STOP
STOP

Index

Series 61

Description Page 109

Product Assembly Page 110

Product Range

- pushbuttons for standard mounting **Page 111**
- pushbuttons for flush mounting **Page 117**
- asseccories / spare parts **Page 123**

Technical Data Page 137

Technical Drawing / Dimension / Layouts Page 140

Circuit Drawing Page 150

Typical Applications Page 151

Marking Page 153

General Notes

The indicators, illuminated pushbuttons, selector switches, keylock switches and 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 with universal soldering or plug-in terminals), forced-opening, slow-make switching elements with gold or silver contacts and soldering or plug-in terminals are available. They can be supplied with screw terminals and silver contacts too. 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 and 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 no. 01-907. Max. tightening torque 50 Ncm. For mounting dimensions and grid size see as of page 145.
The preassembled switching element with the connecting wires in a single plane can be clipped on afterwards. For block or series mounting aids are available.
For switching elements with 2.8 mm plug-in terminals, we offer plug-in bases, which when soldered to a PCB enable a plug-in connection to the button. All actuators are provided with an anti-rotation device.

Lenses

The flat or concave lenses are available in various colours and a transparent or translucent version. The lens surface is non-reflecting (matt). Lenses 19.7 mm dia. can be supplied also in aluminium.

Marking

For engraving, hot stamping and film inserts, see page 153 under “Marking”.

Illumination

The midget-grooved T 1 3/4 incandescent lamp (6-60 V, 1.2 W) ensures perfect illumination of the lenses, which are supplied in various colours.
Midget-grooved T 1 3/4 Multi-LED (6, 12, 24, 48 V) are also available in white, red, yellow and green.
For supply voltages above 60 V, it is necessary to use a voltage reduction element (external series resistor, capacitor or transformer).
Do not solder the terminals directly, bacause of the high surface temperature.

Position indication

When the switch with maintained action is actuated, the lens snaps into place mechanically. The position of contacts can always be determined by the position of the lens.

Keylock switch

Standard lock (index D)
1 standard number 311. If the lock number is not specified, we will supply no. 311. An additional 134 special locks (index X) are available on request. Master keys for locks no. 311 - 445 may be ordered by quoting no. 31-989.300.
Two keys are supplied with each keylock switch.
Spare keys for DOM standard locks may be ordered by quoting no. 31-989 (please state the lock number).

Emergency stop switch foolproof with key to unlock

Kaba safety lock. Standard lock number is 1001. Locks with other numbers are available on request.
Spare keys for KABA locks may be ordered under no. 14-987 (please state the lock number).

Specimen order

Indicator complete

- indicator complete, soldering terminal, 18 x 24 mm	61-0030.02

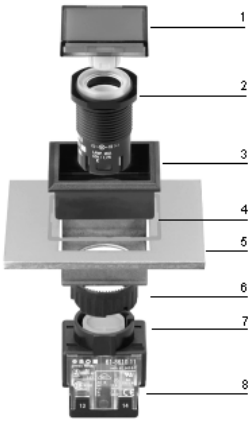
Recommended accessories:

- lens plastic, 18 x 24 mm, clear	61-9331.7
- LED, 6 chips, 6 VDC, yellow	10-5306.3254

illuminated-/pushbutton

1 lens
2 actuator case
3 fixing nut
4 switching element

illuminated-/pushbutton for flush mounting



1 lens
2 acutator housing
3 front bezel
4 sealing
5 front panel
6 fixing bow
7 fixing nut
8 switching element

indicator complete

recommended accessories:

lens plastic → 123

front ring → 126

incandescent lamp → 132; LED → 133

	connection method	18 x 24 mm part no.	24 x 24 mm part no.	18 mm dia. part no.	18 x 18 mm part no.	24 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
indicator complete	ST/PT	**61-0030.02**	**61-0050.02**	**61-0010.02**	**61-0020.02**	**61-0040.02**	1	1	1	0,005

connection method: ST/PT = soldering-/plug-in terminal
Accessorie front ring only requested for Ø 24 mm.
marking see page 153
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

indicator-/flasher-actuator

recommended accessories:

lens plastic → 123

front ring → 126

incandescent lamp → 132; LED → 133

lamp element → 128; diode element → 128; flasher element → 131

	18 x 24 mm part no.	24 x 24 mm part no.	18 mm dia. part no.	18 x 18 mm part no.	24 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
indicator-/flasher-actuator	**61-0039.0**	**61-0059.0**	**61-0019.0**	**61-0029.0**	**61-0049.0**	1	2	1	0,005

Accessorie front ring only requested for Ø 24 mm.
marking see page 153
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

illuminated-/pushbutton actuator

recommended accessories:

lens plastic → 123; lens metal with window → 124; lens metal → 124

front ring → 126

incandescent lamp → 132; LED → 133

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	18 x 24 mm part no.	24 x 24 mm part no.	18 mm dia. part no.	18 x 18 mm part no.	24 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
illuminated-/pushbutton actuator	main	**61-1230.0**	**61-1250.0**	**61-1210.0**	**61-1220.0**	**61-1240.0**	2	3	1	0,005
	mom	**61-1130.0**	**61-1150.0**	**61-1110.0**	**61-1120.0**	**61-1140.0**	3	3	1	0,005
	mom/main	**61-1330.0**	**61-1350.0**	**61-1310.0**	**61-1320.0**		3	3	1	0,005

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action
Accessorie front ring only requested for Ø 24 mm.
marking see page 153
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

emergency stop switch actuator foolproof

according to EN 418

recommended accessories:

label for emergency stop switch → 134

switching element for emergency stop switch → 130

protective shroud for emergency stop switch → 134

	switching action	unlocking	marking of mushroom-head cap	27 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
emergency stop switch actuator foolproof	main	twist to release	arrows	**61-3440.4/1**	4	4	2	0,003
			stop	**61-3440.4/2**	4	4	2	0,003
without label standard lock1001, other lock numbers on request	main	key to release	stop	**61-5441.4/K**	4	4	2	0,038

switching action: main = maintained action
description see page 109
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

pushbutton actuator with mushroom-head cap

recommended accessories:

mushroom-head cap → 124

front ring → 126

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	32 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
pushbutton actuator with mushroom-head cap	main	**61-1240.0**	2	5	2	0,006
	mom	**61-1140.0**	3	5	2	0,006

switching action: main = maintained action, mom = momentary action

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

keylock switch actuator 2 positions

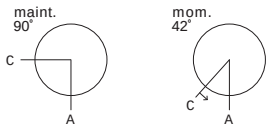
if installed with anti-twist device, the lug is on the left.

recommended accessories:

keylock front bezel → 124

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

anti-twisting ring → 135

	switching action	key removable in	part no.	circuit drawing	technical drawing	mounting dimension	kg
keylock switch actuator 2 positions pos. A: basic position pos. C: maintained action standard lock 311, other lock numbers on request	main	A	**61-2201.0/D**	6	6	1	0,003
		C	**61-2203.0/D**	6	6	1	0,003
		C + A	**61-2205.0/D**	6	6	1	0,003
pos. A: basic position pos. C: momentary action standard lock 311, other lock numbers on request	mom	A	**61-2101.0/D**	5	6	1	0,003

switching action: main = maintained action, mom = momentary action

description see page 109

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

keylock switch actuator 3 positions

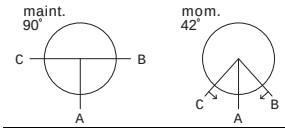
if installed with anti-twist device, the lug is on the left.

recommended accessories:

keylock front bezel → 124

switching element for keylock-/selector switch 3 positions → 130

anti-twisting ring → 135

	switching action	key removable in	part no.	circuit drawing	technical drawing	mounting dimension	kg
keylock switch actuator 3 positions pos. C: maintained action pos. A: basic position pos. B: maintained action standard lock 311 other lock numbers on request	main-0-main	A	**61-2601.0/D**	11	6	1	0,003
		A+B	**61-2604.0/D**	11	6	1	0,003
		B	**61-2602.0/D**	11	6	1	0,003
		C	**61-2603.0/D**	11	6	1	0,003
		C + A	**61-2605.0/D**	11	6	1	0,003
		C+A+B	**61-2607.0/D**	11	6	1	0,003
		C+B	**61-2606.0/D**	11	6	1	0,003
pos. C: maintained action pos. A: basic position pos. B: momentary action standard lock 311 other lock numbers on request	main-0-mom	A	**61-2701.0/D**	10	6	1	0,003
		C	**61-2703.0/D**	10	6	1	0,003
		C + A	**61-2705.0/D**	10	6	1	0,003
pos. C: momentary action pos. A: basic position pos. B: maintained action standard lock 311	mom-0-main	A	**61-2801.0/D**	9	6	1	0,003
		A+B	**61-2804.0/D**	9	6	1	0,003
		B	**61-2802.0/D**	7	6	1	0,003
pos. C: momentary action pos. A: basic position pos. B: momentary action standard lock 311	mom-0-mom	A	**61-2501.0/D**	8	6	1	0,003

switching action: mom = momentary action, main = maintained action, 0 = basic position

description see page 109

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

selector switch actuator 2 positions

if installed with anti-twist device, the lug is on the left.

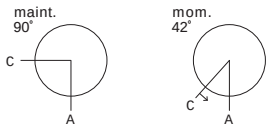
recommended accessories:

lever → 125

incandescent lamp → 132; LED → 133

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

anti-twisting ring → 135

	switching action	18 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
selector switch actuator 2 positions pos. C: maintained action pos. A: basic position	main	**61-4210.0**	13	7	1	0,006
pos. C: momentary action pos. A: basic position	mom	**61-4110.0**	12	7	1	0,006

switching action: main = maintained action, mom = momentary action

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

selector switch actuator 3 positions

if installed with anti-twist device, the lug is on the left.

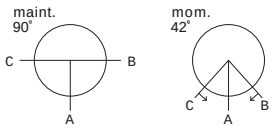
recommended accessories:

lever → 125

incandescent lamp → 132; LED → 133

switching element for keylock-/selector switch 3 positions → 130

anti-twisting ring → 135

	switching action	18 mm dia. part no.	circuit drawing	technical drawing	mounting dimension	kg
selector switch actuator 3 positions pos. C: maintained action pos. A: basic position pos. B: maintained action	main-0-main	**61-4610.0**	17	7	1	0,006
pos. C: maintained action pos. A: basic position pos. B: momentary action	main-0-mom	**61-4710.0**	16	7	1	0,006
pos. C: momentary action pos. A: basic position pos. B: maintained action	mom-0-main	**61-4810.0**	15	7	1	0,006
pos. C: momentary action pos. A: basic position pos. B: momentary action	mom-0-mom	**61-4510.0**	14	7	1	0,006

switching action: mom = momentary, main = maintaining, 0 = basic position

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

indicator complete for flush mounting

recommended accessories:

lens plastic for flush mounting → 124

front bezel-set for flush mounting → 126

incandescent lamp → 132; LED → 133

	connection method	part no.	circuit drawing	technical drawing	mounting dimension	kg
indicator complete for flush mounting	ST/PT	**61-0000.02**	1	8	3	0,006

connection method: ST/PT = soldering-/plug-in terminal

marking see page 153

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

indicator-/flasher-actuator for flush mounting

recommended accessories:

lens plastic for flush mounting → 124

front bezel-set for flush mounting → 126

incandescent lamp → 132; LED → 133

lamp element → 128; diode element → 128; flasher element → 131

	part no.	circuit drawing	technical drawing	mounting dimension	kg
indicator-/flasher-actuator for flush mounting	**61-0009.0**	1	9	3	0,005

marking see page 153

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

illuminated-/pushbutton actuator for flush mounting

recommended accessories:

lens plastic for flush mounting → 124; lens metal with window → 124; lens metal → 124

front bezel-set for flush mounting → 126

incandescent lamp → 132; LED → 133

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	part no.	circuit drawing	technical drawing	mounting dimension	kg
illuminated-/pushbutton actuator for flush mounting	mom/main	**61-1300.0**	19	10	3	0,005
	mom	**61-1100.0**	19	10	3	0,005
	main	**61-1200.0**	18	10	3	0,005

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action
marking see page 153
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

mushroom pushbutton actuator for flush mounting

recommended accessories:

mushroom-head cap → 124

front bezel-set round for flush mounting → 126

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	part no.	circuit drawing	technical drawing	mounting dimension	kg
mushroom pushbutton actuator for flush mounting	mom/main	**61-1300.0**	3	11	2	0,006
	mom	**61-1100.0**	3	11	2	0,006
	main	**61-1200.0**	2	11	2	0,006

switching action: main = maintained action, mom = momentary action, mom/main = momentary-/maintained action
technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

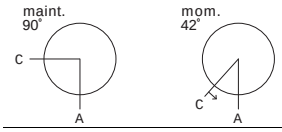
keylock switch actuator with 2 positions for flush mounting

recommended accessories:

keylock front bezel → 124

front bezel-set for flush mounting → 126

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	key removable in	part no.	circuit drawing	technical drawing	mounting dimension	kg
keylock switch actuator with 2 positions for flush mounting pos. A: basic position pos. C: maintained action standard lock 311, other lock numbers on request	main	A	**61-2201.0/D**	6	12	3	0,003
		C	**61-2203.0/D**	6	12	3	0,003
		C + A	**61-2205.0/D**	6	12	3	0,003
pos. A: basic position pos. C: momentary action standard lock 311, other lock numbers on request	mom	A	**61-2101.0/D**	5	12	3	0,003

switching action: main = maintained action, mom = momentary action

description see page 109

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

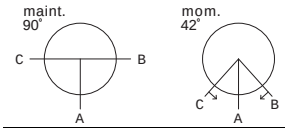
keylock switch actuator 3 positions for flush mounting

recommended accessories:

keylock front bezel → 124

front bezel-set for flush mounting → 126

switching element for keylock-/selector switch 3 positions → 130

	switching action	key removable in	part no.	circuit drawing	technical drawing	mounting dimension	kg
keylock switch actuator 3 positions for flush mounting pos. C: maintained action pos. A: basic position Pos. B: momentary action standard lock 311, other lock numbers on request	main-0-mom	A	**61-2701.0/D**	10	12	3	0,003
		C	**61-2703.0/D**	5	12	3	0,003
		C + A	**61-2705.0/D**	10	12	3	0,003
pos. C: maintained action pos. A: basic position pos. B: maintained action standard lock 311, other lock numbers on request	main-0-main	A	**61-2601.0/D**	11	12	3	0,003
		A+B	**61-2604.0/D**	11	12	3	0,003
		B	**61-2602.0/D**	11	12	3	0,003
		C	**61-2603.0/D**	11	12	3	0,003
		C + A	**61-2605.0/D**	11	12	3	0,003
		C+A+B	**61-2607.0/D**	11	12	3	0,003
		C+B	**61-2606.0/D**	11	12	3	0,003
pos. C: momentary action pos. A: basic position pos. B: maintained action standard lock 311, other lock numbers on request	mom-0-main	A	**61-2801.0/D**	9	12	3	0,003
		A+B	**61-2804.0/D**	9	12	3	0,003
		B	**62-2802.0/D**	9	12	3	0,003
pos. C: momentary action pos. A: basic position pos. B: momentary action standard lock 311, other lock numbers on request	mom-0-mom	A	**61-2501.0/D**	8	12	3	0,003

switching action: mom = momentary action, main = maintained action, 0 = basic position

description see page 109

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

selector switch actuator 2 positions for flush mounting

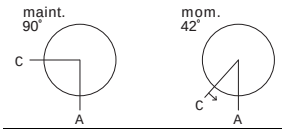
recommended accessories:

lever for flush mounting → 125

front bezel-set for flush mounting → 126

incandescent lamp → 132; LED → 133

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions → 129

	switching action	part no.	circuit drawing	technical drawing	mounting dimension	kg
selector switch actuator 2 positions for flush mounting pos. C: maintained action pos. A: basic position	main	**61-4210.0**	13	13	3	0,006
pos. C: momentary action pos. A: basic position	mom	**61-4110.0**	12	13	3	0,006

switching action: main = maintained action, mom = momentary action

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

selector switch actuator 3 positions for flush mounting

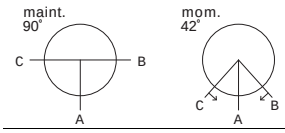
recommended accessories:

lever for flush mounting → 125

front bezel-set for flush mounting → 126

incandescent lamp → 132; LED → 133

switching element for keylock-/selector switch 3 positions → 130

	switching action	part no.	circuit drawing	technical drawing	mounting dimension	kg
selector switch actuator 3 positions for flush mounting pos. C: maintained action pos. A: basic position pos. B: maintained action	main-0-main	**61-4610.0**	17	13	3	0,006
pos. C: maintained action pos. A: basic position pos. B: momentary action	main-0-mom	**61-4710.0**	16	13	3	0,006
pos. C: momentary action pos. A: basic position pos. B: maintained action	mom-0-main	**61-4810.0**	15	13	3	0,006
pos. C: momentary action pos. A: basic position pos. B: momentary action	mom-0-mom	**61-4510.0**	14	13	3	0,006

switching action: mom = momentary, main = maintaining, 0 = basic position

technical drawing as of page 140, mounting dimensions as of page 145, circuit drawing as of page 150

at front

lens plastic

	shape	lens/support	colour	18 x 24 mm part no.	24 x 24 mm part no.	18 mm dia. part no.	18 x 18 mm part no.	25 mm dia. part no.	kg	
lens plastic matt	concave	transparent/translucent	blue	**61-9336.6**			**61-9326.6**		0,001	
			colourless, clear	**61-9336.7**			**61-9326.7**		0,001	
			green	**61-9336.5**			**61-9326.5**		0,001	
			orange	**61-9336.3**			**61-9326.3**		0,001	
			red	**61-9336.2**			**61-9326.2**		0,001	
			yellow	**61-9336.4**			**61-9326.4**		0,001	
	flat	transparent/translucent	blue			**61-9311.6**	**61-9321.6**		0,001	
								61-9642.6	0,002	
				61-9331.6	**61-9351.6**				0,001	
			colourless, clear	**61-9331.7**		**61-9311.7**	**61-9321.7**		0,001	
								61-9642.7	0,002	
					61-9351.7				0,001	
			green	**61-9331.5**	**61-9351.5**	**61-9311.5**	**61-9321.5**		0,001	
								61-9642.5	0,002	
			orange				**61-9321.3**		0,001	
								61-9642.3	0,002	
				61-9331.3	**61-9351.3**	**61-9311.3**			0,001	
			red				**61-9321.2**		0,001	
								61-9642.2	0,002	
				61-9331.2	**61-9351.2**	**61-9311.2**			0,001	
			smoked	**61-9331.1**		**61-9311.1**			0,001	
								61-9642.1	0,002	
					61-9351.1		**61-9321.1**		0,001	
			yellow					**61-9642.4**	0,002	
				61-9331.4	**61-9351.4**	**61-9311.4**	**61-9321.4**		0,001	
matt (not for film insert and LED)	concave	translucent/translucent	white	**61-9236.9**			**61-9226.9**		0,001	
	flat	translucent/translucent	white	**61-9231.9**	**61-9251.9**	**61-9211.9**	**61-9221.9**		0,001	
matt (not for film insert and illumination)	concave	opaque/translucent	black	**61-9236.0**			**61-9226.0**		0,001	
			grey	**61-9236.8**			**61-9226.8**		0,001	
	flat	opaque/translucent	black	**61-9231.0**	**61-9251.0**	**61-9211.0**	**61-9221.0**		0,001	
			grey	**61-9231.8**	**61-9251.8**	**61-9211.8**	**61-9221.8**		0,001	

lens plastic for flush mounting

	shape	lens/support	colour	⊏⊐ 24 x 30 mm part no.	⊏⊐ 24 x 24 mm part no.	25 mm dia. part no.	kg	
lens plastic for flush mounting matt	flat	transparent/translucent	blue	**61-9681.6**	**61-9671.6**	**61-9642.6**	0,001	
			colourless, clear	**61-9681.7**	**61-9671.7**	**61-9642.7**	0,001	
			green	**61-9681.5**	**61-9671.5**	**61-9642.5**	0,001	
			orange	**61-9681.3**	**61-9671.3**	**61-9642.3**	0,001	
			red	**61-9681.2**	**61-9671.2**	**61-9642.2**	0,001	
			smoked			**61-9642.1**	0,001	
			yellow	**61-9681.4**	**61-9671.4**	**61-9642.4**	0,001	
matt (not for film insert and LED)	flat	translucent/translucent	white	**61-9781.9**	**61-9771.9**		0,001	
matt (not for film insert and illumination)	flat	opaque/translucent	black	**61-9781.0**	**61-9771.0**		0,001	
			grey	**61-9781.8**	**61-9771.8**		0,001	

lens metal with window

	shape	lens	colour	25 mm dia. part no.	kg	
lens metal with window matt	flat	aluminium anodized	natural	**61-9841.8A**	0,002	

lens metal

	shape	lens	colour	25 mm dia. part no.	kg	
lens metal matt	flat	aluminium anodized	black	**61-9841.0**	0,002	
			blue	**61-9841.6**	0,002	
			green	**61-9841.5**	0,002	
			natural	**61-9841.8**	0,002	
			red	**61-9841.2**	0,002	
			yellow	**61-9841.4**	0,002	

mushroom-head cap

	mushroom	colour	32 mm dia. part no.	kg	
mushroom-head cap plastic	opaque	black	**61-9593.0**	0,004	
		green	**61-9593.5**	0,004	
		red	**61-9593.2**	0,004	
		yellow	**61-9593.4**	0,004	

keylock front bezel

for keylock switch actuator

	⊏⊐ 18 x 24 mm part no.	⊏⊐ 24 x 24 mm part no.	18 mm dia. part no.	⊏⊐ 18 x 18 mm part no.	kg
keylock front bezel	**61-9230.0**	**61-9250.0**	**61-9210.0**	**61-9220.0**	0,001

61-9250.0 not for flush mounting

lever

	colour	colour of bar	part no.	kg	
lever with marking dot and transparent bar	black	black, opaque	**52-928.0**	0,001	
		blue	**52-928.60**	0,001	
		green	**52-928.50**	0,001	
		orange	**52-928.30**	0,001	
		red	**52-928.20**	0,001	
		white, opaque	**52-928.9**	0,001	
		yellow	**52-928.40**	0,001	
	grey	blue	**52-929.60**	0,001	
		green	**52-929.50**	0,001	
		grey, opaque	**52-929.8**	0,001	
		orange	**52-929.30**	0,001	
		red	**52-929.20**	0,001	
		white, opaque	**52-929.9**	0,001	
		yellow	**52-929.40**	0,001	

61

lever for flush mounting

	colour	colour of bar	part no.	kg	
lever for flush mounting with marking dot and transparent bar	black	black, opaque	**61-9028.0**	0,001	
		blue	**61-9028.60**	0,001	
		green	**61-9028.50**	0,001	
		orange	**61-9028.30**	0,001	
		red	**61-9028.20**	0,001	
		white, opaque	**61-9028.9**	0,001	
		yellow	**61-9028.40**	0,001	
	grey	blue	**61-9029.60**	0,001	
		green	**61-9029.50**	0,001	
		grey, opaque	**61-9029.8**	0,001	
		orange	**61-9029.30**	0,001	
		red	**61-9029.20**	0,001	
		white, opaque	**61-9029.9**	0,001	
		yellow	**61-9029.40**	0,001	

marking plate

for lens round, 61-9642...

	front shape	marking plate	colour	part no.	kg	
marking plate clear, of plastic, can be hot pressed	round	transparent	clear	**61-9707.7**	0,001	

front bezel

for selector switch square front

	material	colour	⧉ 24 x 24 mm part no.	⧉ 26 x 26 mm part no.	kg	
front bezel	plastic	black	**52-950.0**	**52-952.0**	0,001	

front bezel-set for flush mounting

	use	material	colour	24 x 30 mm part no.	24 x 24 mm part no.	Ø 25 mm part no.	kg	
front bezel-set for flush mounting	illuminated pushbutton/indicator	aluminium anodized	natural			**61-9933.0**	0,006	
			black			**61-9933.1**	0,007	
		plastic	aluminium plated	**61-9931.4**	**61-9930.4**		0,007	
			black	**61-9931.0**	**61-9930.0**	**61-9933.10**	0,006	
	keylock switch	aluminium anodized	natural			**61-9932.0**	0,007	
			black			**61-9932.1**	0,007	
		plastic	aluminium plated	**61-9931.4**	**61-9930.4**		0,007	
			black	**61-9931.0**	**61-9930.0**	**61-9932.10**	0,006	
	selector switch	aluminium anodized	natural			**61-9932.0**	0,006	
			black			**61-9932.1**	0,007	
		plastic			**61-9936.0**	**61-9932.10**	0,007	

front ring

for actuator 24 mm dia.

	material	colour	part no.	kg	
front ring	aluminium anodized	black	**61-9600.0**	0,003	
		natural	**61-9600.1**	0,003	

protective front membrane cap

for actuator 24 mm dia.

	material	colour	part no.	kg	
protective front membrane cap	silicone nature	transparent	**61-9926.7**	0,001	

protective front membrane cap for flush mounting

	material	colour	part no.	kg	
protective front membrane cap for flush mounting for front bezel-set for flush mounting	silicone nature	transparent	**84-9103.7**	0,001	

protective cover

	18 x 24 mm part no.	18 x 18 mm part no.	24 x 24 mm part no.	technical drawing	kg	
protective cover hinged, transparent, with means for sealing	**51-925**			15	0,005	
			61-9920.0	16	0,006	
		51-920		14	0,005	

technical drawing as of page 140

protective cover for flush mounting

	24 x 30 mm part no.	24 x 24 mm part no.	kg	
protective cover for flush mounting hinged, transparent, with means for sealing	**61-9922.0**	**61-9921.0**	0,006	

blind plug projecting

	colour	18 x 24 mm part no.	24 x 24 mm part no.	18 mm dia. part no.	18 x 18 mm part no.	mounting dimension	kg	
blind plug projecting for mounting hole 16 mm dia.	black	**51-947.0**	**61-9450.0**	**51-949.0**	**51-948.0**	1	0,003	

mounting dimensions as of page 145

blind plug flat

	colour	24 x 30 mm part no.	24 x 24 mm part no.	28 mm dia. part no.	mounting dimension	kg	
blind plug flat for mounting hole 21 x 21 mm	black		**61-9451.0**		3	0,006	
for mounting hole 21 x 27 mm	black	**61-9452.0**			3	0,006	
for mounting hole 22.5 mm dia.	black			**704.960.7**	3	0,006	

mounting dimensions as of page 145

EMC key protection cap

	part no.	kg	
EMC key protection cap plastic black, for lock type DOM	**31-985.0**		

spare key

	part no.	kg	
spare key for emergency stop switch with key to release, lock type KABA standard lock 1001, other lock numbers on request	**14-987.1001**	0,006	
for keylock switch, lock type DOM standard lock 311, other lock numbers on request	**31-989.311**	0,006	

description see page 109

master key

	part no.	kg	
master key for lock numbers 311-445	**31-989.300**	0,006	

at back

lamp element

	part no.	circuit drawing	kg	
lamp element with screw terminal	**61-8006.01**	1	0,005	

circuit drawing as of page 150

diode element

	number of diodes	part no.	circuit drawing	components layout	kg	
diode element with soldering-/plug-in terminal	1	**61-8101.02**	20	1	0,007	
	2	**61-8102.02**	21	2	0,008	

components layouts as of page 146, circuit drawing as of page 150

switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions

	diode (1N 4007)	switching system	contacts	connection method	material of contacts	part no.	circuit drawing	components layout	[kg]	
switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions with lamp terminal, max. 250 VAC/6A	-	SA	1NC	ST/PT	gold/silver	**61-8440.22**	23	3	0,007	
					silver	**61-8440.12**	23	3	0,007	
			1NC + 1NO	ST/PT	gold/silver	**61-8470.22**	31	15	0,007	
					silver	**61-8470.12**	31	15	0,007	
			1NC + 2NO	ST/PT	gold/silver	**61-8490.22**	33	16	0,007	
					silver	**61-8490.12**	33	16	0,007	
			1NO	ST/PT	gold/silver	**61-8410.22**	28	12	0,007	
					silver	**61-8410.12**	28	12	0,007	
			2NC	ST/PT	gold/silver	**61-8450.22**	25	4	0,007	
					silver	**61-8450.12**	25	4	0,007	
			2NC + 1NO	ST/PT	gold/silver	**61-8480.22**	32	6	0,007	
					silver	**61-8480.12**	32	6	0,007	
			2NO	ST/PT	gold/silver	**61-8420.22**	35	13	0,007	
					silver	**61-8420.12**	35	-	0,007	
			3NC	ST/PT	gold/silver	**61-8460.22**	26	5	0,007	
					silver	**61-8460.12**	26	5	0,007	
			3NO	ST/PT	gold/silver	**61-8430.22**	36	14	0,007	
					silver	**61-8430.12**	36	14	0,007	
		T	1NC	SCH	silver	**61-8640.11**	22	-	0,008	
			1NO	SCH	silver	**61-8610.11**	28	13	0,008	
	2	SA	1NO + 2D	ST/PT	silver	**61-8212.12**	29	17	0,007	
			1NO + 2D	ST/PT	gold/silver	**61-8212.22**	29	17	0,007	
with lamp terminal, max. 42 VAC/DC/100 mA	-	T	1NC	ST/PT	gold	**61-8640.37**	23	10	0,008	
			1NC + 1NO	ST/PT	gold	**61-8670.37**	31	9	0,008	
			1NO	ST/PT	gold	**61-8610.37**	28	7	0,008	
			2NC	ST/PT	gold	**61-8650.37**	25	11	0,008	
			2NO	ST/PT	gold	**61-8620.37**	35	8	0,008	
with lamp terminal, max.250 VAC/5A	-	T	1NC	ST/PT	silver	**61-8640.17**	23	10	0,008	
			1NC + 1NO	ST/PT	silver	**61-8670.17**	31	9	0,008	
			1NO	ST/PT	silver	**61-8610.17**	28	7	0,008	
			2NC	ST/PT	silver	**61-8650.17**	25	11	0,008	
			2NO	ST/PT	silver	**61-8620.17**	35	8	0,008	
without lamp terminal, max. 250 VAC/6 A	-	T	1NC	SCH	silver	**61-8645.11**	22	-	0,008	
			1NC + 1NO	SCH	silver	**61-8675.11**	30	-	0,008	
			1NO	SCH	silver	**61-8615.11**	27	-	0,008	
			2NC	SCH	silver	**61-8655.11**	24	-	0,008	
			2NO	SCH	silver	**61-8625.11**	34	-	0,008	

switching system: SA = snap-action switching element, T = slow-make switching element
connection method: SCH = screw terminal, ST/PT = soldering-/plug-in terminal
contacts: NC = normally closed, NO = normally open
components layouts as of page 146, circuit drawing as of page 150

switching element for emergency stop switch

	switching system	contacts	connection method	material of contacts	part no.	circuit drawing	components layout	kg	
switching element for emergency stop switch max. 250 VAC/5A	T	1NC	ST/PT	silver	**61-8745.17**	37	19	0,008	
		1NC + 1NO	ST/PT	silver	**61-8775.17**	39	18	0,008	
		2NC	ST/PT	silver	**61-8755.17**	38	20	0,008	
max. 250 VAC/6A	T	1NC	SCH	silver	**61-8745.11**	37	-	0,008	
		1NC + 1NO	SCH	silver	**61-8775.11**	39	-	0,008	
		2NC	SCH	silver	**61-8755.11**	38	-	0,008	
max. 42 VAC/DC/100 mA	T	1NC	ST/PT	gold	**61-8745.37**	37	19	0,008	
		1NC + 1NO	ST/PT	gold	**61-8775.37**	39	18	0,008	
		2NC	ST/PT	gold	**61-8755.37**	38	20	0,008	

switching system: T = slow-make switching element
connection method: SCH = screw terminal, ST/PT = soldering-/plug-in terminal
contacts: NC = normally closed, NO = normally open
components layouts as of page 146, circuit drawing as of page 150

switching element for keylock-/selector switch 3 positions

	switching system	contacts	connection method	material of contacts	part no.	circuit drawing	components layout	kg	
switching element for keylock-/ selector switch 3 positions with lamp terminal, max. 250 VAC/ 6A	SA	1NC + 1NO	ST/PT	gold/silver	**61-8574.22**	31	23	0,008	
				silver	**61-8574.12**	31	23	0,008	
		2NC	ST/PT	gold/silver	**61-8550.22**	25	21	0,008	
				silver	**61-8550.12**	25	21	0,008	
		2NO	ST/PT	gold/silver	**61-8520.22**	35	22	0,008	
				silver	**61-8520.12**	35	22	0,008	
with lamp terminal, max. 42 VAC/ DC/100 mA	T	1NC + 1NO	ST/PT	gold	**61-8770.37**	31	24	0,008	
		2NC	ST/PT	gold	**61-8750.37**	25	26	0,008	
		2NO	ST/PT	gold	**61-8720.37**	35	25	0,008	
with lamp terminal, max.250 VAC/ 5A	T	1NC + 1NO	ST/PT	silver	**61-8770.17**	31	24	0,008	
		2NC	ST/PT	silver	**61-8750.17**	25	26	0,008	
		2NO	ST/PT	silver	**61-8720.17**	35	25	0,008	
without lamp terminal, max. 250 VAC/6 A	T	1NC + 1NO	SCH	silver	**61-8775.11**	31	-	0,008	
		2NC	SCH	silver	**61-8755.11**	24	-	0,008	
		2NO	SCH	silver	**61-8725.11**	35	-	0,008	

switching system: SA = snap-action switching element, T = slow-make switching element
connection method: SCH = screw terminal, ST/PT = soldering-/plug-in terminal
contacts: NC = normally closed, NO = normally open
components layouts as of page 146, circuit drawing as of page 150

flasher element

	operation voltage	connection method	part no.	kg	
flasher element	12 VAC/DC - 28 VAC/DC	ST	**61-8000.05**		

connection method: ST = soldering terminal
typical applications see page 151
circuit drawing as of page 150

PCB plug-in base

for plug-in terminal

	for	pin orientation	part no.	components layout	kg	
PCB plug-in base 13.1 mm dia. x 12.8 mm	indicator complete	axial	**61-9820.1**	27	0,002	
15 mm x 23 mm x 9.4 mm	slow-make switching element	axial	**61-9823**	29	0,002	
17.7 mm x 23.6 mm x 10.9 mm	snap-action switching element	axial	**61-9821.1**	28	0,003	

components layouts as of page 146

multi-plug housing

	part no.	kg	
multi-plug housing for snap-action switching element, max. 6 connections possible	**61-9830**	0,002	

cable shoe

	connection method	part no.	kg	
cable shoe	plug in terminal 2,8 x 0,5 mm	**31-946**	0,001	
	plug-in terminal 2,8 x 0,5 mm for multi-plug housing	**51-943.1**	0,001	

terminal cover

	use	part no.	kg	
terminal cover	for indicator element	**61-9831.2**	0,001	
	for snap-action switching element	**61-9830.2**	0,002	

for illumination

incandescent lamp

	voltage/current	part no.	kg	
incandescent lamp base MG T 1 3/4	6 AC/DC/125 mA	**10-1306.1349 (41-963.0)**	0,001	
	6.3 AC/DC/200 mA	**10-1307.1369 (31-963.0)**	0,001	
	12 AC/DC/75 mA	**10-1309.1309 (41-963.1)**	0,001	
	14 AC/DC/80 mA	**10-1310.1319 (31-963.1)**	0,001	
	18 AC/DC/40 mA	**10-1311.1249 (41-963.2)**	0,001	
	24 AC/DC/35 mA	**10-1312.1229 (41-963.3)**	0,001	
	28 AC/DC/30 mA	**10-1313.1209 (41-963.4)**	0,001	
	28 AC/DC/40 mA	**10-1313.1249 (31-963.2)**	0,001	
	36 AC/DC/20 mA	**10-1316.1179 (41-963.36)**	0,001	
	36 AC/DC/30 mA	**10-1316.1209 (31-963.5)**	0,001	
	48 AC/DC/20 mA	**10-1319.1179 (41-963.5)**	0,001	
	48 AC/DC/25 mA	**10-1319.1199 (31-963.3)**	0,001	
	60 AC/DC/20 mA	**10-1320.1179 (31-963.4)**	0,001	

LED

	number of chips	voltage/current	colour	part no.	kg	
LED base MG T1 3/4	6 chips	6 VDC/45 mA	green	**10-5306.3255 (31-968.05)**	0,001	
			red	**10-5306.3252 (31-968.02)**	0,001	
			yellow	**10-5306.3254 (31-968.04)**	0,001	
		12 VDC/30 mA	green	**10-5309.3205 (31-968.15)**	0,001	
			red	**10-5309.3202 (31-968.12)**	0,001	
			yellow	**10-5309.3204 (31-968.14)**	0,001	
		24 VAC/DC/12.5 mA	green	**10-5312.1115 (22-996.51)**	0,001	
			red	**10-5312.1112 (22-996.21)**	0,001	
			yellow	**10-5312.1114 (22-996.41)**	0,001	
		24 VDC/14 mA	green	**10-5312.3135 (31-968.25)**	0,001	
			red	**10-5312.3132 (31-968.22)**	0,001	
			yellow	**10-5312.3134 (31-968.24)**	0,001	
		28 VAC/DC/12.5 mA	green	**10-5313.1115 (22-997.51)**	0,001	
			red	**10-5313.1112 (22-997.21)**	0,001	
			yellow	**10-5313.1114 (22-997.41)**	0,001	
		28 VDC/14 mA	green	**10-5313.3135 (22-997.5)**	0,001	
			red	**10-5313.3132 (22-997.2)**	0,001	
			yellow	**10-5313.3134 (22-997.4)**	0,001	
		48 VDC/12 mA	green	**10-5319.3105 (31-968.45)**	0,001	
			red	**10-5319.3102 (31-968.42)**	0,001	
			yellow	**10-5319.3104 (31-968.44**	0,001	
	8 chips	6 VDC/48 mA	green	**10-6306.3265 (61-994.5)**	0,001	
			red	**10-6306.3262 (61-994.2)**	0,001	
			yellow	**10-6306.3264 (61-994.4)**	0,001	
		12 VDC/24 mA	green	**10-6309.3185 (61-995.5)**	0,001	
			red	**10-6309.3182 (61-995.2)**	0,001	
			yellow	**10-6309.3184 (61-995.4)**	0,001	
		24 VDC/12 mA	green	**10-6312.3105 (61-996.5)**	0,001	
			red	**10-6312.3102 (61-996.2)**	0,001	
			yellow	**10-6312.3104 (61-996.4)**	0,001	
		28 VDC/12 mA	green	**10-6313.3105 (96-997.5)**	0,001	
			red	**10-6313.3102 (61-997.2)**	0,001	
			yellow	**10-6313.3104 (61-997.4)**	0,001	
	1 chip	24 VDC/14 mA	white	**10-2312.3139**	0,001	
		28 VDC/14 mA	white	**10-2313.3139**	0,001	

capacitor

for lamp voltage reduction

	value	part no.	kg	
capacitor use with 60 VAC/20 mA, 50 Hz lamp voltage	230 VAC/0.27 µF	**02-917.0**	0,004	

Wire in accordance with local electrical safety regulations.

series resistor

for lamp voltage reduction

	value	part no.	kg	
series resistor use with 60 VAC/20 mA lamp rating	110 V/2.7 kOhm	**02-904.0**	0,003	
	125 V/3.3 kOhm	**02-904.1**	0,003	
	145 V/4.7 kOhm	**02-904.3**	0,003	
	230-240 V/10 kOhm	**02-904.7**	0,003	

Wire in accordance with local electrical safety regulations.

terminal plate empty

for fitting with series resistors and capacitors

	no. of spaces	part no.	kg	
terminal plate empty	5 spaces	**02-912.1**	0,025	
	10 spaces	**02-912.2**	0,045	
	15 spaces	**02-912.3**	0,090	
	20 spaces	**02-912.4**	0,095	

terminal plate with capacitor

	value	no. of components	part no.	kg	
terminal plate with capacitor use with 60 VAC/20 mA lamp rating	0,27 µF/230 VAC/60 VAC	5 spaces	**02-914.10**	0,045	
		10 spaces	**02-914.20**	0,090	
		15 spaces	**02-914.30**	0,135	
		20 spaces	**02-914.40**	0,180	

terminal plate with series resistor

	value	no. of components	part no.	kg	
terminal plate with series resistor use with 60 VAC/20 mA lamp rating	2.7 kOhm/110/60 V	5 spaces	**02-913.10**	0,040	
		10 spaces	**02-913.20**	0,075	
		15 spaces	**02-913.30**	0,115	
		20 spaces	**02-913.40**	0,155	
	3.3 kOhm/125/60 V	5 spaces	**02-913.11**	0,040	
		10 spaces	**02-913.21**	0,075	
		15 spaces	**02-913.31**	0,115	
		20 spaces	**02-913.41**	0,155	
	10 kOhm/230-240/60 V	5 spaces	**02-913.17**	0,040	
		10 spaces	**02-913.27**	0,075	
		15 spaces	**02-913.37**	0,115	
		20 spaces	**02-913.47**	0,155	

Wire in accordance with local electrical safety regulations.

for emergency stop switch

label for emergency stop switch

	marking	43 mm dia. part no.	kg	
label for emergency stop switch 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	
	without marking	**61-9970.0**	0,002	

protective shroud for emergency stop switch

	part no.	kg	
protective shroud for emergency stop switch aluminium anodized, yellow	**61-9965**		

enclosure for emergency stop switch

	part no.	kg	
enclosure for emergency stop switch with mounting hole size 16 mm dia. colour RAL 1004. dimensions: 65 mm long, 65 mm wide, 57 mm high front protection IP 65	**61-9480.4**	0,079	

cable gland PG11

	part no.		
cable gland PG11	**61-9481.8**		

assembling

anti-twisting ring

	part no.	kg	
anti-twisting ring for key- and selector switch	**51-910.0**	0,002	

reducing ring

for 16 mm pushbuttons in mounting hole 22.5 mm dia.

	part no.	kg	
reducing ring only for use of front dimension: 24 x 24 mm/24 mm dia.	**61-9960**	0,003	

tool-set

	part no.	kg	
tool-set consists of lens remover, lamp remover, mounting tool, dismantling tool	**K61-999.100**		

lens remover

	use	part no.	kg	
lens remover	for 24 x 24 mm, 25 mm dia. front and overhanging lenses	**61-9730.0**	0,011	
	for standard lenses	**02-905**	0,011	

lamp/LED remover

	part no.	kg	
lamp/LED remover	**61-9740.0**	0,003	

dismantling tool for lens

for dismantling of lens and lensholder

	part no.	kg	
dismantling tool for standard lens	**51-938**	0,027	
dismantling tool for lens for flush mounting	**61-9832**	0,024	

dismantling tool for switching element

	part no.	kg	
dismantling tool for switching element	**61-9711.0**	0,004	

mounting tool

	part no.	kg	
mounting tool for tightening (or loosening) fixing nuts	**01-907**	0,020	

cable shoe remover

	part no.	kg	
cable shoe remover for removing the connector from the multi-plug housing	**51-943.9**	0,001	

actuator with snap-action switching element

switching system

Self- cleaning, double-break, snap-action switching elements (contact gap 2 x 0.5 mm).
The elements can be supplied with the following choice of switching functions:
for illuminated pushbutton or switch actuator with 2 positions: max. 3 normally open contacts, max. 3 normally closed contacts or combined
switch actuator with 3 positions:
max. 2 normally open contacts, max. 2 normally closed contacts or combined
The switching element can be easily snapped to or dismantled from the actuator.

material

actuator case
polyetherimide PEI, self-extinguishing

front bezel
polyetherimide PEI and chromium plated

front ring
of aluminium

lenses
polymethylmethacrylat PMMA, polycarbonate PC, aluminium (mushroom head cap: polyamide PA)

material of contacts
gold-plated silver or silver

switching element
diallyl phthalate DAP, self-extinguishing, polysulfone PSU

mechanical characteristics

actuating force
measured at the lens of the illuminated pushbutton:
2.7-10 N, depending on the number of switching elements

actuating torque
measured at the lever or key of the selector-or keylock switch:
2.5 - 10 Ncm, depending on the number of switching elements

actuating travel
illuminated pushbutton :3 mm

switch actuator with 2 positions:
1 x ca. 42° deflection momentary action
1 x ca. 90° deflection maintained action
switch actuator with 3 positions:
2 x ca. 42° deflection momentary action
2 x ca. 90° deflection maintained action

ambient air temperature
-25°C to +55°C
for indicators and illuminated pushbuttons mounted as a block , make sure the heat can escape freely
(as per DIN IEC 68-)

connection method
universal terminal (soldering-/plug-in terminal):
max. wire diameter: 2 of 1 mm
max. wire cross-section of stranded cable: 1 x 0.75 mm^2 soldering-/plug-in terminal: 2.8 x 0.5 mm

degree of protection
indicator, illuminated pushbutton, emercency stop switch, selector- and keylock switch: front IP 65
switching element IP 40
soldering terminal IP 20

mechanical life
as per IEC 512-5-6
momentary action 2 mio. cycles of operation
maintained action 1 mio. cycles of operation
keylock switch 50000 cycles of operation
selector switch 100000 cycles of operation

rebound time
<= 5ms

resistance to shock
(single impacts, semi-sinusoidal)
50 g, 11 ms as per IEC 512-4-3, IEC 68-2-27

resistance to vibration
(sinusoidal)
10 g, at 10- 2000- 10 Hz, amplitude 0.75 mm as per IEC 512-4-4, IEC 68-2-6

storage temperature
-40°C to + 85°C
(as per DIN IEC 68-)

electrical characteristics

continuous thermal current Ith_2
5 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

electric strength
as per VDE 0630 (IEC 512-2-11)
2500 VAC, 50 Hz, 1 min between all terminals and earth

electrostatic breakdown value
>= 11 KV (keylock switch)

protection class
II

rated current
6 A

rated voltage
250 VAC/VDC

switch rating
gold-/silver contact:
min. 5 VAC/10 mA
max. 250 VAC/6 A
silver contact:
min. 20 VAC/500 mA
max. 250 VAC/6 A

switch rating AC, cos. φ 0,7:

rated service voltage	250 VAC	125 VAC	110 VAC
rated service current	2 A	3 A	3 A

switch rating DC, L:R=30 ms:

rated service voltage:	220	110	60	24 VDC
rated service current resistive:	0.5	0.7	2.0	6.0 A
rated service current L:R=30ms:	0.15	0.3	0.7	2.0 A

volume resistance
starting value (initial) for:
gold-/silver contact <= 50 mΩ as per IEC 512-2-test 4
silver contact <= 100 mΩ as per IEC 512-2-test 5

rules

IEC 1058 EN 61 058

approvals

- SEV 250 VAC/6 A
- CSA 300 VAC
- UR 250 VAC/6 A
- VDE 250 VAC/6 A
- German Lloyd

actuator with slow-make switching element

switching system

Self-cleaning, double-break, snap-action switching elements (contact gap 2 x 1.5 mm).
The elements can be supplied with the following choice of switching functions:
for illuminated pushbutton or switch actuator with 2 positions:
max. 2 normally open contacts, max. 2 normally closed contacts or combined
for switch actuator with 3 positions:
max. 2 normally open contacts, max.2 normally closed contacts or combined
The switching element can be easily snapped to or dismantled from the actuator.

material

actuator case
polyetherimide PEI, self-extinguishing

front bezel
polyetherimide PEI and chromium plated

front ring
of aluminium

lenses
polymethylmethacrylat PMMA, polycarbonate PC, aluminium (mushroom head cap: polyamide PA)

material of contacts
gold (low level), silver

switching element
polyamide PA, polysulfone PSU

mechanical characteristics

actuating force
measured at the lens of the illuminated pushbutton:
3.5-20 N, depending on the number of switching elements

measured at the mushroom head cap of the emergency stop switch:
max. 65 N

actuating torque
measured at the lever or key of the selector-or keylock switch:
4-16 Ncm, depending on the number of switching elements
emergency stop switch: 15 Ncm

actuating travel
illuminated pushbutton :3 mm

emergency stop switch:10 mm

switch actuator with 2 positions:
1 x ca. 42° deflection momentary action
1 x ca. 90° deflection maintained action
switch actuator with 3 positions:
2 x ca. 42° deflection momentary action
2 x ca. 90° deflection maintained action

ambient air temperature
-25°C to +55°C
for indicators and illuminated pushbuttons mounted as a block , make sure the heat can escape freely
(as per DIN IEC 68-)

connection method
universal terminal (soldering-/plug-in terminal):
max. wire diameter: 2 of 1 mm
max. wire cross-section of stranded cable: 1 x 0.75 mm^2

soldering-/plug-in terminal: 2.8 x 0.5 mm
screw terminal:
max. wire cross-section of stranded cable: 1 x 1 mm^2

degree of polution
3

degree of protection
indicator, illuminated pushbutton, emercency stop switch, selector- and keylock switch: front IP 65
switching element IP 40
screw terminal IP 20 as per VDE 0106 Teil 100

mechanical life
as per IEC 512-5-6
momentary action 2 mio. cycles of operation
maintained action 1 mio. cycles of operation
keylock switch 50000 cycles of operation
selector switch 100000 cycles of operation
emergency stop switch 50000 cycles of operation

rebound time
<= 2 ms

resistance to shock
(single impacts, semi-sinusoidal)
50 g, 11 ms as per IEC 512-4-3, IEC 68-2-27

resistance to vibration
(sinusoidal)
10 g, at 10- 2000- 10 Hz, amplitude 0.75 mm as per IEC 512-4-4, IEC 68-2-6

storage temperature
-40°C to + 85°C
(as per DIN IEC 68-)

electrical characteristics

continuous thermal current Ith_2
universal terminal 5 A
screw terminal 10 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

electric strength
as per VDE 0630 (IEC 512-2-11)
4000 VAC, 50 Hz, 1 between all terminals and earth

electrical life
switching element of emergency stop switch 6´050 cycles of operation

electrostatic breakdown value
>= 11 KV (keylock switch)

max. permissible rated current
10 A gL

over voltage category
III

protection class
II

rated current
6 A

rated voltage
300 V

switch rating
gold contact (universal terminal, Low Level):
min. 100 µV/10 µA
max. 42 VAC/100 mA;
silver contact (universal terminal):
min. 20 VAC/10 mA
max. 250 VAC/5 A
silver contact (screw terminal):
min. 20 VAC/10 mA
max. 250 VAC/6 A
switch rating AC:

rated service voltage	250	120	60	24 VAC
rated service current AC 13	3 A	5 A	6 A	6 A
rated service current AC 14*	2 A	3 A	4 A	5 A
rated service current AC 15**	2 A			

*only for emergency stop switch with universal terminal
**only for emergency stop switch with screw terminal
switch rating DC :

rated service voltage:	240	110	60	24 VDC
rated service current resistive:	0,5	0,7	2,0	6,0 A
rated service current L:R=30 ms:	0.2	0.4	1.0	2.0 A

volume resistance
starting value (initial) for:
gold contact <= 50 mΩ as per IEC 512-2-test 4
silver contact <= 50 mΩ as per IEC 512-2-test 5

rules
IEC 947-5-1 EN 60 947

approvals
- SEV 250 VAC
- CSA
- UL
- VDE

actuator with flasher element

material

actuator case
polyetherimide PEI, self-extinguishing

lenses
polymetylmethacrylat PMMA, polycarbonate PC

mechanical characteristics

ambient air temperature
0°C to + 45°C
(as per DIN IEC 68-)

connection method
soldering terminal 2.8 x 0.8 mm

electrical characteristics

flashing frequency
1 Hz ± 0.25 Hz

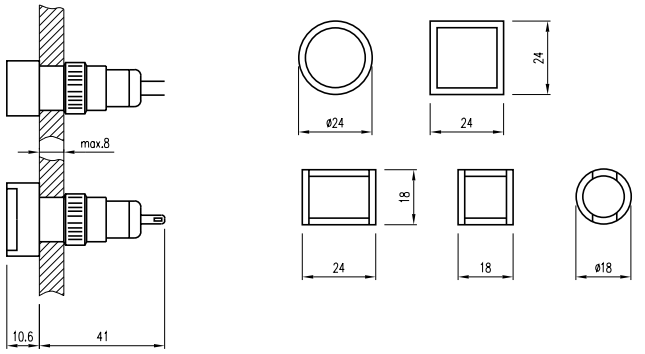
illumination
incandescent lamp: 14 V, 80 mA or 28 V, 40 mA
Multi-LED: 12 V, 25 mA or 24 V, 12.5 mA

making cycle
1:1

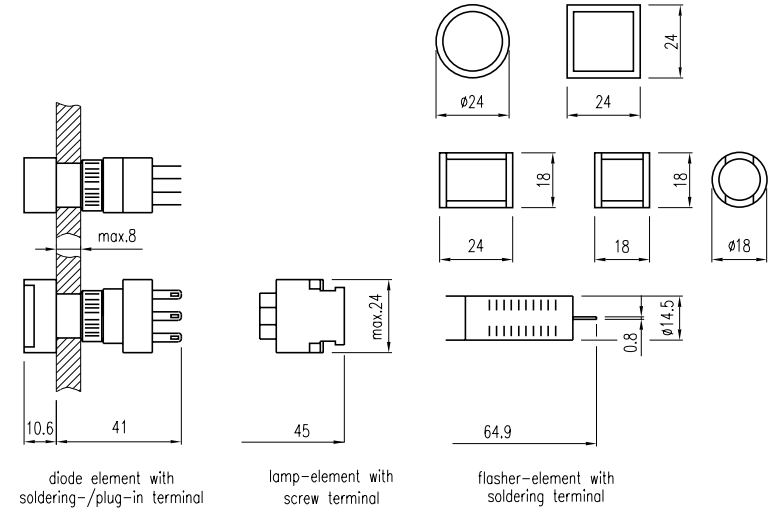
operating voltage
AC or DC
12 - 10% or 28 V + 10%

technical drawing

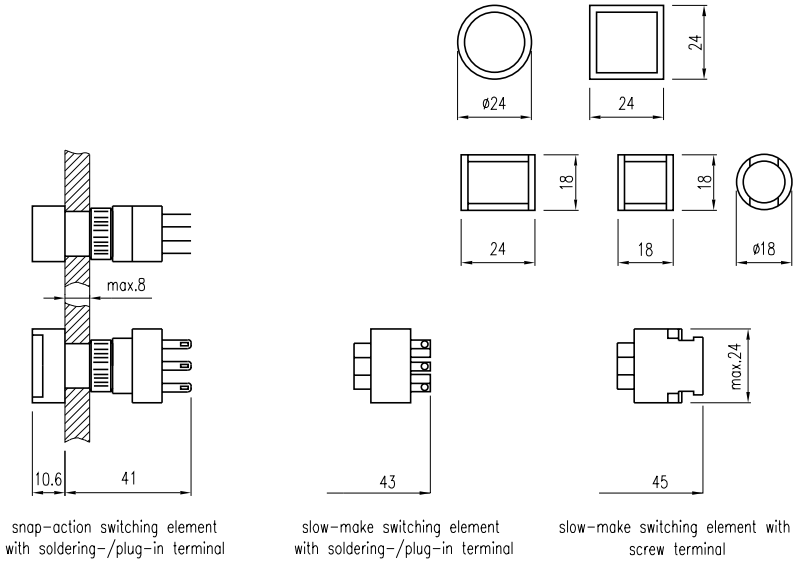
1 indicator complete
page 111



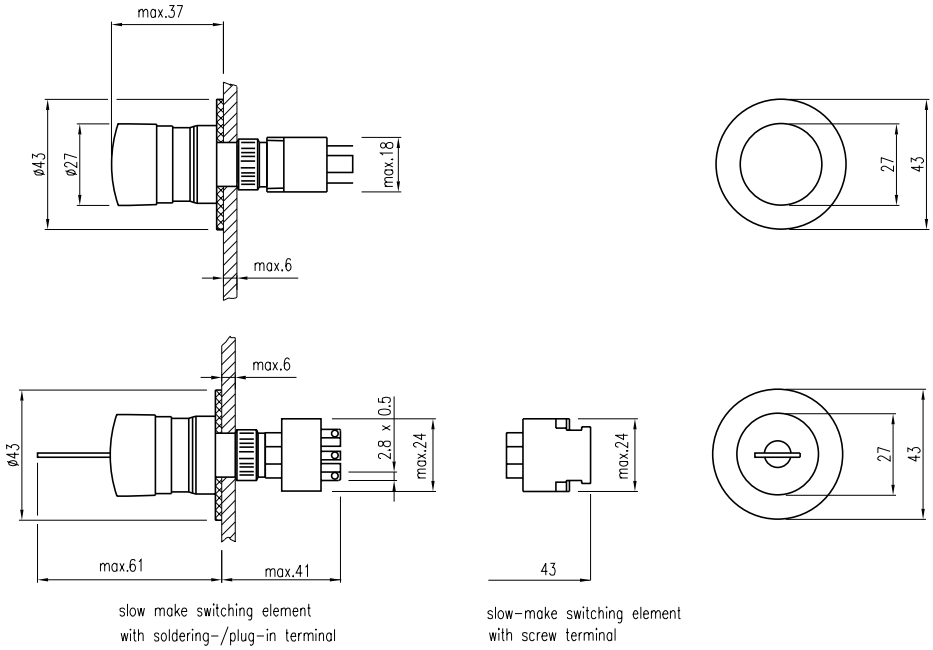
2 indicator-/flasher-actuator
page 111



3 illuminated-/pushbutton actuator
page 112



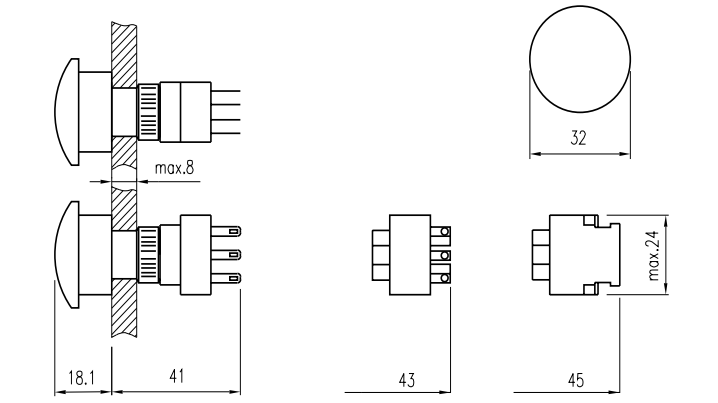
4 emergency stop switch actuator foolproof
page 112



slow make switching element with soldering-/plug-in terminal

slow-make switching element with screw terminal

5 pushbutton actuator with mushroom-head cap
page 113

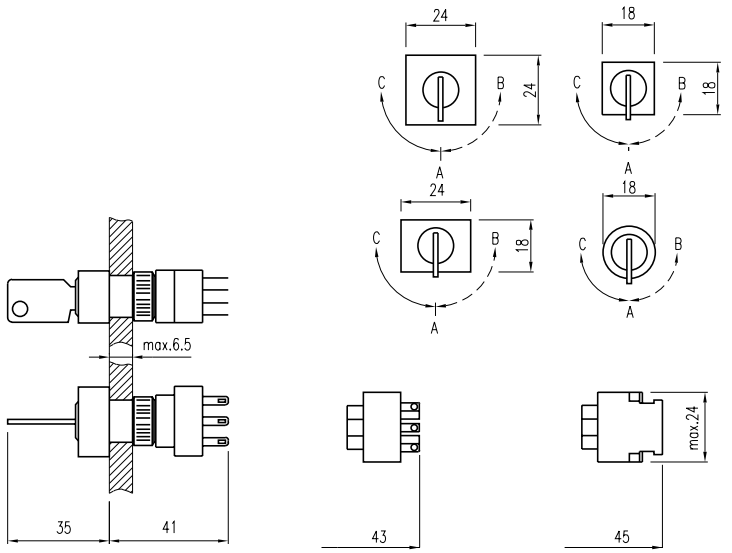


snap-action switching element with soldering-/plug-in terminal

slow-make switching element with soldering-/plug-in terminal

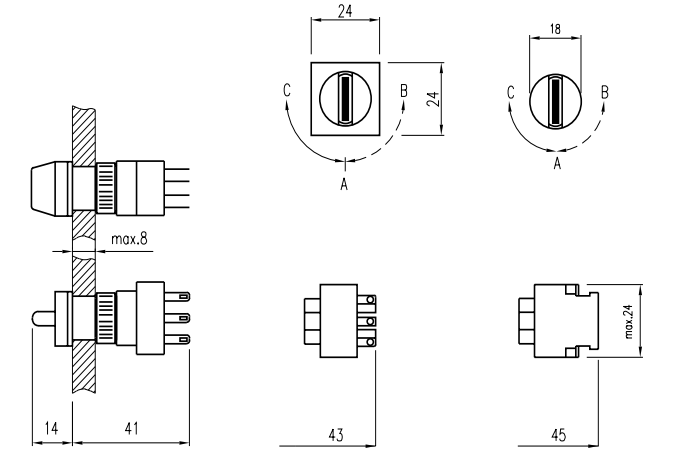
slow-make switching element with screw terminal

6 keylock switch actuator 2 positions, keylock switch actuator 3 positions
page 113, 114



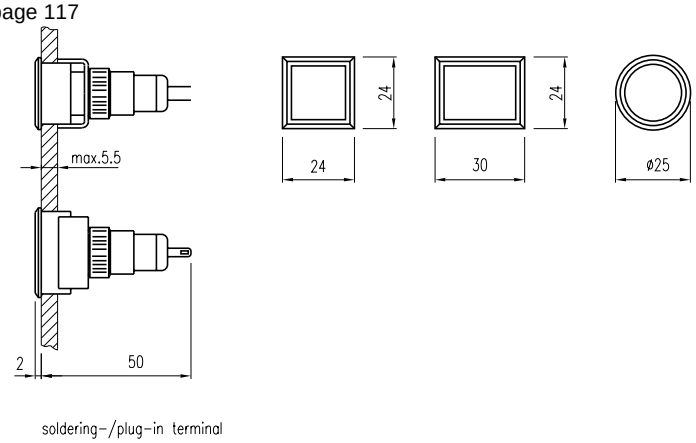
snap-action switching element with soldering-/plug-in terminal | slow-make switching element with soldering-/plug-in terminal | slow-make switching element with screw terminal

7 selector switch actuator 2 positions, selector switch actuator 3 positions
page 115, 116



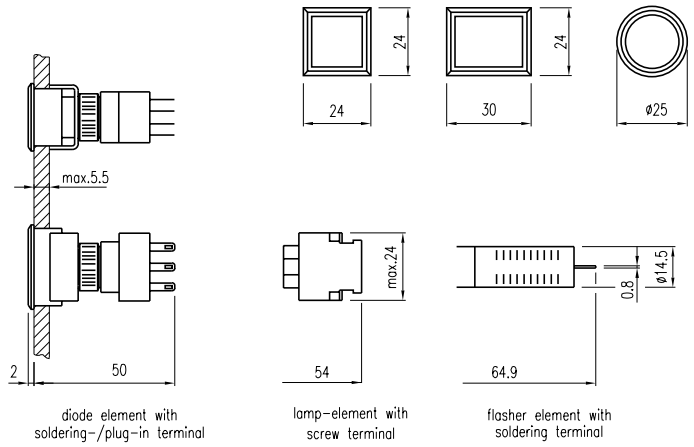
snap-action switching element with soldering-/plug-in terminal | slow-make switching element with soldering-/plug-in terminal | slow-make switching element with screw terminal

8 indicator complete for flush mounting
page 117

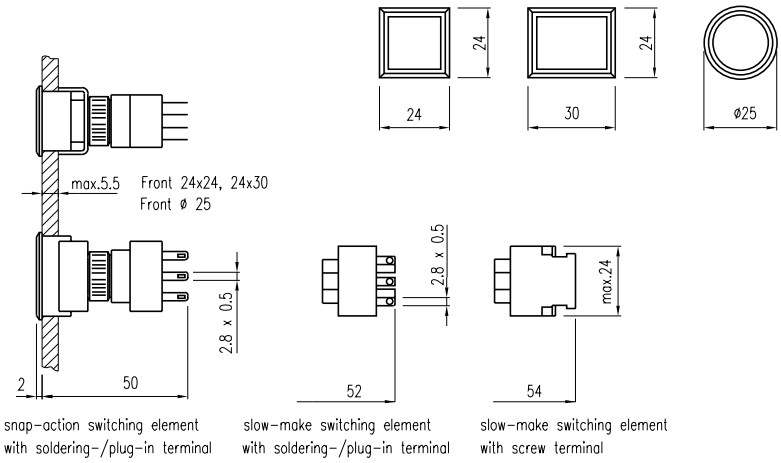


soldering-/plug-in terminal

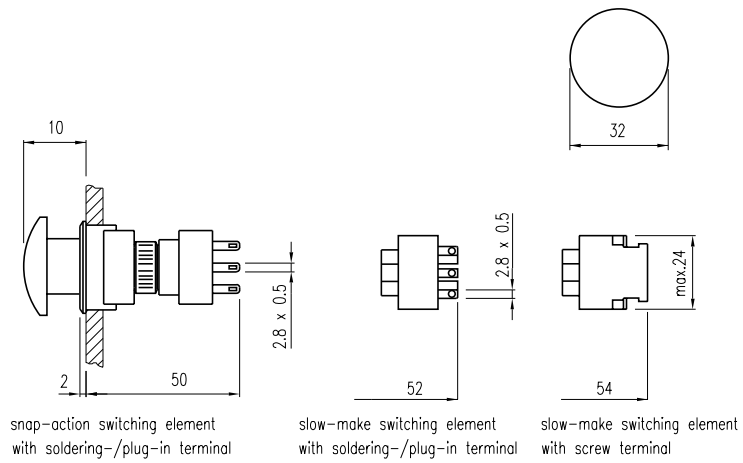
9 indicator-/flasher-actuator for flush mounting
page 117



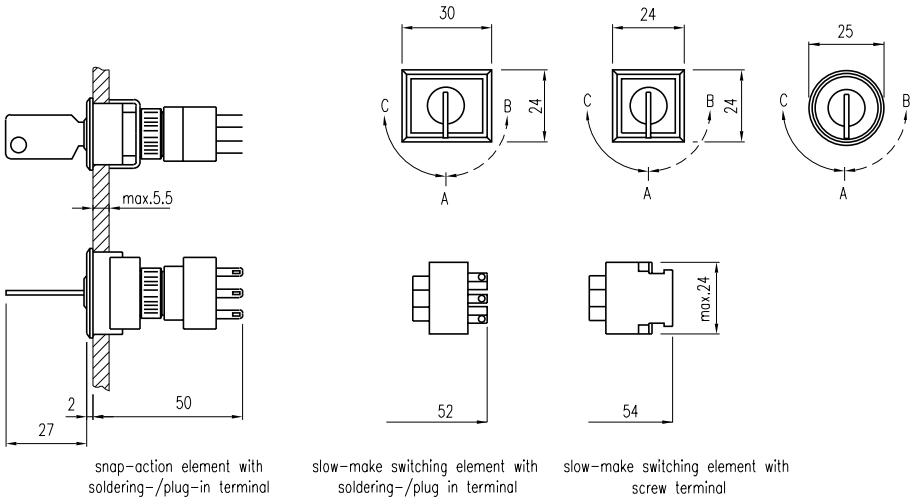
10 illuminated-/pushbutton actuator for flush mounting
page 118



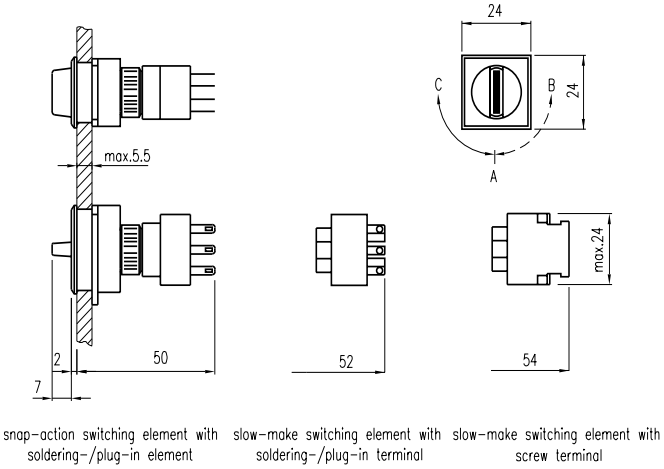
11 mushroom pushbutton actuator for flush mounting
page 118



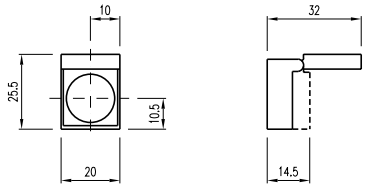
12 keylock switch actuator with 2 positions for flush mounting, keylock switch actuator 3 positions for flush mounting
page 119, 120



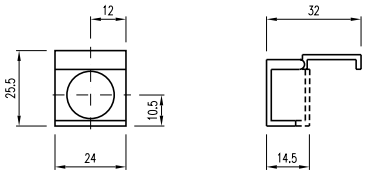
13 selector switch actuator 2 positions for flush mounting, selector switch actuator 3 positions for flush mounting
page 121, 122



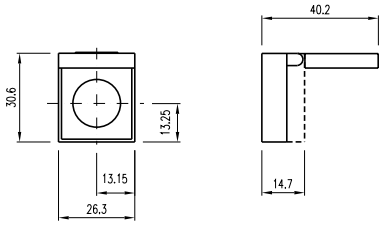
14 protective cover
page 126



15 protective cover
page 126

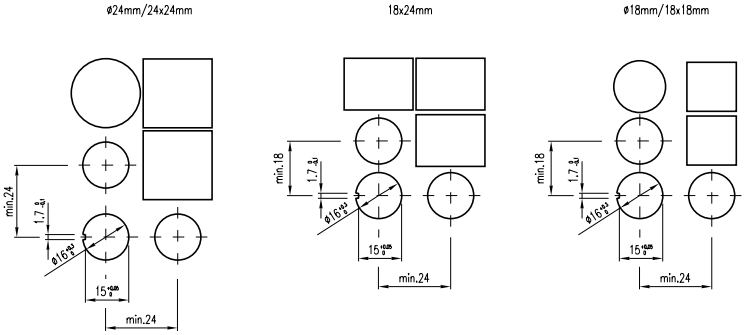


16 protective cover
page 126

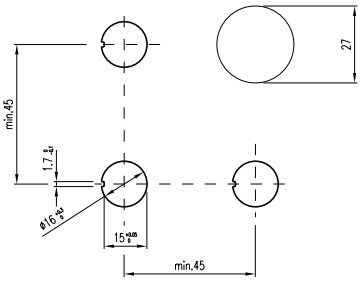


mounting dimension

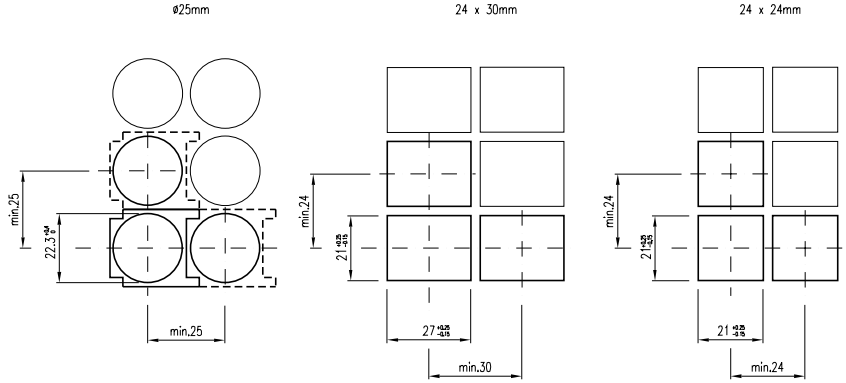
1 indicator complete, indicator-/flasher-actuator, illuminated-/pushbutton actuator, keylock switch actuator 2 positions, keylock switch actuator 3 positions, selector switch actuator 2 positions, selector switch actuator 3 positions, blind plug projecting
page 111, 112, 113, 114, 115, 116, 127



2 emergency stop switch actuator foolproof, pushbutton actuator with mushroom-head cap, mushroom pushbutton actuator for flush mounting
page 112, 113

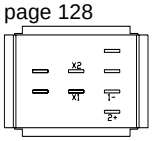


3 indicator complete for flush mounting, indicator-/flusher-actuator for flush mounting, illuminated-/pushbutton actuator for flush mounting, keylock switch actuator with 2 positions for flush mounting, keylock switch actuator 3 positions for flush mounting, selector switch actuator 2 positions for flush mounting, selector switch actuator 3 positions for flush mounting, blind plug flat
page 117,118,119,120, 121, 122, 127

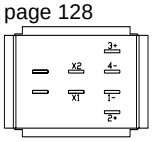


components layouts

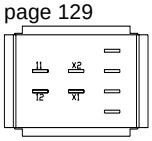
1 diode element
page 128



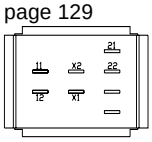
2 diode element
page 128



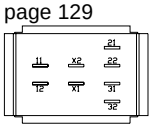
3 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



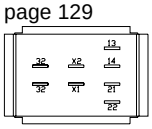
4 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



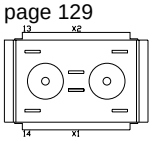
5 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



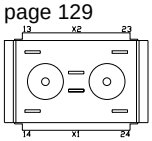
6 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



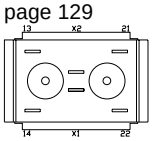
7 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



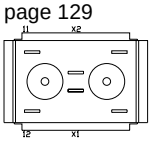
8 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



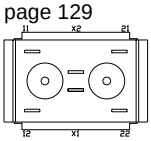
9 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



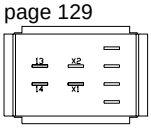
10 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



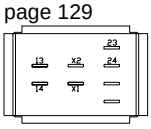
11 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



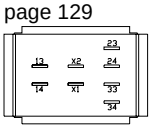
12 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



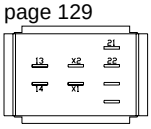
13 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



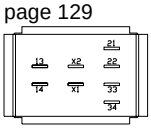
14 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



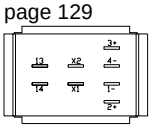
15 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



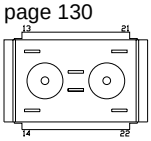
16 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



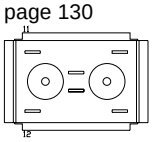
17 switching element for illuminated-/pushbutton, keylock-/selector switch 2 positions
page 129



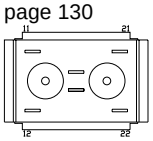
18 switching element for emergency stop switch
page 130



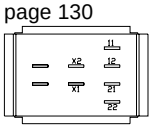
19 switching element for emergency stop switch
page 130



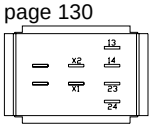
20 switching element for emergency stop switch
page 130



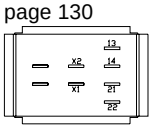
21 switching element for keylock-/selector switch 3 positions
page 130



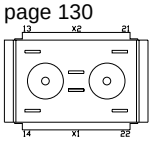
22 switching element for keylock-/selector switch 3 positions
page 130



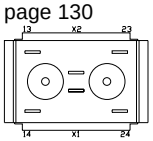
23 switching element for keylock-/selector switch 3 positions
page 130



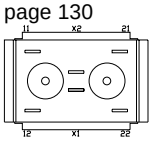
24 switching element for keylock-/selector switch 3 positions
page 130



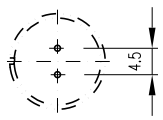
25 switching element for keylock-/selector switch 3 positions
page 130



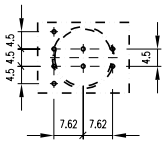
26 switching element for keylock-/selector switch 3 positions
page 130



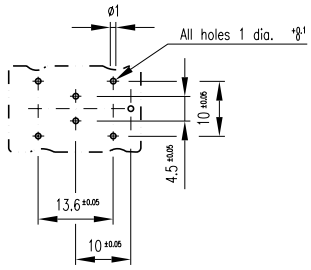
27 PCB plug-in base
page 131



28 PCB plug-in base
page 131



29 PCB plug-in base
page 131



	circuit drawing
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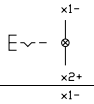
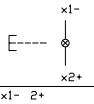
18	
19	
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	circuit drawing
21	
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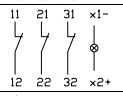
26	
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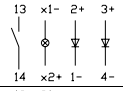
29	
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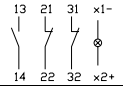
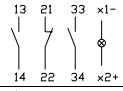
31	
32	
33	
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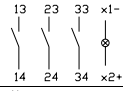
36	
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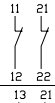
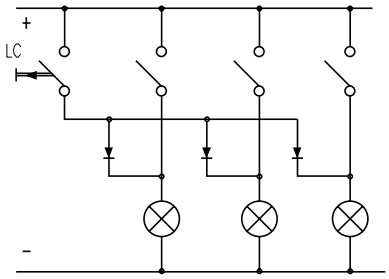
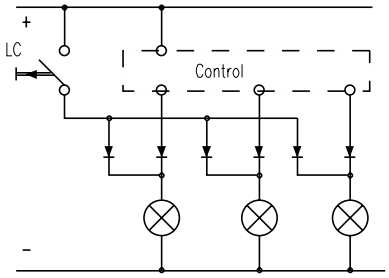
38	
39	

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

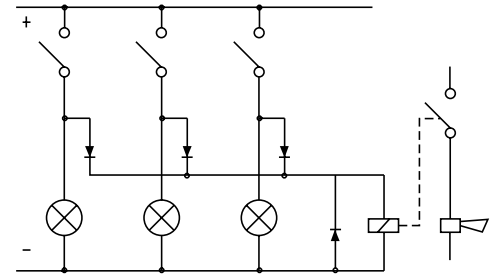
lamp check



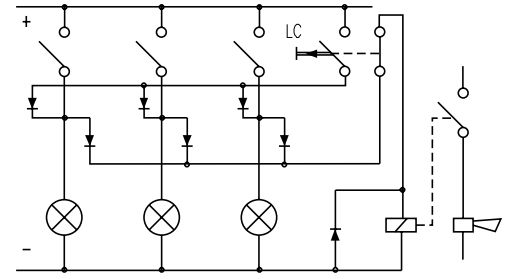
lamp check with blocking diodes



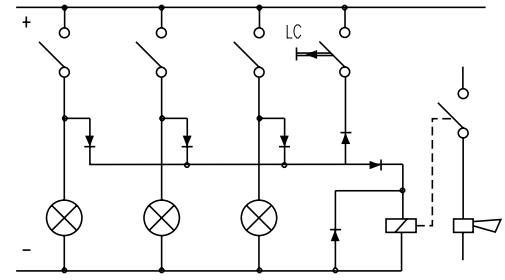
alarm circuit from fault annunciating system



lamp check and alarm circuit

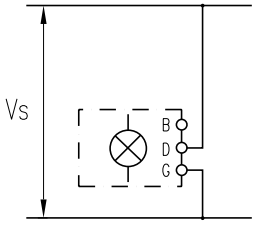


lamp check and alarm circuit with only one diode and AC voltage



LC = lamp check

Flasher element



1. Continuous light

1. Engraving

Typefaces

In addition to the most commonly used world languages (see DIN 1451) with close spacing, the following typefaces are available: Scandinavian, Slavian, Greek, Russian.

Coloured filling of engraving

Specify whether engraving should be on the diffuser, or on the lens.
Specify the infill colour, charcter height and the text or symbol orientation.

Symbols

A list of the symbols available can be supplied on request.

2. Hot stamping

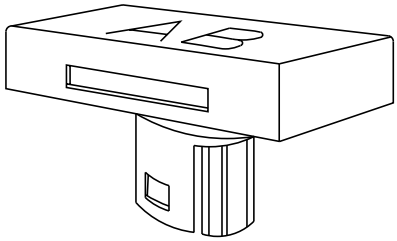
For large batches it is worth while to have the lettering produced by hot stamping.

Typefaces

For letters and figures, typefaces with 2,5 mm, 3 mm and 4 mm are available.

Symbols

A list of the symbols available can be supplied on request.



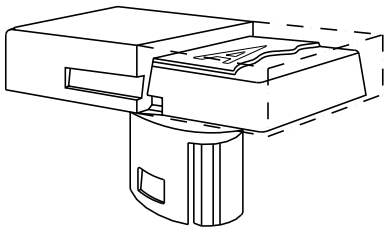
Important!

Before engraving, check the position of the illuminated pushbutton or indicator

Height of letters mm	Thickness of letters mm	(switch) lens	(18 x 24) 15,3 x 21,5 mm						(Ø 18) Ø 15,8 mm			(18 x 18) 15,3 x 15,3 mm		
			Horizontal mounting			Vertical mounting								
			Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line
h	s			(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)
2,5	0,4		4	11	12	5	7-8	8	3	6	6	4	7-8	8
3	0,4		3	9-10	10-11	4	6-7	7	2	5	6	3	6-7	7
4	0,5		2	7	7-8	3	4-5	5	2	3	4	2	4-5	5
5	0,5		2	5-6	6	2	3-4	4	1	2	3	2	3-4	4
6	0,6		1	4-5	5	2	3	3-4	1	2	2	1	3	3-4
8	0,6		1	3-4	3-4	1	2-3	2-3	1	2	2	1	2-3	2-3
Film dimension			□ max. 12,7 x 18,7 mm						Ø 12,8 mm			□ 12,7 x 12,7 mm		

3. Film inserts

Instead of using engraving, the lenses can be fitted with transparent film inserts.
For this purpose, though, it is advisable to use transparent lenses. When a smoked lens is used, the lettering does not become visible until the lamp lights.



Film dimensions

16,9x16,9 mm
11,9x11,9 mm
max 11,9x18,0 mm

Film thickness

0.2 mm

Important!

Before engraving, check the position of the illuminated pushbutton or indicator.

		(switch) Ø 25 Marking plate for lens 19,7 mm dia.			(24 x 24 mm) 20 x 20 mm			(24 x 30 mm) 18 x 24 mm						(24 x 24) 18 x 18 mm		
								Horizontal mounting			Vertical mounting					
Height of letters	Thickness of letters	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line
h	s		(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)
2,5	0,4	3	6	6	4	9	10	4	12	13	5	8-9	9	4	8-9	9
3	0,4	2	5	6	3	7-8	9	3	10-11	11-12	4	7-8	8	3	7-8	8
4	0,5	2	3	4	2	4-5	5	2	7	8	3	4-5	5	2	4-5	5
5	0,5	1	2	3	2	4	4-5	2	5-6	6	2	4	4-5	2	4	4-5
6	0,6	1	2	3	1	4	4	1	4-5	5	2	3	3-4	1	4	4
8	0,6	1	2	2	1	2	2	1	3-4	3-4	1	2-3	2-3	1	2-3	2-3
Film dimension					⊡ 16,9 x 16,9 mm			⊡ 15,1 x 21 mm						⊡ 15,1 x 15,1 mm		

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

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