressor circuits

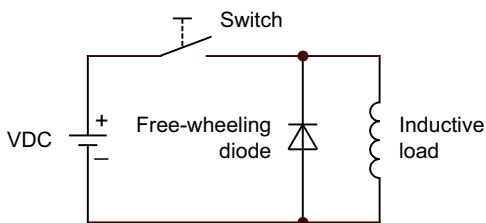
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

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.

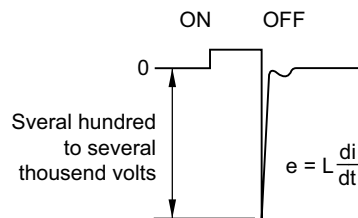
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (V_R) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current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

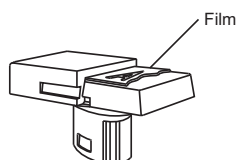
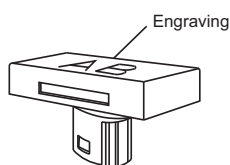
For lenses 24 mm and 25 mm dia. with Typ-Nr. 619642.x the marking takes place directly on the text plate Typ-Nr. 61-9707.7, instead of a film insert.

Important : Consider pushbutton mounting orientation before specifying engraving characters !

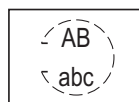
Lenses for Indicators | Illuminated pushbuttons, flush mounting

All dimensions in mm

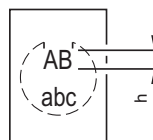
Front size (Lens)	Film insert max. size	Height of letters h	Number of lines	Number of (target value) capital letters per line	Number of (target value) small letters per line	Image
24 x 24 (18 x 18)	15.1 x 15.1	2	4	8 - 9	9	B3
		3	3	7 - 8	8	B3
		4	2	4 - 5	5	B3
		5	2	4	4 - 5	B3
		6	1	4	4	B3
		8	1	2 - 3	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
				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



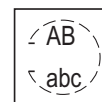
B1



B2



B3



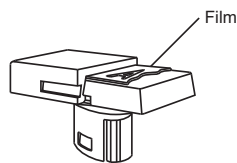
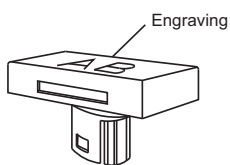
B4



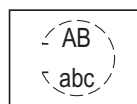
Lenses for Indicators | Illuminated pushbuttons, raised mounting

All dimensions in mm

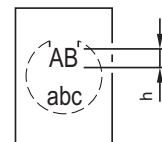
Front size (Lens)	Film insert max. size	Height of letters h	Number of lines	Number of (target value) capital letters per line	Number of (target value) small letters per line	Image
18 dia. (15.8 dia.)	12.8 dia.	2		6	6	B4
		3	2	5	6	B4
		4	2	3	4	B4
		5	1	2	3	B4
		6	1	2	3	B4
		8	1	2	2	B4
18 x 18 (15.3 x 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



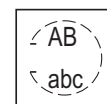
B1



B2



B3



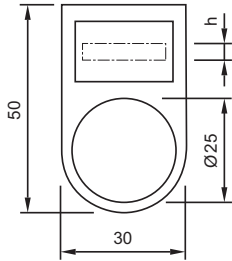
B4



Engraving legend plates

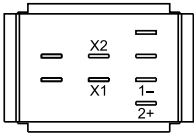
All dimensions in mm

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

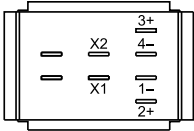


Component layout

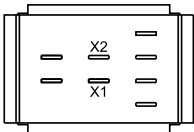
1 Diode element page 33



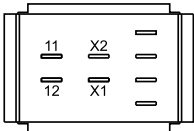
2 Diode element page 33



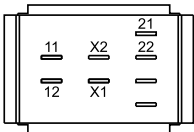
3 Lamp element page 33



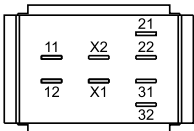
4 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



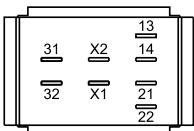
5 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



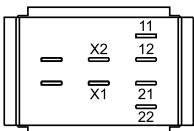
6 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



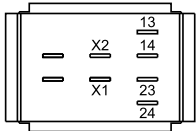
7 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



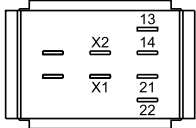
8 Switching element for Keylock- and Selector switch 3 positions page 36



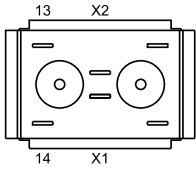
9 Switching element for Keylock- and Selector switch 3 positions page 36



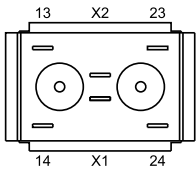
10 Switching element for Keylock- and Selector switch 3 positions page 36



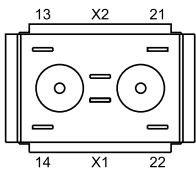
11 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



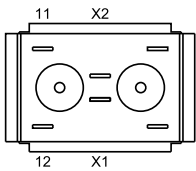
12 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



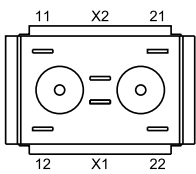
13 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



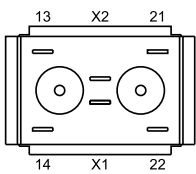
14 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



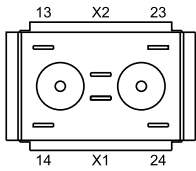
15 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



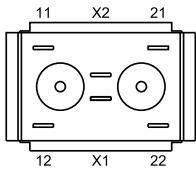
16 Switching element for Keylock- and Selector switch 3 positions page 36



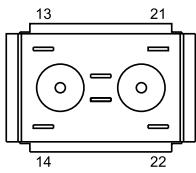
17 Switching element for Keylock- and Selector switch 3 positions page 36



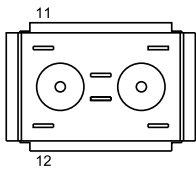
18 Switching element for Keylock- and Selector switch 3 positions page 36



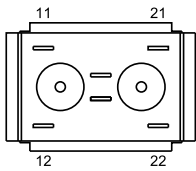
19 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36 | **Switching element for Stop pushbutton, foolproof** page 37



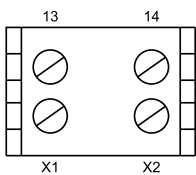
20 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36 | **Switching element for Stop pushbutton, foolproof** page 37



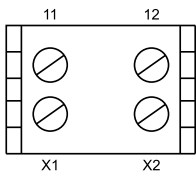
21 Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36 | **Switching element for Stop pushbutton, foolproof** page 37



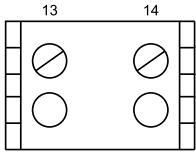
22 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



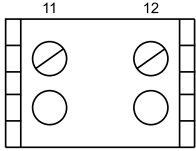
23 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



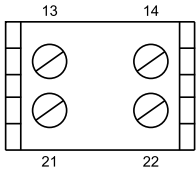
24 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



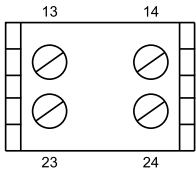
25 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36



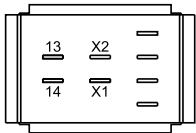
26 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36 | Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36



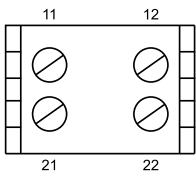
27 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36



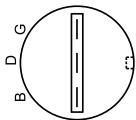
28 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



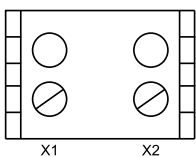
29 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36 | Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36



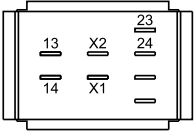
30 Flasher element page 34



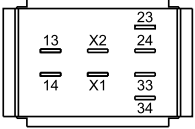
31 Lamp element page 33



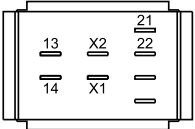
32 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



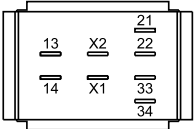
33 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



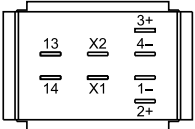
34 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



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

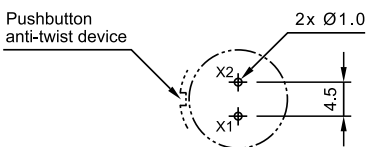


36 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



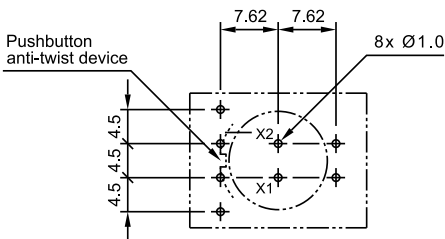
37 PCB plug-in base page 37

Drilling plan (Element side)
Through-connection recommended



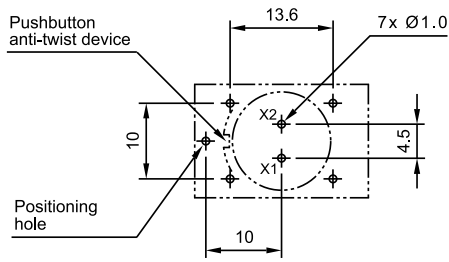
38 PCB plug-in base page 37

Drilling plan (Elementside)
Through-connection recommended



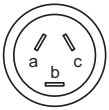
39 PCB plug-in base page 37

Drilling plan (Elementside)
Trough-connection recommended



40 Potentiometer, flush mounting page 24

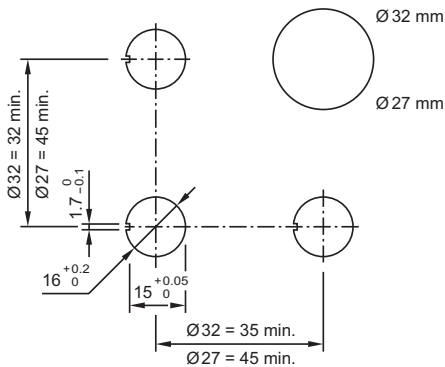
Rearview
Potentiometer terminals



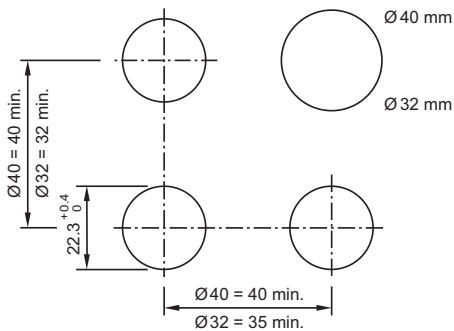
Conductor colour of flat ribbon cable
a = blue, b = red, c = yellow

Mounting dimensions

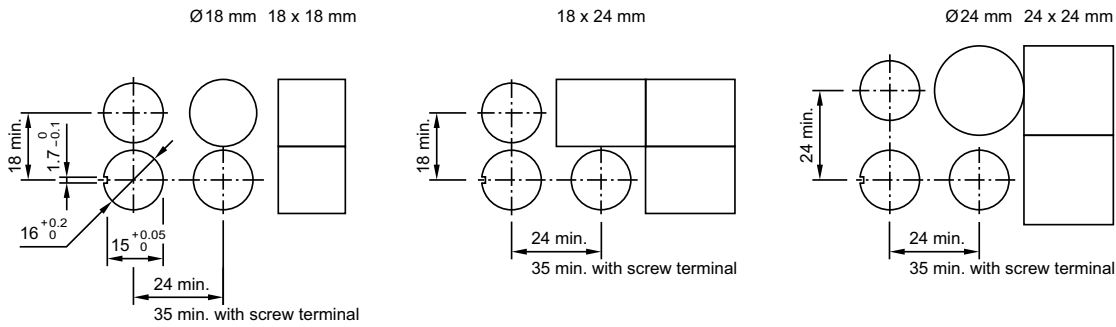
1 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5 page 13 | Stop pushbutton actuator, foolproof page 14 | Mushroom-head pushbutton actuator page 14



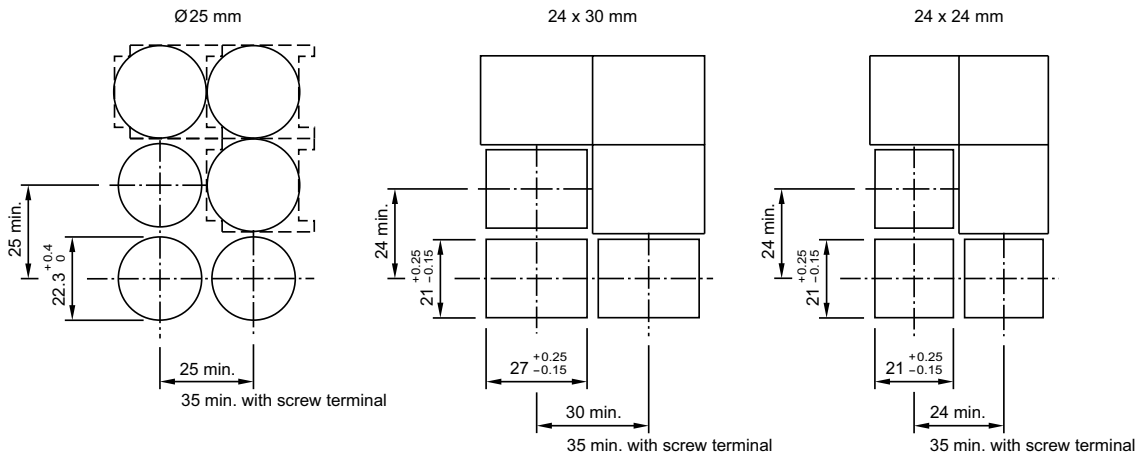
2 Mushroom-head pushbutton actuator, flush mounting page 20 | Front bezel set for Mushroom-head pushbutton, flush mounting page 30



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



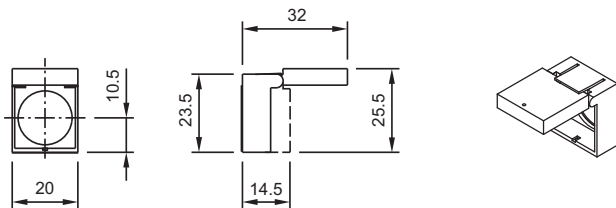
4 Indicator complete, flush mounting page 19 | Indicator actuator, flush mounting page 19 | Illuminated pushbutton actuator, flush mounting page 20 | Keylock switch actuator 2 positions, flush mounting page 21 | Keylock switch actuator 3 positions, flush mounting page 22 | Selector switch actuator 2 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



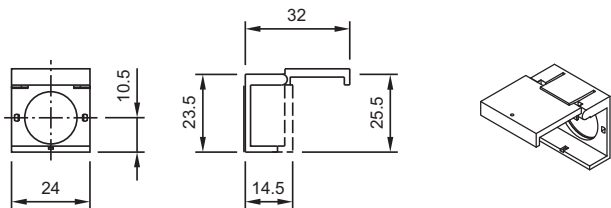
- Hole spacing min. 26 mm / min. 26 mm by using of the round front protective cap 84-9103.7
- Hole spacing min. 31 mm / min. 25 mm by using of the rectangular front protectice cap 61-9927.2

Technical drawing

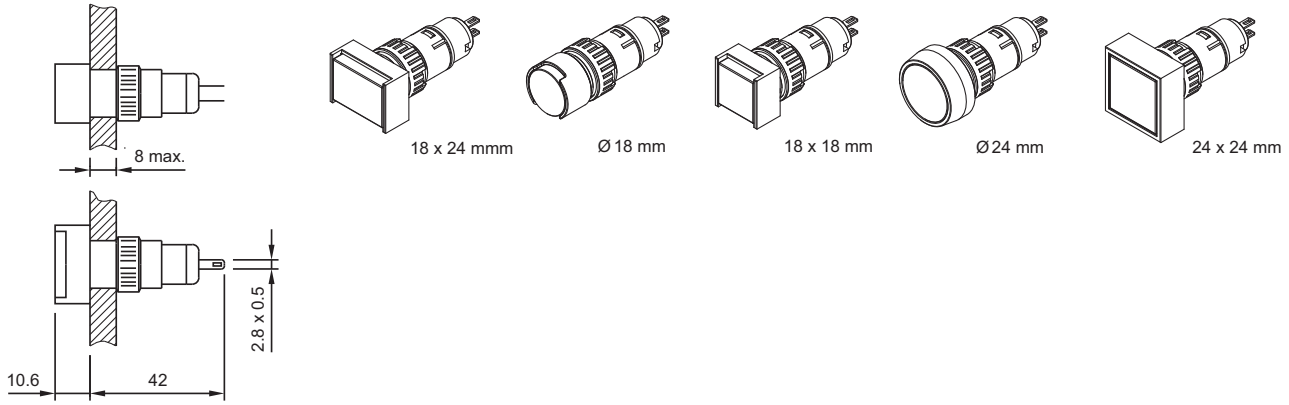
1 Protective cover, raised mounting page 31



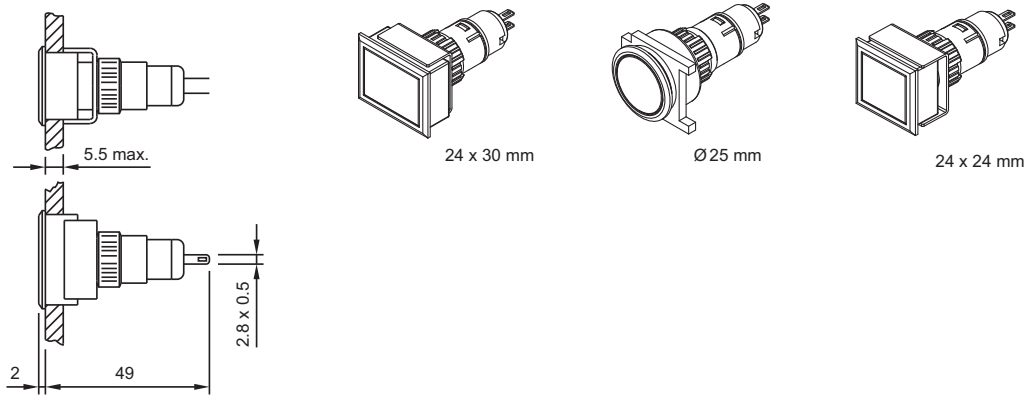
2 Protective cover, raised mounting page 31



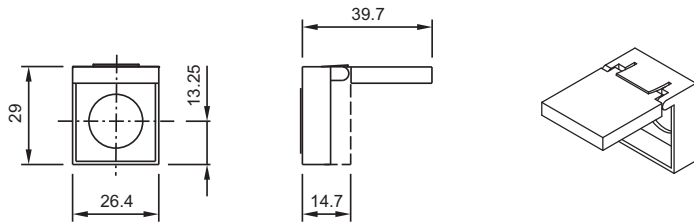
3 Indicator complete page 11



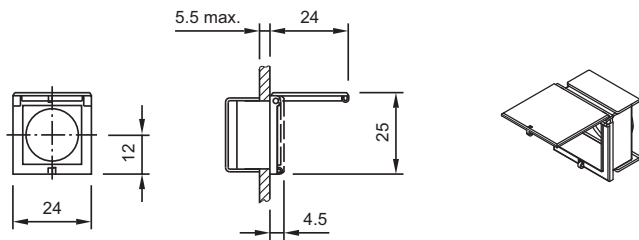
4 Indicator complete, flush mounting page 19



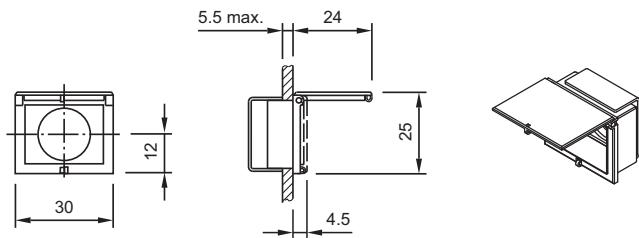
5 Protective cover, raised mounting page 31



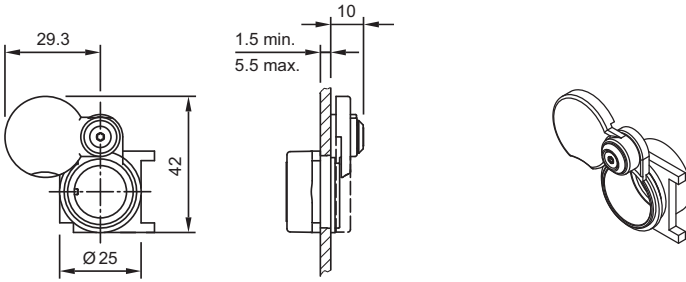
6 Protective cover, flush mounting page 32



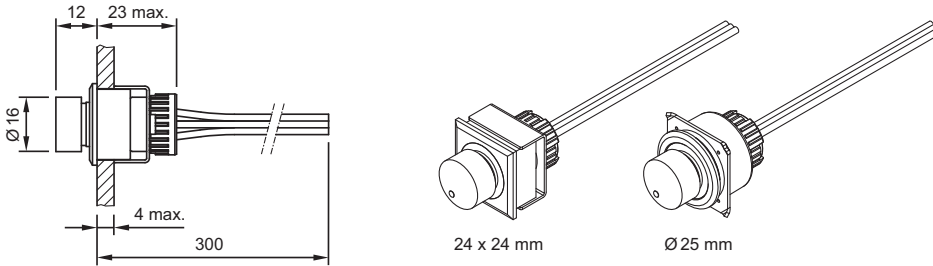
7 Protective cover, flush mounting page 32



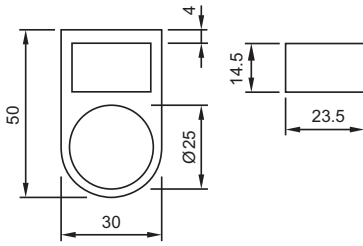
8 Protective cover, flush mounting page 32



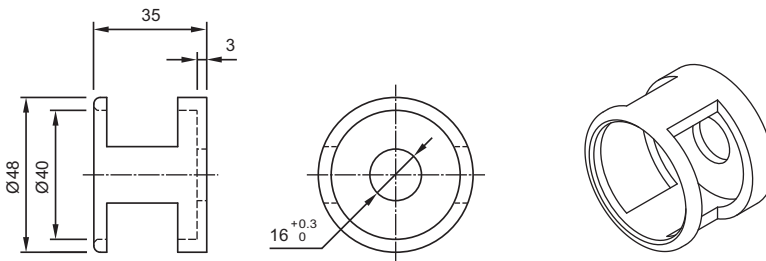
9 Potentiometer, flush mounting page 24



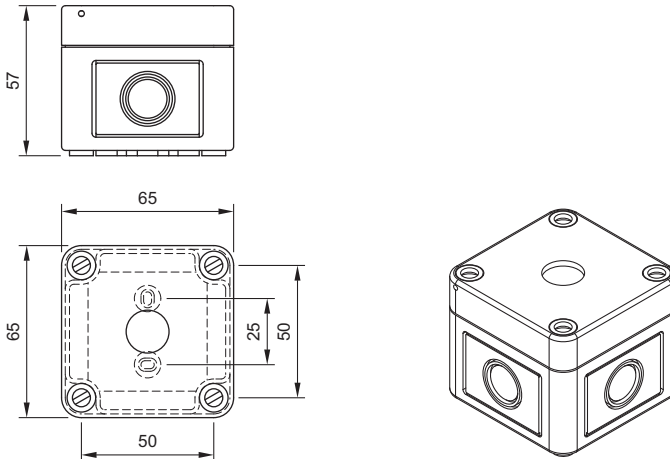
10 Legend frame page 28



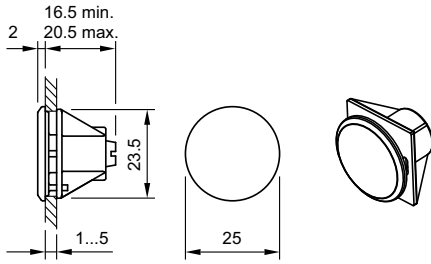
11 Emergency-stop protective shroud page 40



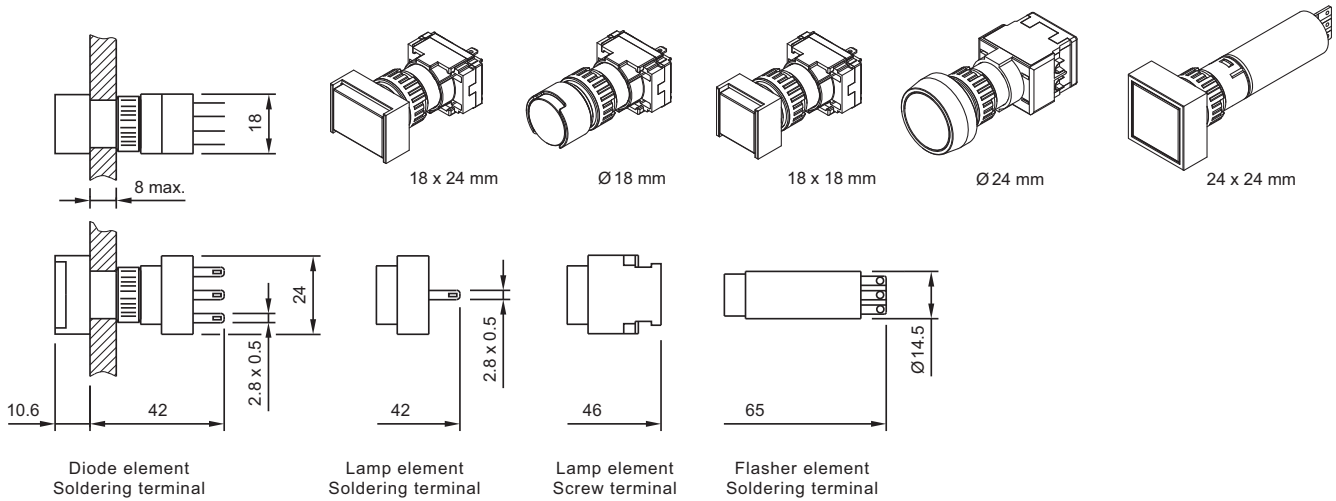
12 Emergency-stop enclosures page 40 | Enclosure page 42



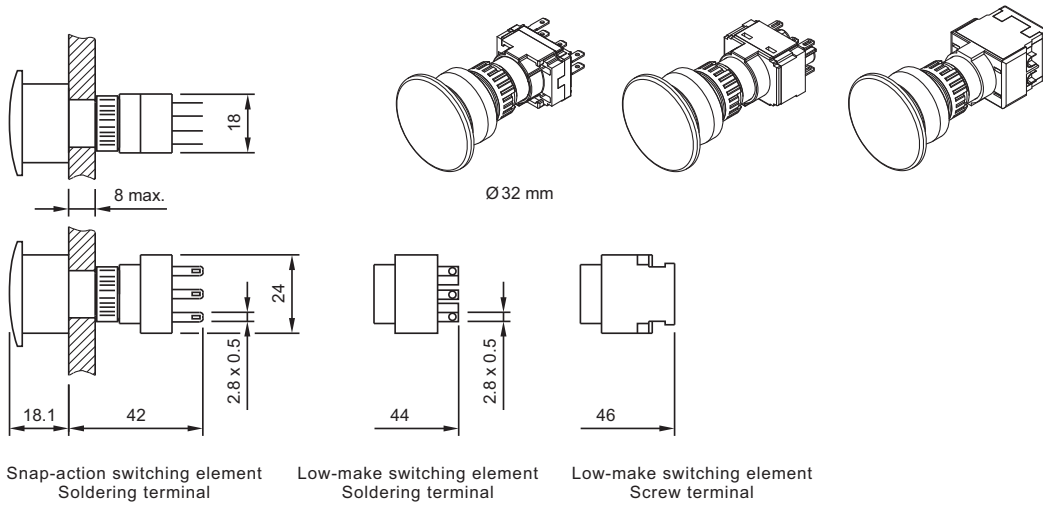
13 Blind plug, flush mounting page 32



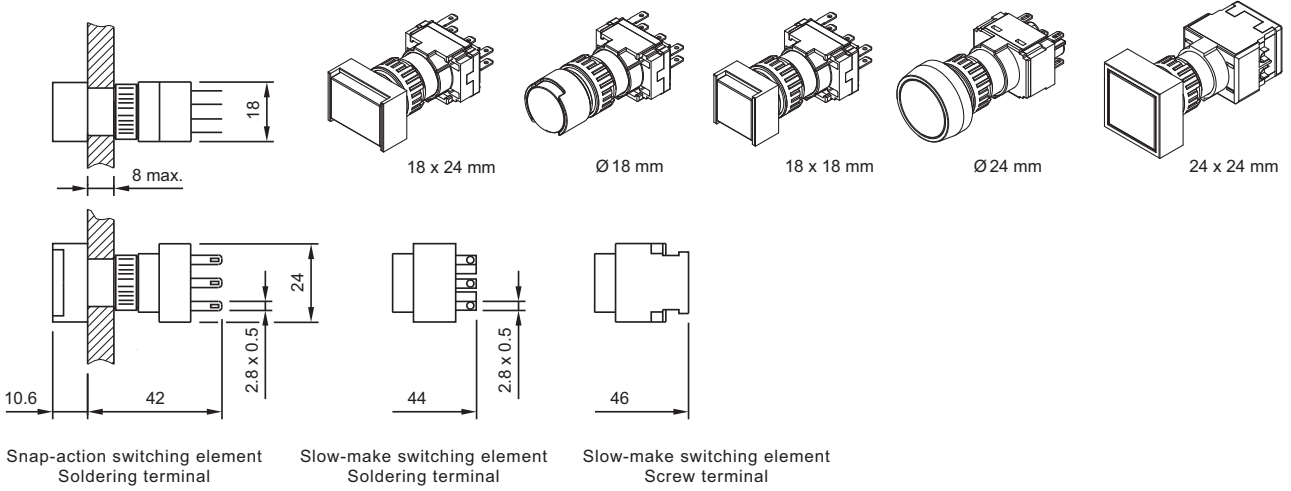
14 Indicator actuator page 11



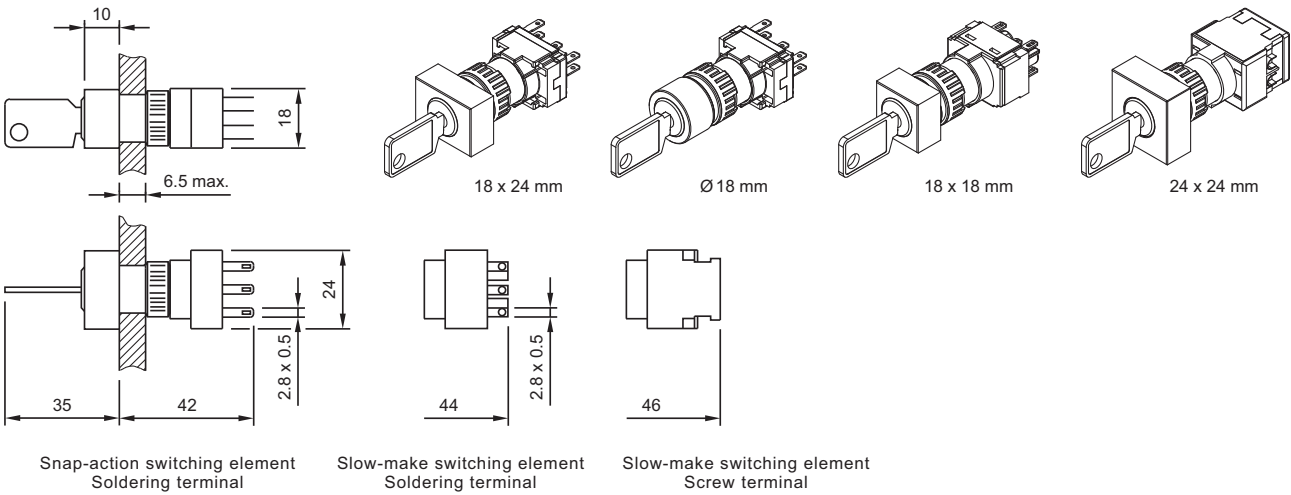
15 Mushroom-head pushbutton actuator page 14



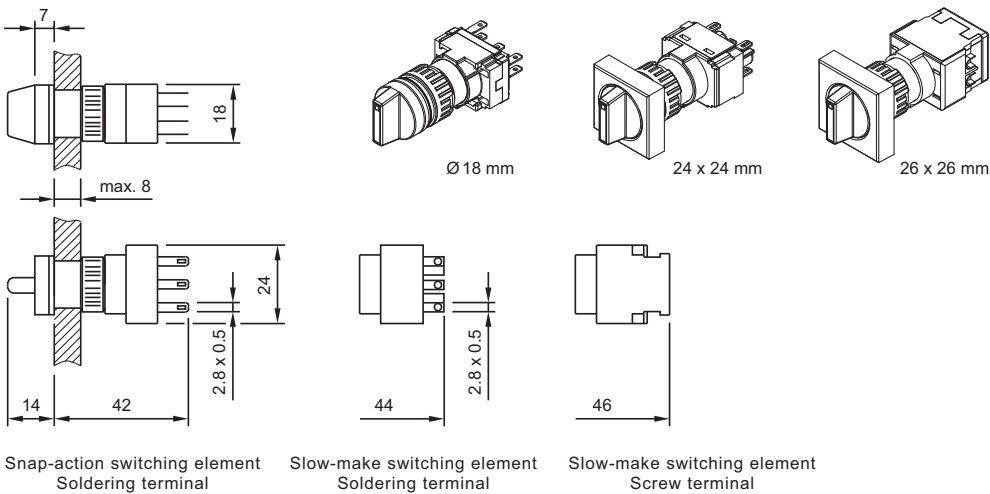
16 Illuminated pushbutton actuator page 12



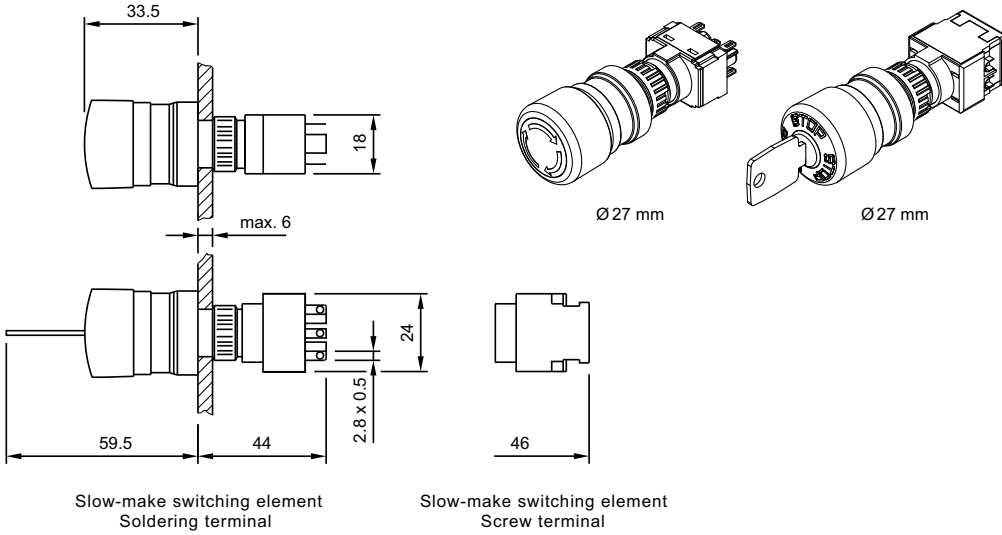
17 Keylock switch actuator 2 positions page 15 | Keylock switch actuator 3 positions page 16



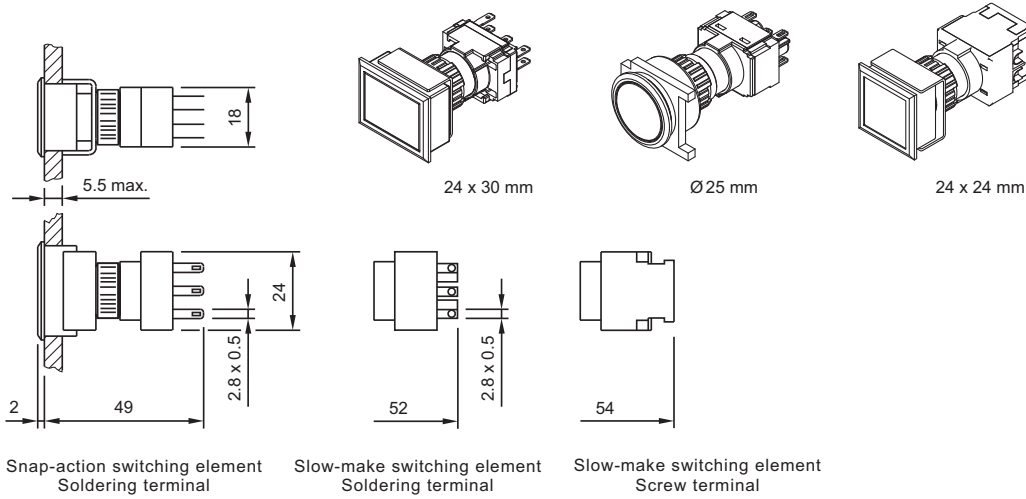
18 Selector switch actuator 2 positions page 17 | Selector switch actuator 3 positions page 18



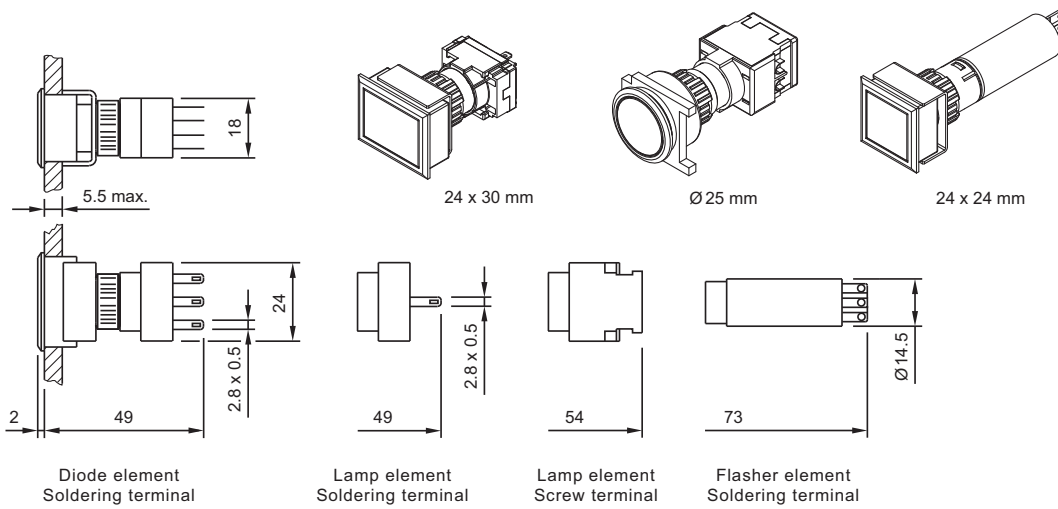
19 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5 page 13 | Stop pushbutton actuator, foolproof page 14



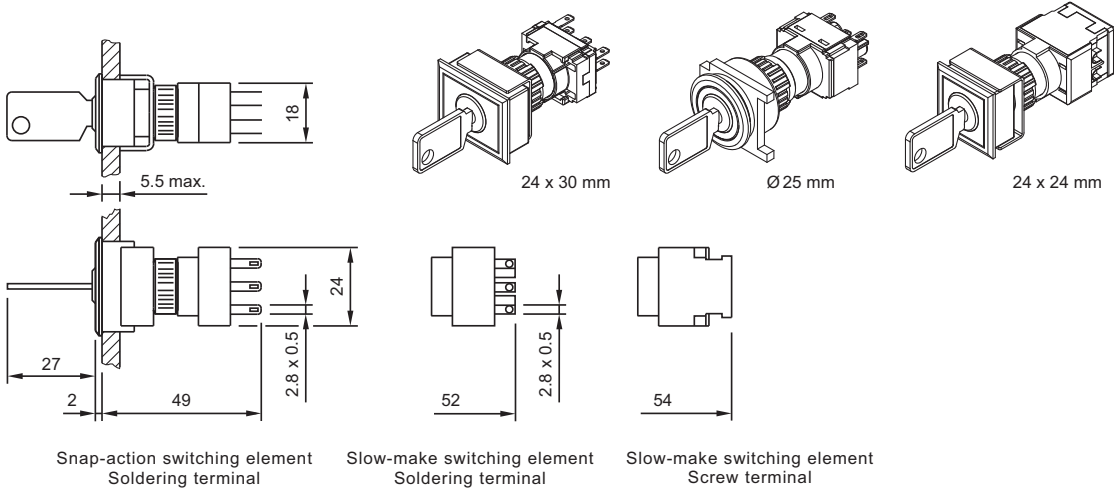
20 Illuminated pushbutton actuator, flush mounting page 20



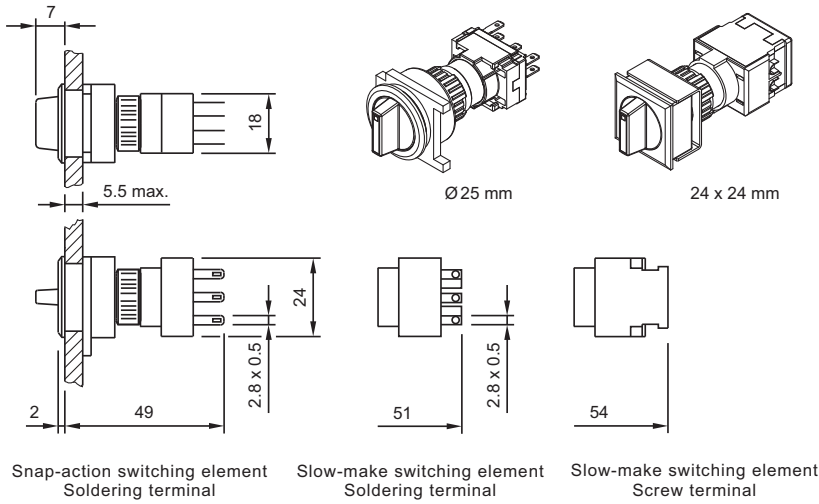
21 Indicator actuator, flush mounting page 19



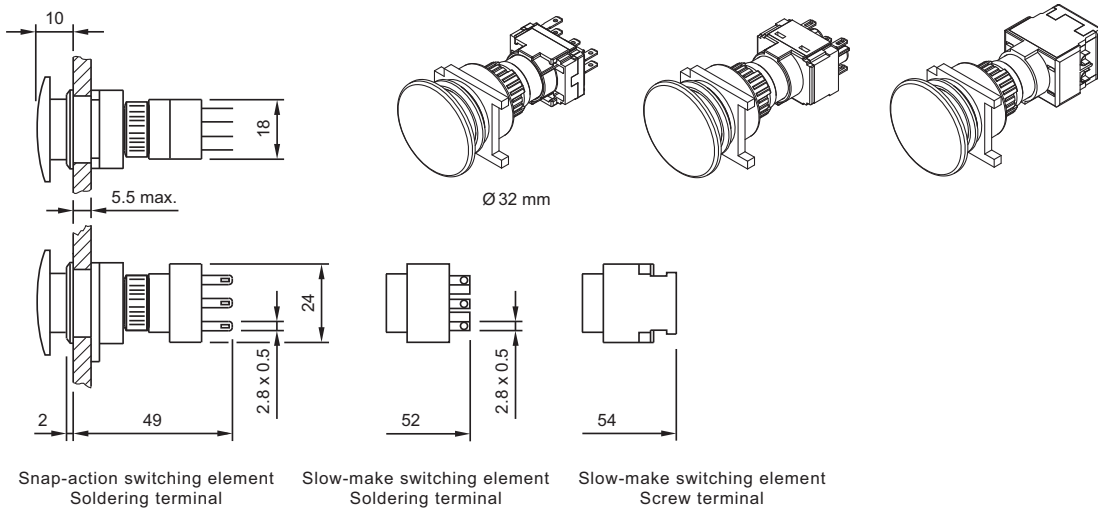
22 Keylock switch actuator 2 positions, flush mounting page 21 | Keylock switch actuator 3 positions, flush mounting page 22



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

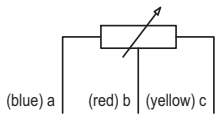


24 Mushroom-head pushbutton actuator, flush mounting page 20



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



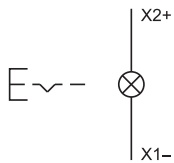
4 Indicator complete page 11 | Indicator actuator page 11 | Indicator complete, flush mounting page 19 | Indicator actuator, flush mounting page 19 | Lamp element page 33



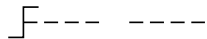
5 Emergency-stop pushbutton actuator, foolproof EN IEC 60947-5-5 page 13 | Stop pushbutton actuator, foolproof page 14



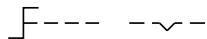
6 Illuminated pushbutton actuator page 12



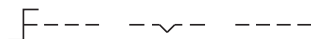
7 Selector switch actuator 2 positions page 17 | Selector switch actuator 2 positions, flush mounting page 23



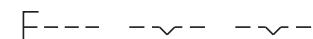
8 Selector switch actuator 2 positions page 17 | Selector switch actuator 2 positions, flush mounting page 23



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



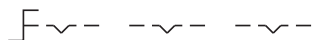
10 Selector switch actuator 3 positions page 18 | Selector switch actuator 3 positions, flush mounting page 24



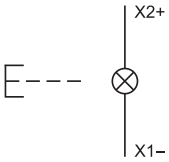
11 Selector switch actuator 3 positions page 18 | Selector switch actuator 3 positions, flush mounting page 24



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



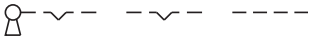
16 Keylock switch actuator 2 positions page 15 | **Keylock switch actuator 2 positions, flush mounting** page 21



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



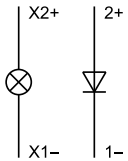
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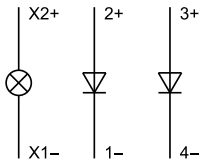
19 Keylock switch actuator 3 positions page 16 | **Keylock switch actuator 3 positions, flush mounting** page 22



20 Diode element page 33



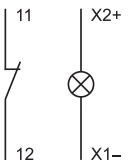
21 Diode element page 33



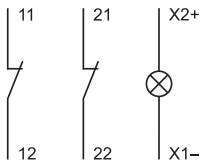
22 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



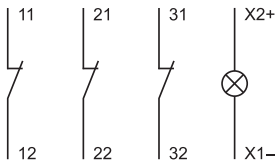
23 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



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



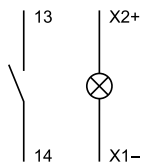
25 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



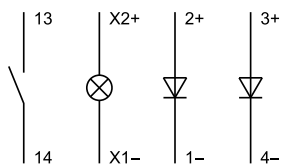
26 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



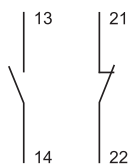
27 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



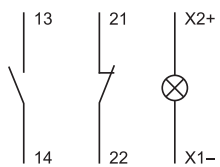
28 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



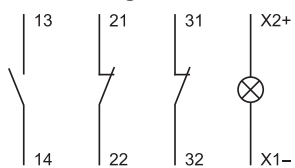
29 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



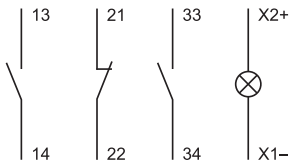
30 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36



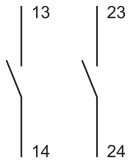
31 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



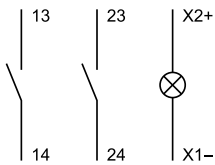
32 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



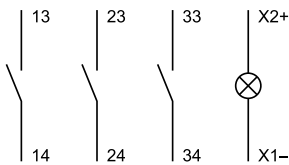
33 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36



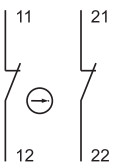
34 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36



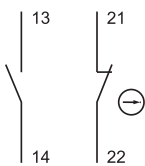
35 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35



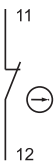
36 Switching element for Pushbutton | Keylock- and Selector switch 2 positions page 35 | Switching element for Keylock- and Selector switch 3 positions page 36 | Switching element for Emergency-stop pushbutton, foolproof EN IEC 60947-5-5 page 36 | Switching element for Stop pushbutton, foolproof page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



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