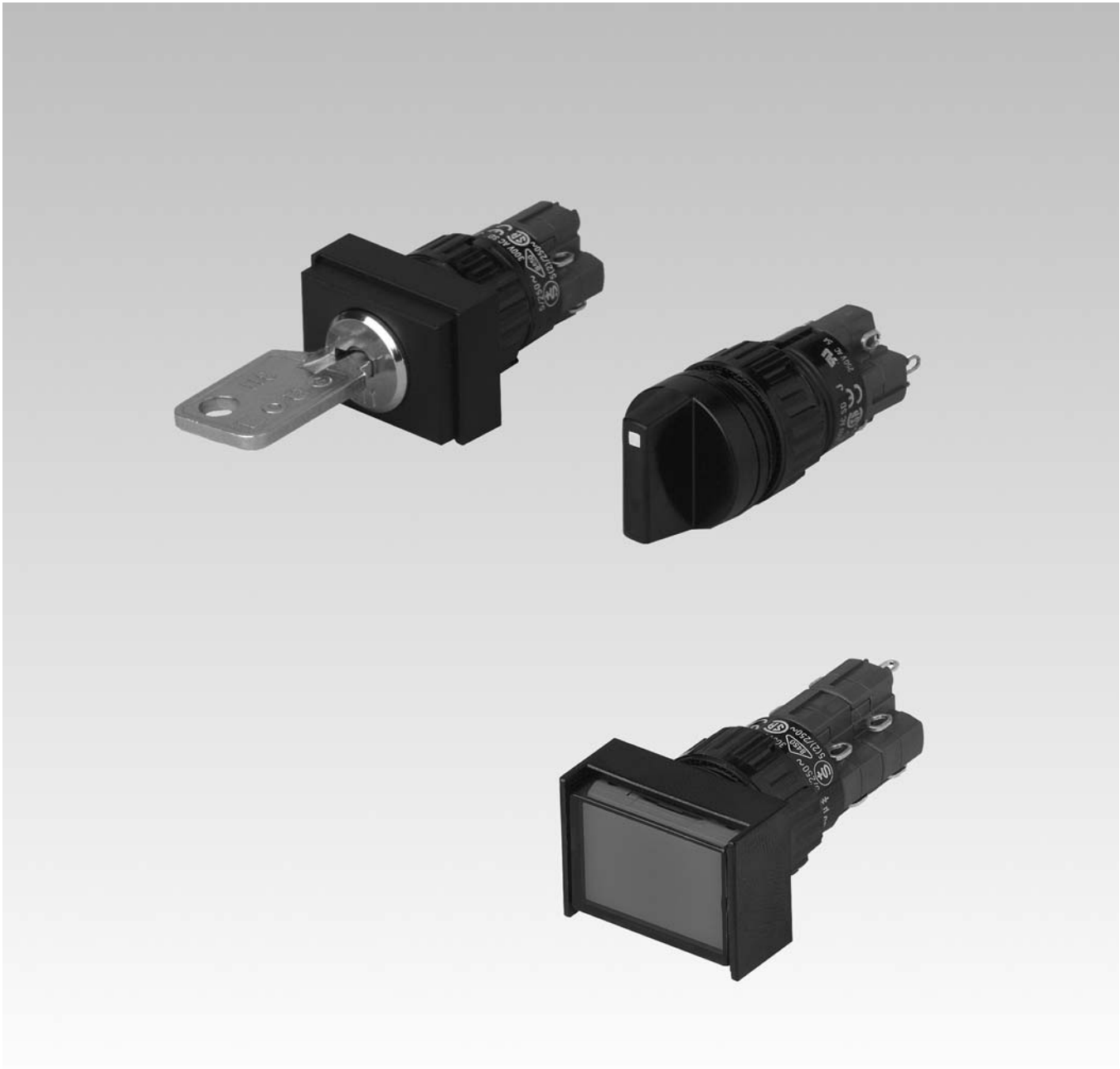




## EAO Product Information

Series 51





Description .....	4
Product Assembly .....	5
Devices raised mounting .....	6
Accessories.....	12
Technical Data.....	19
Typical Applications .....	22
Marking .....	23
Drawings.....	24
Index.....	40

## Product Information

### General notes

The illuminated pushbuttons of series 51 with hoseproof front (IP 65) can be supplied with snap-action or low-level switching elements. They are protected against accidental operation by the extended sides of the bezel.

The front dimensions of these units are 18 x 24 mm, 18 x 18 mm or 18 mm dia.

To supplement the range of illuminated pushbuttons, we can offer a hoseproof safety keylock switch with various lock numbers.

### 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.

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. The rectangular actuators are provided with an anti-twisting device.

### Lenses

The flat or concave lenses, made of Polymethyl Methacrylate, are available in various colours, as well as translucent or transparent.

### Marking

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

### Illumination

The T1  $\frac{3}{4}$  Midget Groove incandescent (filament) lamp (6 ... 48 V) ensures perfect illumination of the lenses, which are supplied in various colours.

T1  $\frac{3}{4}$  Midget Groove Single-LED (6, 12, 24, 28, 48 V) are also available in blue, green, red, white or yellow.

Luminosity and wave length scattering caused by the technology used in the LED manufacturing processes may lead to visual differences in our products.

For supply voltages above 48 V, it is necessary to use a voltage reduction element (external series resistor or transformer).

### 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).

## Specimen order

### Indicator :

- |  |            |
|--|------------|
| - Indicator actuator, 18 x 24 mm, soldering terminal | 31-040.005 |
|--|------------|

### Essential accessories :

- |   |              |
|---|--------------|
| - Lens plastic blue, transparent, flush, 18 x 24 mm | 31-903.6     |
| - Single-LED, T1 $\frac{3}{4}$ MG, 24 VAC/DC, blau  | 10-2J12.1066 |

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

## Pushbutton illuminative, raised mounting






- 1 Lens
- 2 Switch housing
- 3 Fixing nut

## Indicator actuator



### Essential Accessories:

-  Lens plastic page 12
-  Single-LED page 16

	Front protection	Diode (1N 4007)	Terminals	⌀ 18 x 18 mm Typ-Nr.	⌀ 18 x 24 mm Typ-Nr.	Ø 18 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	
<b>Indicator actuator</b>	IP 65	1 D	UT	<b>51-703.006</b>	<b>51-701.006</b>	<b>51-741.006</b>	4	1	1	79	0.006
		2 D	UT	<b>51-704.006</b>	<b>51-702.006</b>	<b>51-742.006</b>	4	1	1	80	0.006
	-	S		<b>51-050.005</b>	<b>51-040.005</b>	<b>51-030.005</b>		1	8	2	0.004
		S1		<b>51-050.002</b>	<b>51-040.002</b>	<b>51-030.002</b>		1	8	1	0.004
		UT		<b>51-051.006</b>	<b>51-041.006</b>	<b>51-031.006</b>	4	1	2	1	0.005

Indicators fit also in mounting hole no. 2

Diode (1N 4007): D = Diode, - = without



Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)


Component layout from page 24, Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28

## Illuminated pushbutton actuator



### Essential Accessories:

-  Lens plastic page 12
-  Single-LED page 16

	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action		Ø 18 x 18 Typ-Nr.	□ 18 x 24 mm Typ-Nr.	Ø 18 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing		
					MA	UT									Terminal
<b>Illuminated pushbutton actuator</b>	IP 65	LL	1 NC	-	MA	UT	51-486.036	51-466.036	51-476.036	4	1	2	12	0.007	
					M	UT	51-456.036	51-426.036	51-436.036	4	1	2	58	0.007	
			1 NC + 1 NO	-	MA	UT	51-483.036	51-463.036	51-473.036	4	1	2	15	0.007	
					M	UT	51-453.036	51-423.036	51-433.036	4	1	2	61	0.007	
			1 NO	-	MA	UT	51-485.036	51-465.036	51-475.036	4	1	2	14	0.007	
					M	UT	51-455.036	51-425.036	51-435.036	4	1	2	60	0.007	
			2 NC	-	MA	UT	51-482.036	51-462.036	51-472.036	4	1	2	13	0.007	
					M	UT	51-452.036	51-422.036	51-432.036	4	1	2	59	0.007	
			2 NO	-	MA	UT	51-481.036	51-461.036	51-471.036	4	1	2	16	0.007	
					M	UT	51-451.036	51-421.036	51-431.036	4	1	2	62	0.007	
			SA	1 NC + 1 NO	1 D	MA	UT	51-717.0292	51-713.0292	51-747.0292	4	1	10	9	0.008
						M	UT	51-709.0292	51-705.0292	51-743.0292	4	1	10	55	0.008
					2 D	MA	UT	51-718.0292	51-714.0292	51-748.0292	4	1	10	10	0.008
						M	UT	51-710.0292	51-706.0292	51-744.0292	4	1	10	56	0.008
		-			MA	S	51-281.0252	51-261.0252	51-271.0252		1	9	11	0.006	
						S1	51-281.022	51-261.022	51-271.022		1	9	8	0.006	
					M	S	51-151.0252	51-121.0252	51-131.0252		1	9	57	0.006	
						S1	51-151.022	51-121.022	51-131.022		1	9	54	0.006	
		2 NC + 2 NO			1 D	MA	UT	51-719.0292	51-715.0292	51-749.0292	4	1	10	5	0.010
						M	UT	51-711.0292	51-707.0292	51-745.0292	4	1	10	51	0.010
					2 D	MA	UT	51-720.0292	51-716.0292	51-750.0292	4	1	10	6	0.010
						M	UT	51-712.0292	51-708.0292	51-746.0292	4	1	10	52	0.010
					-	MA	S	51-282.0252	51-262.0252	51-272.0252		1	9	7	0.008
						M	S	51-152.0252	51-122.0252	51-132.0252		1	9	53	0.008
		3 NC + 3 NO	-	MA	S	51-283.0252	51-263.0252	51-273.0252		1	9	4	0.010		
				M	S	51-153.0252	51-123.0252	51-133.0252		1	9	50	0.010		
		4 NC + 4 NO	-	MA	S	51-284.0252	51-264.0252	51-274.0252		1	9	3	0.012		
				M	S	51-154.0252	51-124.0252	51-134.0252		1	9	49	0.012		

Illuminated pushbuttons fit also in mounting hole no. 2

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Diode (1N 4007): - = without, D = Diode

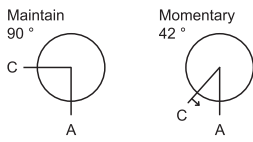
Switching action: MA = Maintained action, M = Momentary action

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Component layout from page 24, Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28



## Keylock switch 2 positions



	Front protection	Switching system	Contacts	Switching action	Terminals	Key remove	Ø 18 x 18 mm Typ-Nr.	Ø 18 x 24 mm Typ-Nr.	Ø 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	E-1			
<b>Keylock switch 2 positions</b> Position A : Basic position Position C : Maintained action Standard lock 311 Front : Plastic black	IP 65	LL	1 NC + 1 NO	MA	UT	A	51-445.036D	51-405.036D	51-415.036D	2	3	77	0.017			
							C	51-448.036D	51-408.036D	51-418.036D	2	3	77	0.017		
							C + A	51-442.036D	51-402.036D	51-412.036D	2	3	77	0.017		
			2 NO	MA	UT	A	51-444.036D	51-404.036D	51-414.036D	2	3	78	0.017			
							C	51-447.036D	51-407.036D	51-417.036D	2	3	78	0.017		
							C + A	51-441.036D	51-401.036D	51-411.036D	2	3	78	0.017		
			SA	1 NC + 1 NO	MA	S	A	51-255.025D2	51-295.025D2	51-235.025D2	2	11	73	0.016		
								C	51-355.025D2	51-395.025D2	51-335.025D2	2	11	73	0.016	
								C + A	51-155.025D2	51-195.025D2	51-135.025D2	2	11	73	0.016	
							S1	A	51-255.022D	51-295.022D	51-235.022D	2	11	73	0.016	
									C	51-355.022D	51-395.022D	51-335.022D	2	11	73	0.016
									C + A	51-155.022D	51-195.022D	51-135.022D	2	11	73	0.016
		2 NC + 2 NO		MA	S	A	51-256.025D2	51-296.025D2	51-236.025D2	2	11	74	0.016			
							C	51-356.025D2	51-396.025D2	51-336.025D2	2	11	74	0.016		
							C + A	51-156.025D2	51-196.025D2	51-136.025D2	2	11	74	0.016		
		3 NC + 3 NO		MA	S	A	51-257.025D2	51-297.025D2	51-237.025D2	2	11	75	0.016			
							C	51-357.025D2	51-397.025D2	51-337.025D2	2	11	75	0.016		
							C + A	51-157.025D2	51-197.025D2	51-137.025D2	2	11	75	0.016		
		4 NC + 4 NO	MA	S	A	51-258.025D2	51-298.025D2	51-238.025D2	2	11	76	0.016				
						C	51-358.025D2	51-398.025D2	51-338.025D2	2	11	76	0.016			
						C + A	51-158.025D2	51-198.025D2	51-138.025D2	2	11	76	0.016			
		Position A : Basic position Position C : Momentary action Standard lock 311 Front : Plastic black	IP 65	LL	1 NC + 1 NO	M	UT	A	51-458.036D	51-428.036D	51-438.036D	2	3	71	0.017	
									2 NO	51-457.036D	51-427.036D	51-437.036D	2	3	72	0.017
					SA	1 NC + 1 NO	M	S	A	51-145.025D2	51-495.025D2	51-141.025D2	2	11	67	0.016
S1	51-145.022D									51-495.022D	51-141.022D	2	11	67	0.016	
2 NC + 2 NO	M					S	A	51-146.025D2	51-496.025D2	51-142.025D2	2	11	68	0.016		
								3 NC + 3 NO	M	S	A	51-147.025D2	51-497.025D2	51-143.025D2	2	11
4 NC + 4 NO	M			S	A	51-148.025D2	51-498.025D2	51-144.025D2	2	11	70	0.016				

Power rating: Low level switching element 42 V, 100 mA; Snap action switching element 250 V, 5 A

Other lock numbers on request

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

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

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28

## Keylock switch 3 positions



	Front protection	Switching system	Contacts	Switching action	Terminals	Key remove	Typ-Nr.	Typ-Nr.	Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
<b>Keylock switch 3 positions</b> Position C : Maintained action Position A : Basic position Position B : Maintained action Standard lock 311	IP 65	SA	2 NC + 2 NO	MA-0-MA	S1	A	<b>51-381.022D</b>	<b>51-361.022D</b>	<b>51-371.022D</b>	2	4	66	0.025
						C+A+B	<b>51-382.022D</b>	<b>51-362.022D</b>	<b>51-372.022D</b>	2	4	66	0.025
						C + B	<b>51-383.022D</b>	<b>51-363.022D</b>	<b>51-373.022D</b>	2	4	66	0.025
Position C : Maintained action Position A : Basic position Position B : Momentary action Standard lock 311	IP 65	SA	2 NC + 2 NO	MA-0-M	S1	A	<b>51-385.022D</b>	<b>51-365.022D</b>	<b>51-375.022D</b>	2	4	65	0.025
						C + A	<b>51-386.022D</b>	<b>51-366.022D</b>	<b>51-376.022D</b>	2	4	65	0.025
Position C : Momentary action Position A : Basic position Position B : Momentary action Standard lock 311	IP 65	SA	2 NC + 2 NO	M-0-M	S1	A	<b>51-384.022D</b>	<b>51-364.022D</b>	<b>51-374.022D</b>	2	4	64	0.025
Position C : Momentary action Position A : Basic position Position B : Maintained action standard lock 311	IP 65	SA	2 NC + 2 NO	M-0-MA	S1	A	<b>51-387.022D</b>	<b>51-367.022D</b>	<b>51-377.022D</b>	2	4	63	0.025
						A + B	<b>51-388.022D</b>	<b>51-368.022D</b>	<b>51-378.022D</b>	2	4	63	0.025

Snap-action element block only available with soldering terminal 2.8 x 0.5 mm (also pluggable) and Gold/Silver contact.

Other lock numbers on request

Switching system: SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

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

Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28

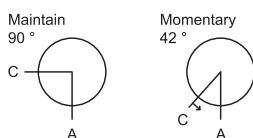
## Selector switch 2 positions



### Essential Accessories:

Lever page 12

Single-LED page 16



	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	Ø 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing		
<b>Selector switch 2 positions</b> illuminative Position A : Basic position Position C : Maintained action	IP 65	LL	1 NC	-	MA	UT	<b>52-476.036</b>	2 7 44	0.007			
			1 NC + 1 NO	-	MA	UT	<b>52-473.036</b>	2 7 47	0.007			
			1 NO	-	MA	UT	<b>52-475.036</b>	2 7 46	0.007			
			2 NC	-	MA	UT	<b>52-472.036</b>	2 7 45	0.007			
			2 NO	-	MA	UT	<b>52-471.036</b>	2 7 48	0.007			
		SA	1 NC + 1 NO	1 D	MA	UT	<b>52-747.0292</b>	2 13 41	0.008			
				2 D	MA	UT	<b>52-748.0292</b>	2 13 42	0.008			
				-	MA	S	<b>52-271.0252</b>	2 12 43	0.006			
			2 NC + 2 NO	-	MA	S1	<b>52-271.022</b>	2 12 40	0.006			
				1 D	MA	UT	<b>52-749.0292</b>	2 13 37	0.010			
				2 D	MA	UT	<b>52-750.0292</b>	2 13 38	0.010			
			3 NC + 3 NO	-	MA	S	<b>52-273.0252</b>	2 12 36	0.006			
				4 NC + 4 NO	-	MA	S	<b>52-274.0252</b>	2 12 35	0.006		
illuminative Position A : Basic position Position C : Momentary action	IP 65	LL	1 NC	-	M	UT	<b>52-436.036</b>	2 7 30	0.007			
			1 NC + 1 NO	-	M	UT	<b>52-433.036</b>	2 7 33	0.007			
			1 NO	-	M	UT	<b>52-435.036</b>	2 7 32	0.007			
			2 NC	-	M	UT	<b>52-432.036</b>	2 7 31	0.007			
			2 NO	-	M	UT	<b>52-431.036</b>	2 7 34	0.007			
		SA	1 NC + 1 NO	1 D	M	UT	<b>52-743.0292</b>	2 13 27	0.008			
				2 D	M	UT	<b>52-744.0292</b>	2 13 28	0.008			
				-	M	S	<b>52-131.0252</b>	2 12 29	0.006			
			2 NC + 2 NO	-	M	S1	<b>52-131.022</b>	2 12 26	0.006			
				1 D	M	UT	<b>52-745.0292</b>	2 13 23	0.010			
				2 D	M	UT	<b>52-746.0292</b>	2 13 24	0.010			
			3 NC + 3 NO	-	M	S	<b>52-132.0252</b>	2 12 25	0.006			
				4 NC + 4 NO	-	M	S	<b>52-133.0252</b>	2 12 22	0.006		

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open

Diode (1N 4007): - = without, D = Diode

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

Terminals: UT = Universal terminal, S = Soldering terminal, S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

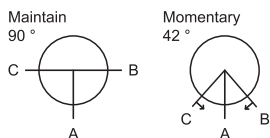
Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28

## Selector switch 3 positions



### Essential Accessories:

- Lever page 12
- Single-LED page 16



	Front protection	Switching system	Contacts	Switching action	Terminals	Ø 18 mm Typ-Nr.	Mounting dimensions	Technical drawing	Circuit drawing	
<b>Selector switch 3 positions</b> illuminative Position C : Maintained action Position A : Basic position Position B : Maintained action	IP 40	SA	2 NC + 2 NO	MA-0-MA	S1	<b>52-571.022A</b>	2 14 20			0.015
illuminative Position C : Maintained action Position A : Basic position Position B : Momentary action	IP 40	SA	2 NC + 2 NO	MA-0-M	S1	<b>52-573.022A</b>	2 14 19			0.015
illuminative Position C : Momentary action Position A : Basic position Position B : Momentary action	IP 40	SA	2 NC + 2 NO	M-0-M	S1	<b>52-572.022A</b>	2 14 17			0.015
illuminative Position C : Momentary action Position A : Basic position Position B : Maintained action	IP 40	SA	2 NC + 2 NO	M-0-MA	S1	<b>52-574.022A</b>	2 14 18			0.015

Switching system: SA = Snap-action switching element

Contacts: NC = Normally closed, NO = Normally open


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

Terminals: S1 = Soldering terminal (also pluggable 2.8 x 0.5 mm)

Mounting dimensions from page 25, Technical drawing from page 25, Circuit drawing from page 28

## Front

### Lens plastic

	Lens	∅ 18 x 18 mm Typ-Nr.	∅ 18 x 24 mm Typ-Nr.	∅ 18 mm Typ-Nr.	
<b>Lens plastic</b> concave, illuminative	blue transparent	<b>51-954.6</b>	<b>51-904.6</b>		0.001
	colourless transparent	<b>51-954.7</b>	<b>51-904.7</b>		0.001
	green transparent	<b>51-954.5</b>	<b>51-904.5</b>		0.001
	orange transparent	<b>51-954.3</b>	<b>51-904.3</b>		0.001
	red transparent	<b>51-954.2</b>	<b>51-904.2</b>		0.001
	yellow transparent	<b>51-954.4</b>	<b>51-904.4</b>		0.001
flush, illuminative	blue transparent	<b>51-953.6</b>	<b>51-903.6</b>	<b>51-933.6</b>	0.001
	colourless transparent	<b>51-953.7</b>	<b>51-903.7</b>	<b>51-933.7</b>	0.001
	green transparent	<b>51-953.5</b>	<b>51-903.5</b>	<b>51-933.5</b>	0.001
	orange transparent	<b>51-953.3</b>	<b>51-903.3</b>	<b>51-933.3</b>	0.001
	red transparent	<b>51-953.2</b>	<b>51-903.2</b>	<b>51-933.2</b>	0.001
	smoked transparent	<b>51-953.1</b>	<b>51-903.1</b>	<b>51-933.1</b>	0.001
	yellow transparent	<b>51-953.4</b>	<b>51-903.4</b>	<b>51-933.4</b>	0.001
	flush, illuminative (not recommended for film insert)	blue translucent	<b>51-951.6</b>	<b>51-901.6</b>	<b>51-931.6</b>
colourless transparent		<b>51-955.7</b>	<b>51-905.7</b>	<b>51-935.7</b>	0.001
green translucent		<b>51-951.5</b>	<b>51-901.5</b>	<b>51-931.5</b>	0.001
green transparent		<b>51-955.5</b>	<b>51-905.5</b>	<b>51-935.5</b>	0.001
orange translucent		<b>51-951.3</b>	<b>51-901.3</b>	<b>51-931.3</b>	0.001
red translucent		<b>51-951.2</b>	<b>51-901.2</b>	<b>51-931.2</b>	0.001
red transparent		<b>51-955.2</b>	<b>51-905.2</b>	<b>51-935.2</b>	0.001
white translucent		<b>51-951.9</b>	<b>51-901.9</b>	<b>51-931.9</b>	0.001
yellow translucent		<b>51-951.4</b>	<b>51-901.4</b>	<b>51-931.4</b>	0.001
yellow transparent		<b>51-955.4</b>	<b>51-905.4</b>	<b>51-935.4</b>	0.001
flush, non-illuminative	black opaque	<b>51-951.0</b>	<b>51-901.0</b>	<b>51-931.0</b>	0.001
	grey opaque	<b>51-951.8</b>	<b>51-901.8</b>	<b>51-931.8</b>	0.001
concave, illuminative (not recommended for film insert)	colourless transparent		<b>51-906.7</b>		0.001
	green transparent		<b>51-906.5</b>		0.001
	red transparent		<b>51-906.2</b>		0.001
	yellow transparent		<b>51-906.4</b>		0.001




### Lever

with bar and marking dot

	Lever	Bar colour	Typ-Nr.	
<b>Lever</b> illuminative	Plastic black	blue	<b>52-928.60</b>	0.001
		green	<b>52-928.50</b>	0.001
		orange	<b>52-928.30</b>	0.001
		red	<b>52-928.20</b>	0.001
		yellow	<b>52-928.40</b>	0.001
	Plastic grey	blue	<b>52-929.60</b>	0.001
		green	<b>52-929.50</b>	0.001
		orange	<b>52-929.30</b>	0.001
		red	<b>52-929.20</b>	0.001
		yellow	<b>52-929.40</b>	0.001
non-illuminative	Plastic black	black	<b>52-928.0</b>	0.001
	Plastic grey	grey	<b>52-929.8</b>	0.001
		white	<b>52-929.9</b>	0.001



## Front bezel square, raised mounting

	Front bezel	Typ-Nr.	
<b>Front bezel square, raised mounting</b> 24 x 24 mm, for Selector switch	Plastic black	<b>52-950.0</b>	0.001
26 x 26 mm, for Selector switch	Plastic black	<b>52-952.0</b>	0.001




## Protective cover

	$\varnothing$ 18 x 18 mm Typ-Nr.	$\varnothing$ 18 x 24 mm Typ-Nr.	Technical drawing	
<b>Protective cover</b> hinged, transparent, with means for sealing	<b>51-920</b>		5	0.002
		<b>51-925</b>	6	0.002



Technical drawing from page 25


## Blind plug

	Blind plug	$\varnothing$ 18 x 18 Typ-Nr.	$\varnothing$ 18 x 24 mm Typ-Nr.	$\varnothing$ 18 mm Typ-Nr.	Mounting dimensions	
<b>Blind plug</b>	Plastic black	<b>51-948.0</b>	<b>51-947.0</b>	<b>51-949.0</b>	1	0.003




Blind plugs fit also in mounting holes no. 2  
Mounting dimensions from page 25

## Master key

	Typ-Nr.	
<b>Master key</b> Lock numbers 311 ... 445 (DOM)	<b>31-989.300</b>	0.006




## Spare key

	Typ-Nr.	
<b>Spare key</b> Key lock switch, standard lock 311 (DOM)	<b>31-989.311</b>	0.006



Other lock numbers on request


## EMC Key protection cap

	Typ-Nr.	
<b>EMC Key protection cap</b> Plastic black, for lock type DOM	<b>31-985.0</b>	0.005



## Backside

### PCB plug-in base

	Terminals	Typ-Nr.	Component layout	
<b>PCB plug-in base</b> 16.4 mm dia. x 9.8 mm for Low level switching element, Pins axial	P	<b>31-940</b>	1	0.002
17.8 x 12.9 mm x 9.8 mm for Snap-action switching element 2.8 mm, Pins axial	P	<b>31-942</b>	3	0.002
17.9 x 17.9 x 8.4 mm for Low level switching element, Pins bent at right-angle	P	<b>31-941</b>	2	0.004



PCB plug-in base Pins right-angle : With the extendable mounting the distance between plug-in base and PCB can be varied up to 3 mm

Terminals: P = PCB terminal


Component layout from page 24

### Multi-plug housing

	Typ-Nr.	
<b>Multi-plug housing</b> for Switching block	<b>51-943.0</b>	0.005




### Flat receptacle

	Typ-Nr.	
<b>Flat receptacle</b> 2.0 x 0.5 mm for Universal terminal	<b>31-945</b>	0.001
2.8 x 0.5 mm for Multi-plug housing	<b>51-943.1</b>	0.001
2.8 x 0.5 mm for Plug-in terminal	<b>31-946</b>	0.001




## Insulation sleeve

	Typ-Nr.	
<b>Insulation sleeve</b> Cover Plug-in terminals for snap-action switching element 2.8 mm	<b>01-928</b>	0.001
for Flat receptacle 31-945	<b>31-928</b>	0.001
for Flat receptacle 31-946	<b>31-929</b>	0.001




## Terminal cover

	Typ-Nr.	
<b>Terminal cover</b>	<b>01-929</b>	0.010



## Illumination


### Filament lamp

	Socket	Operating voltage/-current	Typ-Nr.	
<b>Filament lamp</b>	T1 <sup>3</sup> / <sub>4</sub> MG	12 VAC/DC, 75 mA	<b>10-1309.1309</b>	0.001
		14 VAC/DC, 80 mA	<b>10-1310.1319</b>	0.001
		18 VAC/DC, 40 mA	<b>10-1311.1249</b>	0.001
		24 VAC/DC, 35 mA	<b>10-1312.1229</b>	0.001
		28 VAC/DC, 30 mA	<b>10-1313.1209</b>	0.001
		28 VAC/DC, 40 mA	<b>10-1313.1249</b>	0.001
		36 VAC/DC, 20 mA	<b>10-1316.1179</b>	0.001
		36 VAC/DC, 30 mA	<b>10-1316.1209</b>	0.001
		48 VAC/DC, 20 mA	<b>10-1319.1179</b>	0.001
		48 VAC/DC, 25 mA	<b>10-1319.1199</b>	0.001
		6 VAC/DC, 120 mA	<b>10-1306.1349</b>	0.001
		6.3 VAC/DC, 200 mA	<b>10-1307.1369</b>	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.

## Series resistor

for lamp voltage reduction


Series resistor	Operation voltage	Typ-Nr.	
10 kΩ, for filament lamp 48 VAC, 25 mA	230/240 V	02-904.7	0.003
2.7 kΩ, for filament lamp 48 VAC, 25 mA	110 V	02-904.0	0.003
3.3 kΩ, for filament lamp 48 VAC, 25 mA	125 V	02-904.1	0.003
4.7 kΩ, for filament lamp 48 VAC, 25 mA	145 V	02-904.3	0.003



Please keep to the country specific security rules.

## Terminal plate empty


for fitting with series resistors

Terminal plate empty	Typ-Nr.	
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



## Assembling


### Fixing nut

	Typ-Nr.	 kg
<b>Fixing nut</b> Metal, specifically for keylock switches	<b>31-991</b>	0.005



### Anti-twist ring

for Key lock- and Selector switch

	Typ-Nr.	 kg
<b>Anti-twist ring</b>	<b>51-910</b>	0.001



### Lens remover

	Typ-Nr.	 kg
<b>Lens remover</b>	<b>02-905</b>	0.011



### Lamp remover


	Typ-Nr.	 kg
<b>Lamp remover</b>	<b>61-9740.0</b>	0.003



#### CAUTION


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

### Mounting tool

	Typ-Nr.	 kg
<b>Mounting tool</b> for Indicator 16 mm dia.	<b>01-907</b>	0.020




### Dismantling tool

	Typ-Nr.	 kg
<b>Dismantling tool</b> for dismantling of Lens, Lens holder and Switching element block	<b>51-938</b>	0.027



## Flat receptacle remover

	Typ-Nr.	
<b>Flat receptacle remover</b> for removing the Flat receptacle of the Multi-plug in housing	<b>51-943.9</b>	0.001



## Actuator with snap-action switching element

### Switching system

Self-cleaning, double-break, snap action switching system (with contact gap 2 x 0.5 mm).  
 1 normally closed or 1 normally open contact per element.  
 Snap-action switching elements with soldering terminals at the sides: up to 4 switching element can be on a pushbutton (max. 4 normally closed and 4 normally open contacts).  
 Snap-action switching element with axial plug-in terminals 2.8 mm stachable, only 1 switching element can be on a pushbutton.

### Material

#### Material of contact

Gold plated silver

#### Switch housing

Axial soldering-/plug-in terminal 2.8 mm:  
 Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing.  
 Soldering terminal: PA 6.6 Ultramid

#### Actuator housing

Polyetherimide, self-extinguishing

### Mechanical characteristics

#### Terminals

Snap-action switching element with tinned soldering terminals at the sides:

Max. wire diameter 2 wires à 1.2 mm

Max. wire cross-section of stranded cable 1 x 1 mm<sup>2</sup>

Snap-action switching element with axial soldering terminals, which can also be used as plug-in terminals 2.8 x 0.5 mm:

Max. wire diameter 2 wires of 1 mm

Max. wire cross-section of stranded cable 2 of 0.75 mm<sup>2</sup> or 1 x 1.0 mm<sup>2</sup>

#### Actuating torque

2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements. Measured at the key or lever of the keylock- or selector switch.

#### Actuating force

4 N ... 6 N, depending on the number of switching elements

#### Actuating travel

Illuminated pushbutton 3 mm

Keylock-/selector switch actuator 2 positions:

1x ca. 42° deflection momentary action

1x ca. 90° deflection maintained action

#### Rebound time

≤5ms

#### Mechanical lifetime

Momentary action 2 million cycles of operation

Maintained action 1 million cycles of operation

Keylock switch 50 000 cycles of operation

### Electrical characteristics

#### Standards

IEC 61058, EN 61058

#### Rated voltage

250 VAC/VDC

#### Rated current

5 A

#### Contact resistance

Starting value (initial) ≤50 mΩ

#### Electrostatic discharge

≤15 KV (Keylock switch)

#### Conventional free air thermal current

5 A

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

#### Switch rating

250 VAC, 5 A (cosφ 1)

250 VAC, 3 A (cosφ 0,3)

Switch rating AC (cosφ 0,7)

Voltage 125 VAC 250 VAC

Current 3 A 2 A

Switch rating DC (inductive) L:R = 30 ms

Voltage 24 VDC 60 VDC 110 VDC 220 VDC

Current 2 A 0.7 A 0.2 A 0.1 A

#### Electric strength

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

#### Protection class

II

### Environmental conditions

#### Storage temperature

-40 °C ... +85 °C

#### Service temperature

-25 °C ... +55 °C

For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

#### Protection degree

IP 65 front side, as per IEC 60529

#### Shock resistance

(Single impacts, semi-sinusoidal)

15 g for 11 ms, as per IEC 60512-4-3, IEC 60068-2-27

#### Vibration resistance

(Sinusoidal)

10 g at 10 Hz ... 1500 Hz, amplitude 1.5 mm, as per IEC 60512-4-4, IEC 60068-2-6

#### Climate resistance

Standard condition, as per IEC 60068-2-3 and 2-30

Changing condition, as per IEC 60068-2-14 and 2-33

### Approvals

#### Approbations

CB (IEC 61058)

CSA

ENEC (EN 61058)

Germanischer Lloyd

UL

## Declaration of conformity

CE  
RoHS

## Actuator with snap-action switching element block (Keylock-/selector switch 3 positions)

### Switching system

Self-cleaning, double-break, snap action switching system  
1 normally closed or 1 normally open contact per element.

### Material

**Material of contact**  
Gold plated hardsilver

**Switch housing**  
Diallylphthalate (DAP), heat-resistant and self-extinguishing

**Actuator housing**  
Polyetherimide, self-extinguishing

### Mechanical characteristics

**Terminals**  
Soldering terminal which can also be used as plug-in terminal 2.8 x 0.5 mm:  
Max. wire diameter 2 wires of 1 mm  
Max. wire cross-section of stranded cable 2 x 0.75 mm<sup>2</sup>

**Actuating torque**  
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements. Measured at the key or lever of the keylock- or selector switch.

**Actuating travel**  
Keylock-/selector switch actuator with 3 positions  
2x ca. 42° deflection momentary action  
2x ca. 90° deflection maintained action

**Rebound time**  
≤5ms

**Mechanical lifetime**  
Keylock switch 50 000 cycles of operation  
Selector switch 100 000 cycles of operation

### Electrical characteristics

**Electrostatic discharge**  
≤15 KV (Keylock switch)

**Conventional free air thermal current**  
5 A  
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

**Switch rating**  
250 VAC, 5 A (cosφ 0,75)

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

**Protection class**  
II

### Environmental conditions

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

**Service temperature**  
-25 °C ... +55 °C  
for selector switches mounted as a block, make sure the heat can escape freely

**Protection degree**  
Front side, as per IEC 60529  
IP 65 keylock switch  
IP 40 selector switch

### Approvals

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

**Declaration of conformity**  
CE  
RoHS

## Actuator with low level switching element

### Switching system

This low level switching element was designed for switching low powers in electronic circuits. The mechanism assures reliable switching of loads ranging from a few μA/μV up to 100 mA/42 VAC/DC.  
Single-break momentary contact, as normally open or normally closed with 4 independent points of contact. 2 momentary contacts per switching element; combination of normally open and normally closed is possible.  
Special features are the long life, extremely short rebound time and stable contact resistance.

### Material

**Material of contact**  
Gold plated

**Switch housing**  
Polysulfone, heat-resistant and self-extinguishing

**Actuator housing**  
Polyetherimide, self-extinguishing

### Mechanical characteristics

**Terminals**  
The universal terminals permit these units to be mounted on printed circuit boards (PCB). These terminals can also be used as soldering or plug-in terminals.  
For these terminals we can also supply a plug-in base which, when soldered on to the board, enables the switch to be plugged in.  
Soldering terminal:  
Max. wire diameter 2 wires à 0.8 mm  
Max. wire cross-section of stranded cable 1x 0.75 mm<sup>2</sup>  
  
Plug-in terminal 2.0 x 0.5 mm

**Actuating torque**

2.5 Ncm ... 5.5 Ncm, measured at the key or lever of the keylock- or selector switch

**Actuating force**

3 N ... 3,5 N

**Actuating travel**

Illuminated pushbutton 3 mm

Keylock-/selector switch actuator 2 positions:

1x ca. 42° deflection momentary action

1x ca. 90° deflection maintained action

**Rebound time**

Typ. <100 µs

**Mechanical lifetime**

Momentary action 5 million cycles of operation

Maintained action 1 million cycles of operation

Keylock switch 50 000 cycles of operation

## Electrical characteristics

**Contact resistance**

Starting value (initial) ≤50 mΩ

**Electrostatic breakdown value**

≤15 KV (Keylock switch)

**Switch rating**

10 µA, 100 µV to 100 mA at 42 VAC/VDC

**Electric strength**

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

## Environmental conditions

**Storage temperature**

-40 °C ... +85 °C

**Service temperature**

-25 °C ... +55 °C

For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

**Protection degree**

IP 65 front side, as per IEC 60529

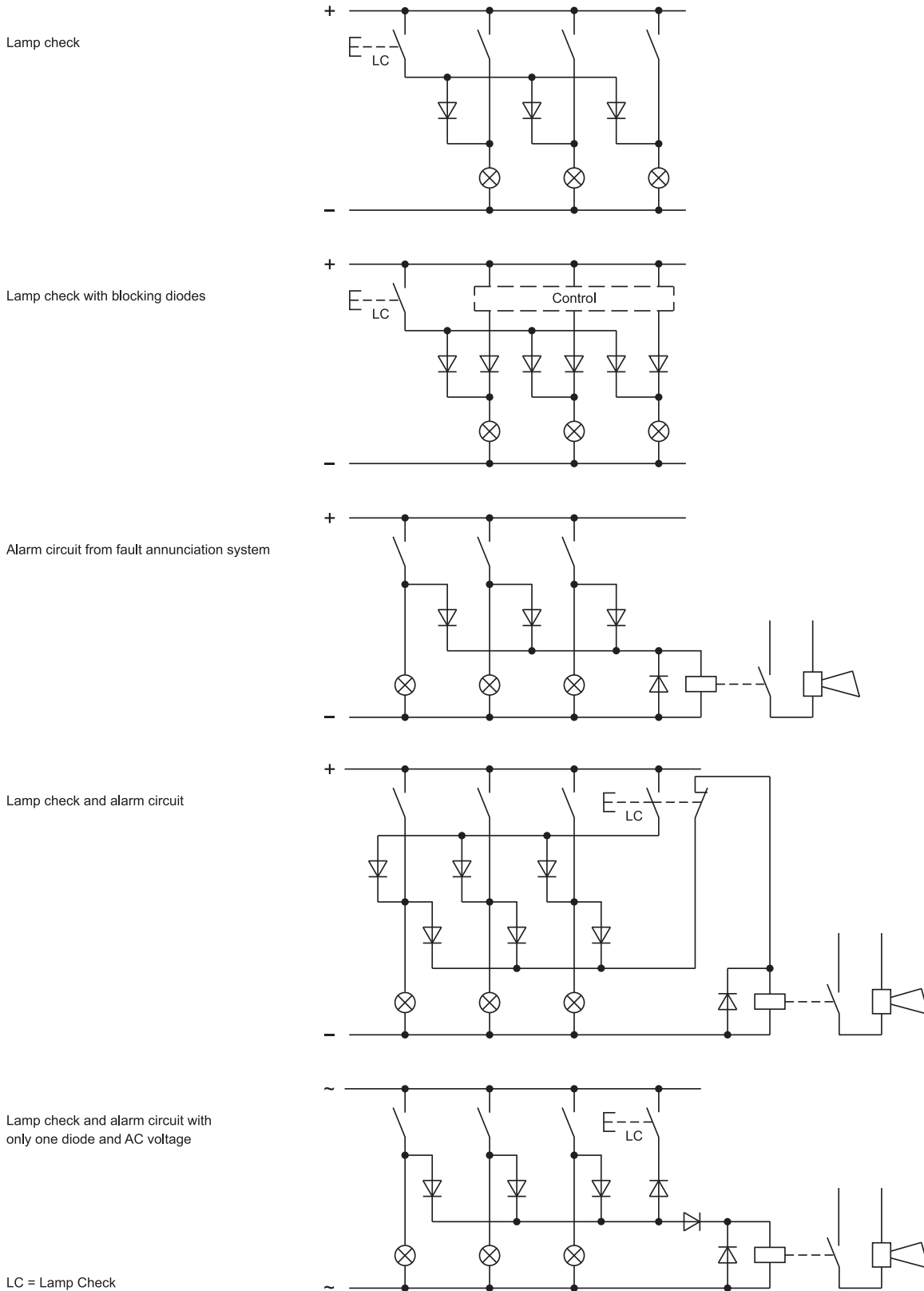
**Shock resistance**

(Single impacts, semi-sinusoidal)

15 g for 11 ms, as per IEC 60512-4-3, IEC 60068-2-27

## 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.



## 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.

### 2. Hot stamping

For larger series it is worth considering markings by means of hot stamping. 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

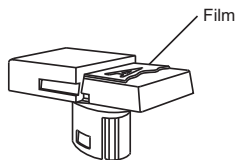
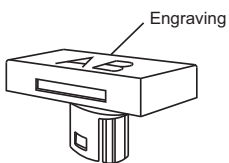
Instead of using engraving the lenses can be fitted with transparent film inserts, as an alternative. For this purpose, though, it is advisable to use transparent lenses. In the case of use of a smoke-black lens the fitted film becomes readable only if the lamp is on.

The film thickness is 0.2 mm.

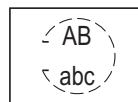
**Important :** Consider pushbutton mounting orientation before specifying engraving characters !

All dimensions in mm

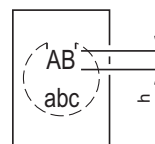
Film insert max. size	Height of letters h	Number of lines	Number of (target value) capital letters per line	Number of (target value) small letters per line	Image
12.7 x 18.7	2.5	4	11	12	B1
		5	7 - 8	8	B2
12.7 x 12.7	2.5	4	7 - 8	8	B3
Ø 12.8	2.5	3	6	6	B4
12.7 x 18.7	3	3	9 - 10	10 - 11	B1
		4	6 - 7	7	B2
12.7 x 12.7	3	3	6 - 7	7	B3
Ø 12.8	3	2	5	6	B4
12.7 x 18.7	4	2	7	7 - 8	B1
		3	4 - 5	5	B2
12.7 x 12.7	4	2	4 - 5	5	B3
Ø 12.8	4	2	3	4	B4
12.7 x 18.7	5	2	5 - 6	6	B1
			3 - 4	4	B2
12.7 x 12.7	5	2	3 - 4	4	B3
Ø 12.8	5	1	2	3	B4
12.7 x 18.7	6	1	4 - 5	5	B1
		2	3	3 - 4	B2
12.7 x 12.7	6	1	3	3 - 4	B3
Ø 12.8	6	1	2	2	B4
12.7 x 18.7	8	1	3 - 4	3 - 4	B1
			2 - 3	2 - 3	B2
12.7 x 12.7	8	1	2 - 3	2 - 3	B3
Ø 12.8	8	1	2	2	B4



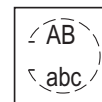
B1



B2



B3



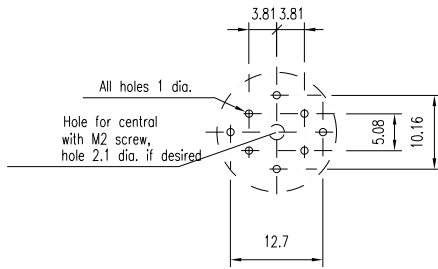
B4



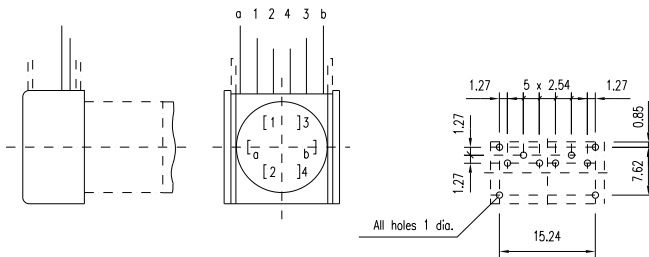


## Component layout

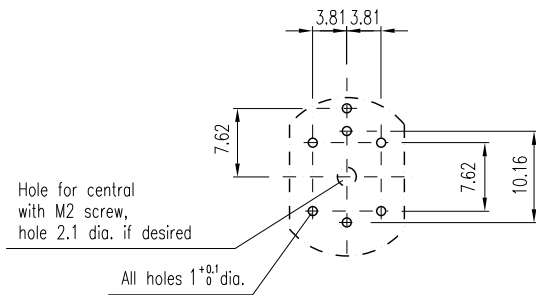
### 1 PCB plug-in base page 14



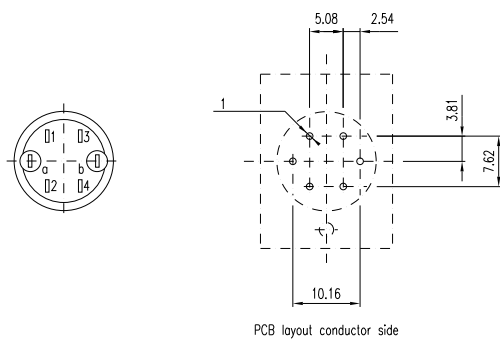
### 2 PCB plug-in base page 14



### 3 PCB plug-in base page 14

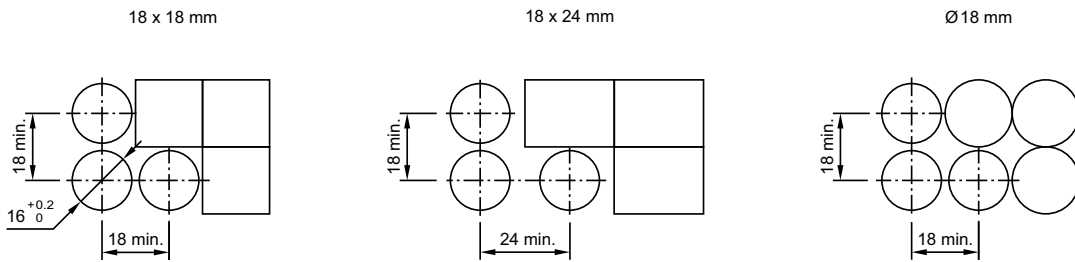


### 4 Indicator actuator page 6 | Illuminated pushbutton actuator page 7

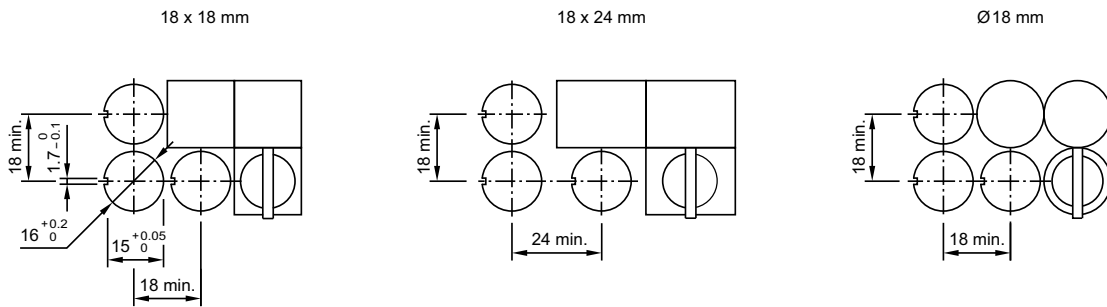


## Mounting dimensions

1 Indicator actuator page 6 | Illuminated pushbutton actuator page 7 | Blind plug page 13

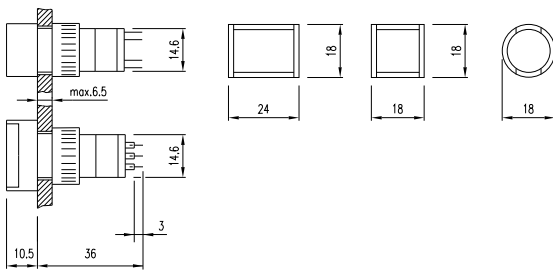


2 Keylock switch 2 positions page 8 | Keylock switch 3 positions page 9 | Selector switch 2 positions page 10 | Selector switch 3 positions page 11

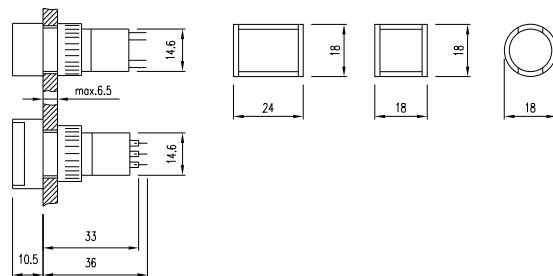


## Technical drawing

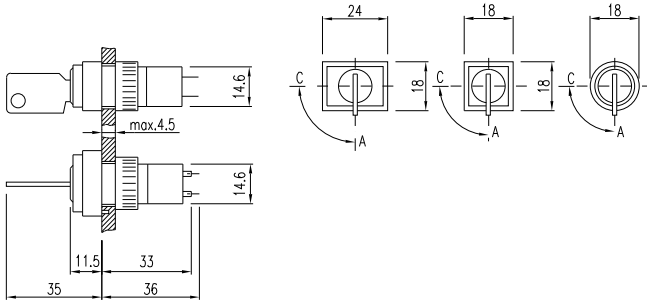
1 Indicator actuator page 6



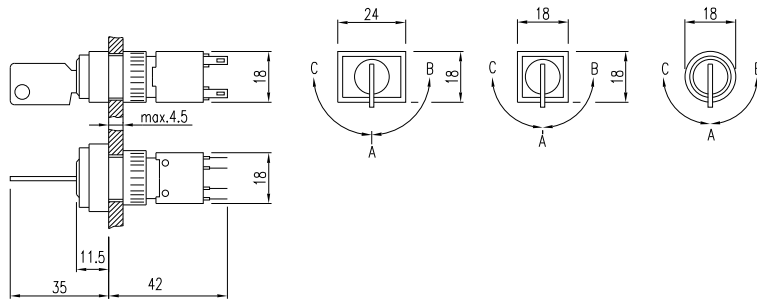
2 Indicator actuator page 6 | Illuminated pushbutton actuator page 7



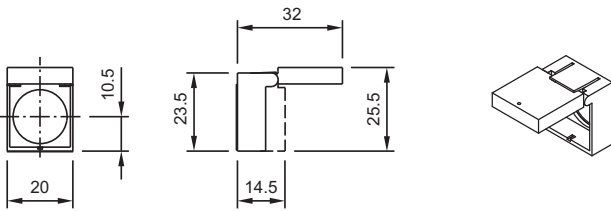
### 3 Keylock switch 2 positions page 8



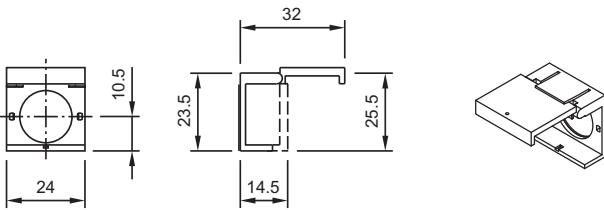
### 4 Keylock switch 3 positions page 9



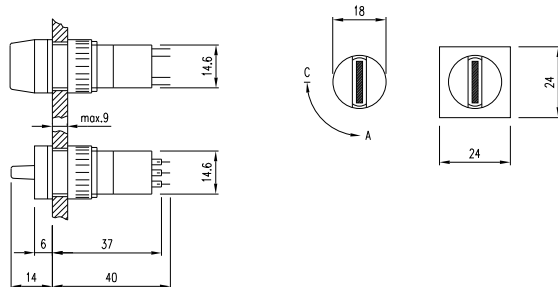
### 5 Protective cover page 13



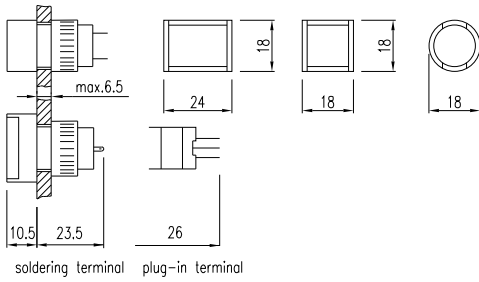
### 6 Protective cover page 13



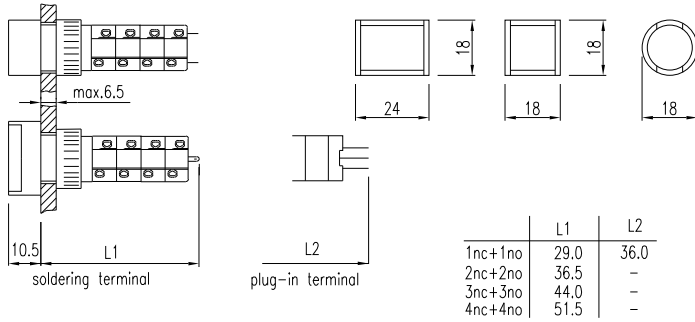
### 7 Selector switch 2 positions page 10



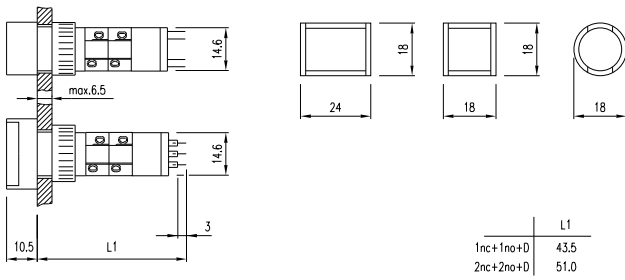
## 8 Indicator actuator page 6



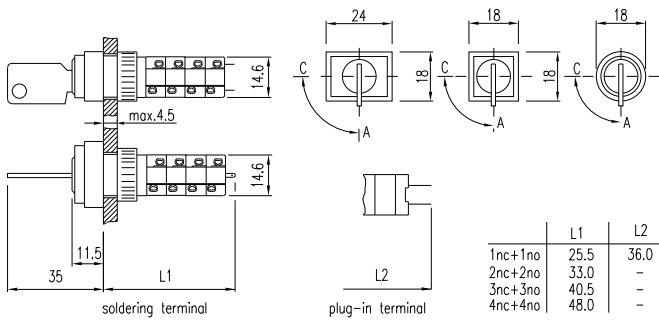
## 9 Illuminated pushbutton actuator page 7



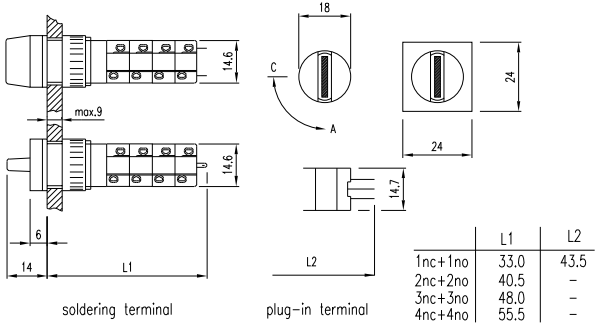
## 10 Illuminated pushbutton actuator page 7



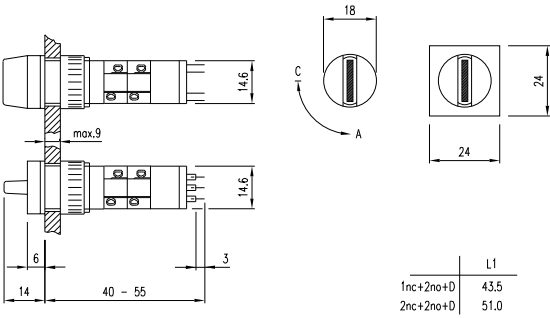
## 11 Keylock switch 2 positions page 8



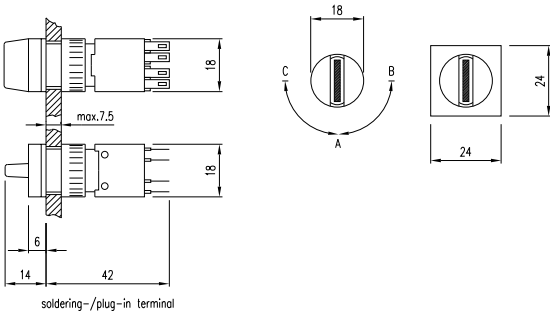
## 12 Selector switch 2 positions page 10



## 13 Selector switch 2 positions page 10



## 14 Selector switch 3 positions page 11



## Circuit drawing

### 1 Indicator actuator page 6

a-(x1)

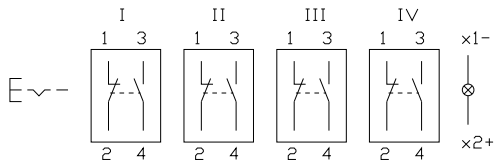


b+(x2)

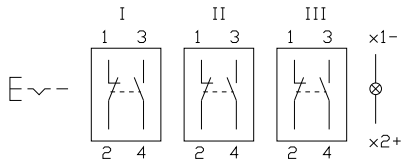
### 2 Indicator actuator page 6



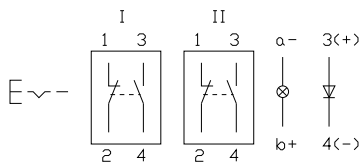
### 3 Illuminated pushbutton actuator page 7



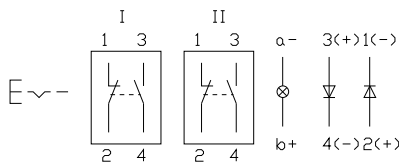
### 4 Illuminated pushbutton actuator page 7



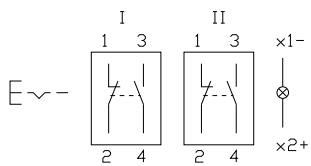
### 5 Illuminated pushbutton actuator page 7



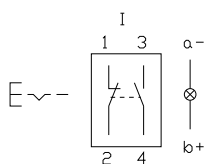
### 6 Illuminated pushbutton actuator page 7



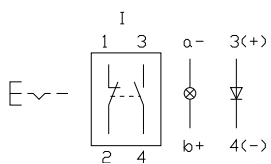
### 7 Illuminated pushbutton actuator page 7



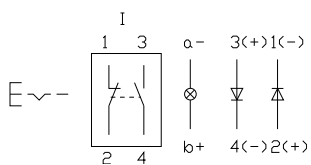
### 8 Illuminated pushbutton actuator page 7



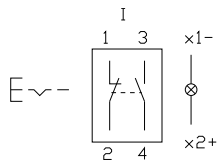
### 9 Illuminated pushbutton actuator page 7



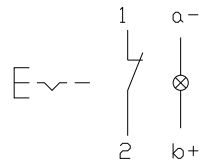
### 10 Illuminated pushbutton actuator page 7



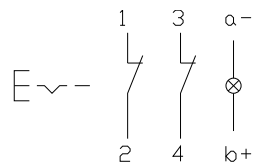
11 Illuminated pushbutton actuator page 7



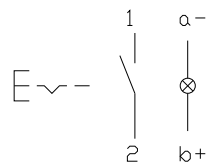
12 Illuminated pushbutton actuator page 7



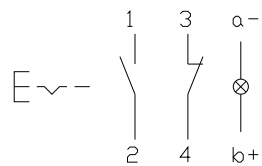
13 Illuminated pushbutton actuator page 7



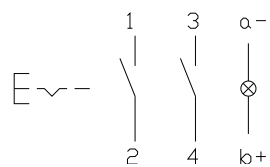
14 Illuminated pushbutton actuator page 7



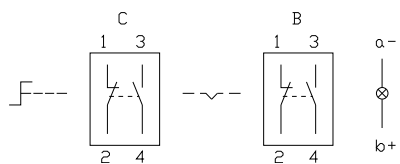
15 Illuminated pushbutton actuator page 7



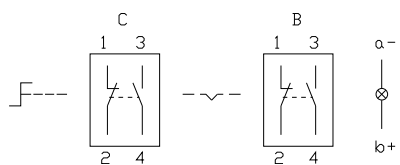
16 Illuminated pushbutton actuator page 7



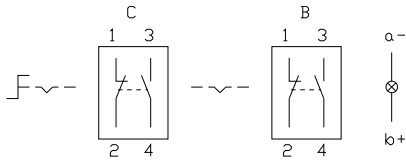
17 Selector switch 3 positions page 11



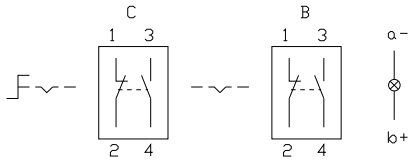
18 Selector switch 3 positions page 11



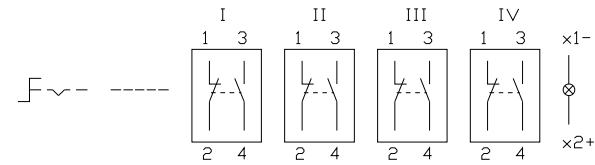
19 Selector switch 3 positions page 11



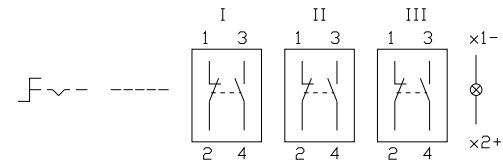
20 Selector switch 3 positions page 11



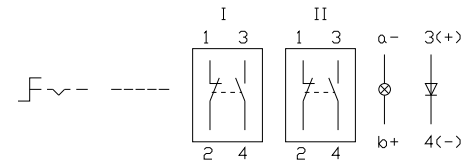
21 Selector switch 2 positions page 10



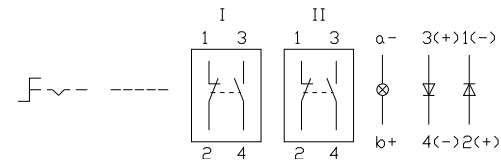
22 Selector switch 2 positions page 10



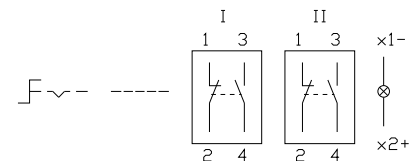
23 Selector switch 2 positions page 10



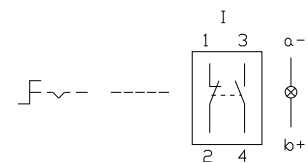
24 Selector switch 2 positions page 10



25 Selector switch 2 positions page 10

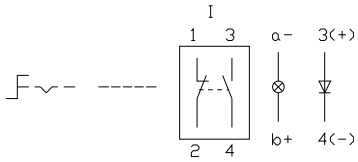


26 Selector switch 2 positions page 10

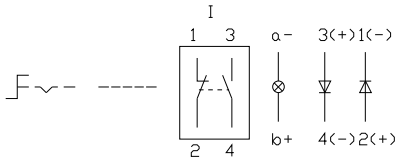




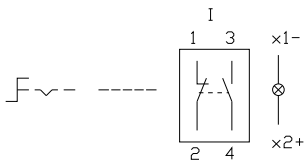
27 Selector switch 2 positions page 10



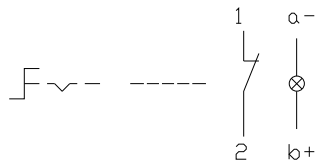
28 Selector switch 2 positions page 10



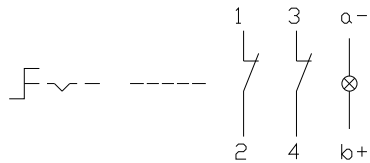
29 Selector switch 2 positions page 10



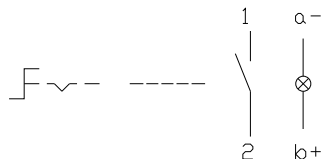
30 Selector switch 2 positions page 10



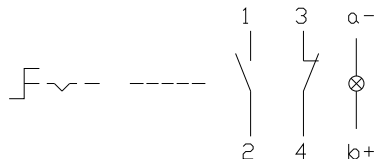
31 Selector switch 2 positions page 10



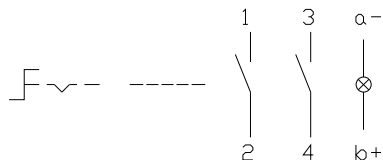
32 Selector switch 2 positions page 10



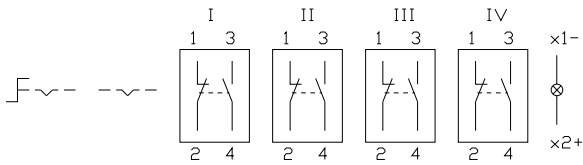
33 Selector switch 2 positions page 10



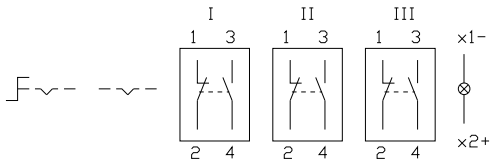
34 Selector switch 2 positions page 10



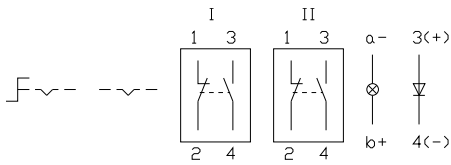
35 Selector switch 2 positions page 10



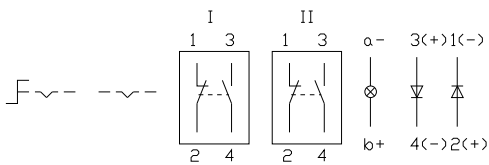
36 Selector switch 2 positions page 10



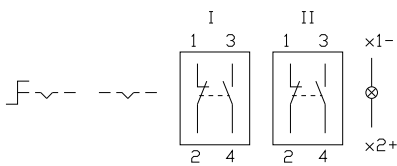
37 Selector switch 2 positions page 10



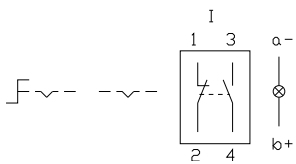
38 Selector switch 2 positions page 10



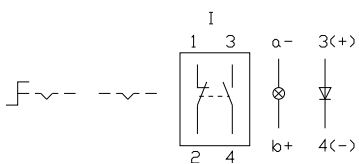
39 Selector switch 2 positions page 10



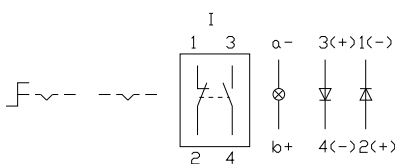
40 Selector switch 2 positions page 10



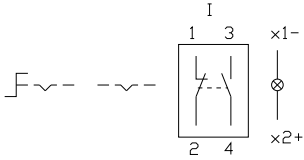
41 Selector switch 2 positions page 10



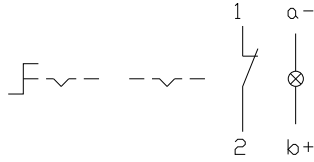
42 Selector switch 2 positions page 10



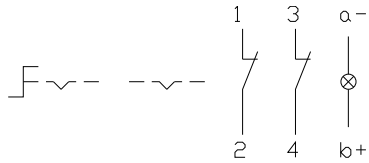
43 Selector switch 2 positions page 10



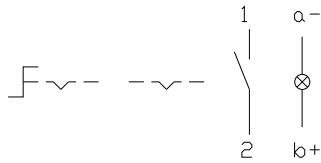
44 Selector switch 2 positions page 10



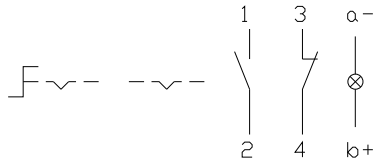
45 Selector switch 2 positions page 10



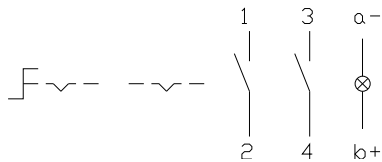
46 Selector switch 2 positions page 10



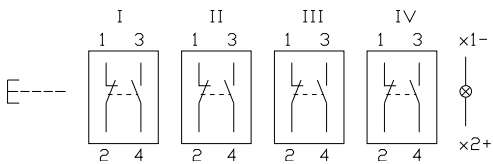
47 Selector switch 2 positions page 10



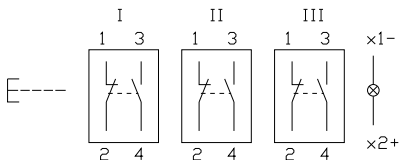
48 Selector switch 2 positions page 10



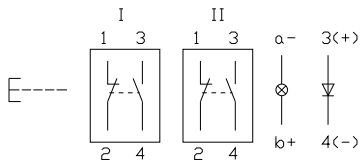
49 Illuminated pushbutton actuator page 7



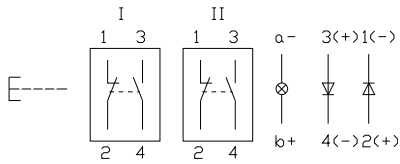
50 Illuminated pushbutton actuator page 7



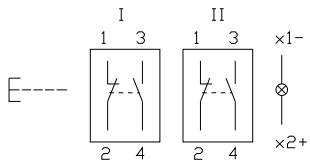
51 Illuminated pushbutton actuator page 7



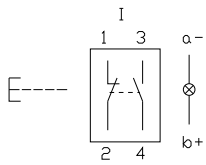
52 Illuminated pushbutton actuator page 7



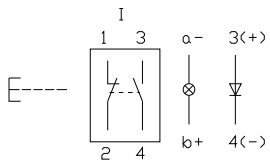
53 Illuminated pushbutton actuator page 7



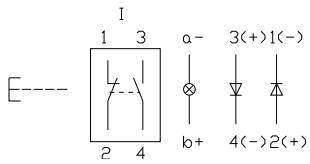
54 Illuminated pushbutton actuator page 7



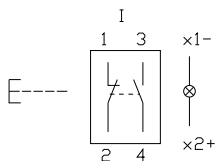
55 Illuminated pushbutton actuator page 7



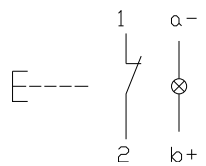
56 Illuminated pushbutton actuator page 7



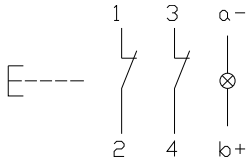
57 Illuminated pushbutton actuator page 7



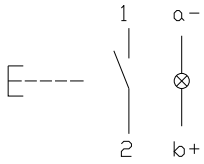
58 Illuminated pushbutton actuator page 7



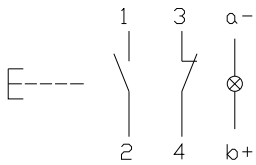
59 Illuminated pushbutton actuator page 7



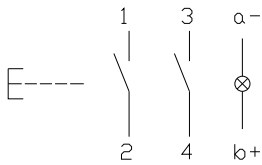
60 Illuminated pushbutton actuator page 7



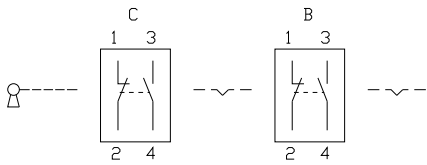
61 Illuminated pushbutton actuator page 7



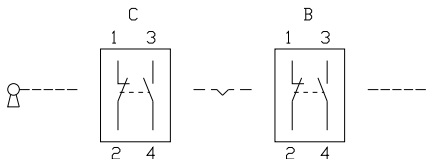
62 Illuminated pushbutton actuator page 7



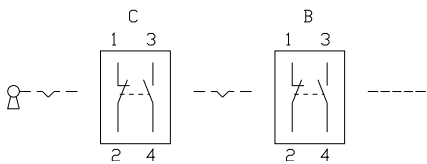
63 Keylock switch 3 positions page 9



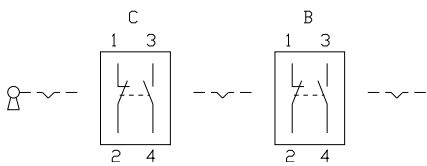
64 Keylock switch 3 positions page 9



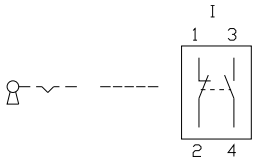
65 Keylock switch 3 positions page 9



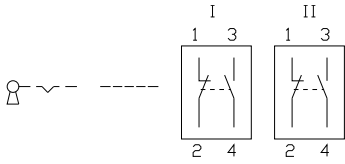
66 Keylock switch 3 positions page 9



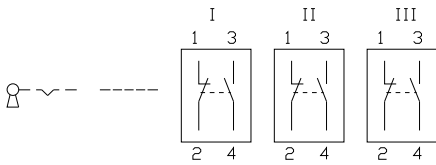
67 Keylock switch 2 positions page 8



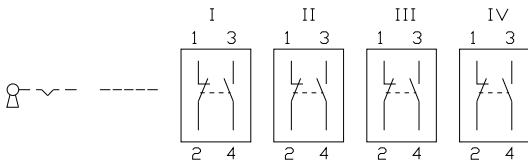
68 Keylock switch 2 positions page 8



69 Keylock switch 2 positions page 8



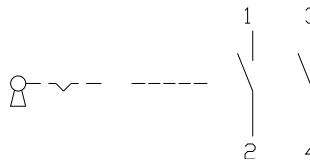
70 Keylock switch 2 positions page 8



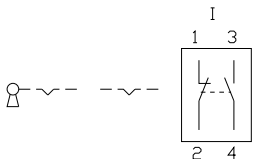
71 Keylock switch 2 positions page 8



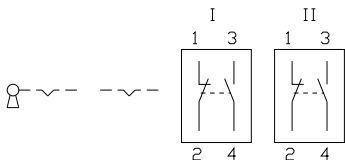
72 Keylock switch 2 positions page 8



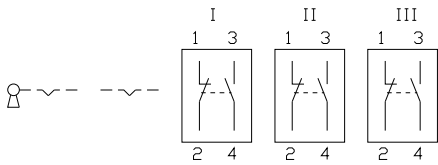
73 Keylock switch 2 positions page 8



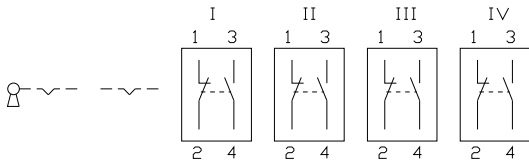
74 Keylock switch 2 positions page 8



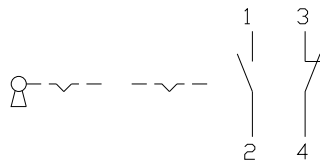
**75 Keylock switch 2 positions page 8**



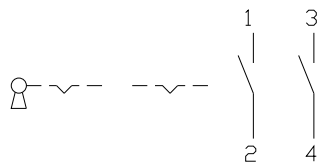
**76 Keylock switch 2 positions page 8**



**77 Keylock switch 2 positions page 8**



**78 Keylock switch 2 positions page 8**



**79 Indicator actuator page 6**

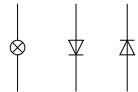
a-(x1) 3(+)



b+(x2) 4(-)

**80 Indicator actuator page 6**

a-(x1) 3(+) 1(-)



b+(x2) 4(-) 2(+)





# Index from Typ-Nr.

Typ-Nr.	Page	Typ-Nr.	Page	Typ-Nr.	Page
01-907	17	51-040.002	6	51-272.0252	7
01-928	15	51-040.005	6	51-273.0252	7
01-929	15	51-041.006	6	51-274.0252	7
02-904.0	16	51-050.002	6	51-281.022	7
02-904.1	16	51-050.005	6	51-281.0252	7
02-904.3	16	51-051.006	6	51-282.0252	7
02-904.7	16	51-121.022	7	51-283.0252	7
02-905	17	51-121.0252	7	51-284.0252	7
02-912.1	16	51-122.0252	7	51-295.022D	8
02-912.2	16	51-123.0252	7	51-295.025D2	8
02-912.3	16	51-124.0252	7	51-296.025D2	8
02-912.4	16	51-131.022	7	51-297.025D2	8
10-1306.1349	15	51-131.0252	7	51-298.025D2	8
10-1307.1369	15	51-132.0252	7	51-335.022D	8
10-1309.1309	15	51-133.0252	7	51-335.025D2	8
10-1310.1319	15	51-134.0252	7	51-336.025D2	8
10-1311.1249	15	51-135.022D	8	51-337.025D2	8
10-1312.1229	15	51-135.025D2	8	51-338.025D2	8
10-1313.1209	15	51-136.025D2	8	51-355.022D	8
10-1313.1249	15	51-137.025D2	8	51-355.025D2	8
10-1316.1179	15	51-138.025D2	8	51-356.025D2	8
10-1316.1209	15	51-141.022D	8	51-357.025D2	8
10-1319.1179	15	51-141.025D2	8	51-358.025D2	8
10-1319.1199	15	51-142.025D2	8	51-361.022D	9
10-2J06.3142	16	51-143.025D2	8	51-362.022D	9
10-2J06.3144	16	51-144.025D2	8	51-363.022D	9
10-2J06.3145	16	51-145.022D	8	51-364.022D	9
10-2J06.3146	16	51-145.025D2	8	51-365.022D	9
10-2J06.3149	16	51-146.025D2	8	51-366.022D	9
10-2J09.1062	16	51-147.025D2	8	51-367.022D	9
10-2J09.1064	16	51-148.025D2	8	51-368.022D	9
10-2J09.1065	16	51-151.022	7	51-371.022D	9
10-2J09.1066	16	51-151.0252	7	51-372.022D	9
10-2J09.1069	16	51-152.0252	7	51-373.022D	9
10-2J12.1062	16	51-153.0252	7	51-374.022D	9
10-2J12.1064	16	51-154.0252	7	51-375.022D	9
10-2J12.1065	16	51-155.022D	8	51-376.022D	9
10-2J12.1066	16	51-155.025D2	8	51-377.022D	9
10-2J12.1069	16	51-156.025D2	8	51-378.022D	9
10-2J13.1062	16	51-157.025D2	8	51-381.022D	9
10-2J13.1064	16	51-158.025D2	8	51-382.022D	9
10-2J13.1065	16	51-195.022D	8	51-383.022D	9
10-2J13.1066	16	51-195.025D2	8	51-384.022D	9
10-2J13.1069	16	51-196.025D2	8	51-385.022D	9
10-2J19.1042	16	51-197.025D2	8	51-386.022D	9
10-2J19.1044	16	51-198.025D2	8	51-387.022D	9
10-2J19.1045	16	51-235.022D	8	51-388.022D	9
10-2J19.1046	16	51-235.025D2	8	51-395.022D	8
10-2J19.1049	16	51-236.025D2	8	51-395.025D2	8
31-928	15	51-237.025D2	8	51-396.025D2	8
31-929	15	51-238.025D2	8	51-397.025D2	8
31-940	14	51-255.022D	8	51-398.025D2	8
31-941	14	51-255.025D2	8	51-401.036D	8
31-942	14	51-256.025D2	8	51-402.036D	8
31-945	14	51-257.025D2	8	51-404.036D	8
31-946	14	51-258.025D2	8	51-405.036D	8
31-985.0	14	51-261.022	7	51-407.036D	8
31-989.300	13	51-261.0252	7	51-408.036D	8
31-989.311	13	51-262.0252	7	51-411.036D	8
31-991	17	51-263.0252	7	51-412.036D	8
51-030.002	6	51-264.0252	7	51-414.036D	8
51-030.005	6	51-271.022	7	51-415.036D	8
51-031.006	6	51-271.0252	7	51-417.036D	8

# Index from Typ-Nr.

Typ-Nr.	Page	Typ-Nr.	Page	Typ-Nr.	Page
51-418.036D	8	51-716.0292	7	51-935.4	12
51-421.036	7	51-717.0292	7	51-935.5	12
51-422.036	7	51-718.0292	7	51-935.7	12
51-423.036	7	51-719.0292	7	51-938	17
51-425.036	7	51-720.0292	7	51-943.0	14
51-426.036	7	51-741.006	6	51-943.1	14
51-427.036D	8	51-742.006	6	51-943.9	18
51-428.036D	8	51-743.0292	7	51-947.0	13
51-431.036	7	51-744.0292	7	51-948.0	13
51-432.036	7	51-745.0292	7	51-949.0	13
51-433.036	7	51-746.0292	7	51-951.0	12
51-435.036	7	51-747.0292	7	51-951.2	12
51-436.036	7	51-748.0292	7	51-951.3	12
51-437.036D	8	51-749.0292	7	51-951.4	12
51-438.036D	8	51-750.0292	7	51-951.5	12
51-441.036D	8	51-901.0	12	51-951.6	12
51-442.036D	8	51-901.2	12	51-951.8	12
51-444.036D	8	51-901.3	12	51-951.9	12
51-445.036D	8	51-901.4	12	51-953.1	12
51-447.036D	8	51-901.5	12	51-953.2	12
51-448.036D	8	51-901.6	12	51-953.3	12
51-451.036	7	51-901.8	12	51-953.4	12
51-452.036	7	51-901.9	12	51-953.5	12
51-453.036	7	51-903.1	12	51-953.6	12
51-455.036	7	51-903.2	12	51-953.7	12
51-456.036	7	51-903.3	12	51-954.2	12
51-457.036D	8	51-903.4	12	51-954.3	12
51-458.036D	8	51-903.5	12	51-954.4	12
51-461.036	7	51-903.6	12	51-954.5	12
51-462.036	7	51-903.7	12	51-954.6	12
51-463.036	7	51-904.2	12	51-954.7	12
51-465.036	7	51-904.3	12	51-955.2	12
51-466.036	7	51-904.4	12	51-955.4	12
51-471.036	7	51-904.5	12	51-955.5	12
51-472.036	7	51-904.6	12	51-955.7	12
51-473.036	7	51-904.7	12	52-131.022	10
51-475.036	7	51-905.2	12	52-131.0252	10
51-476.036	7	51-905.4	12	52-132.0252	10
51-481.036	7	51-905.5	12	52-133.0252	10
51-482.036	7	51-905.7	12	52-134.0252	10
51-483.036	7	51-906.2	12	52-271.022	10
51-485.036	7	51-906.4	12	52-271.0252	10
51-486.036	7	51-906.5	12	52-272.0252	10
51-495.022D	8	51-906.7	12	52-273.0252	10
51-495.025D2	8	51-910	17	52-274.0252	10
51-496.025D2	8	51-920	13	52-431.036	10
51-497.025D2	8	51-925	13	52-432.036	10
51-498.025D2	8	51-931.0	12	52-433.036	10
51-701.006	6	51-931.2	12	52-435.036	10
51-702.006	6	51-931.3	12	52-436.036	10
51-703.006	6	51-931.4	12	52-471.036	10
51-704.006	6	51-931.5	12	52-472.036	10
51-705.0292	7	51-931.6	12	52-473.036	10
51-706.0292	7	51-931.8	12	52-475.036	10
51-707.0292	7	51-931.9	12	52-476.036	10
51-708.0292	7	51-933.1	12	52-571.022A	11
51-709.0292	7	51-933.2	12	52-572.022A	11
51-710.0292	7	51-933.3	12	52-573.022A	11
51-711.0292	7	51-933.4	12	52-574.022A	11
51-712.0292	7	51-933.5	12	52-743.0292	10
51-713.0292	7	51-933.6	12	52-744.0292	10
51-714.0292	7	51-933.7	12	52-745.0292	10
51-715.0292	7	51-935.2	12	52-746.0292	10

# Index from Typ-Nr.

<u>Typ-Nr.</u>	<u>Page</u>	<u>Typ-Nr.</u>	<u>Page</u>	<u>Typ-Nr.</u>	<u>Page</u>
52-747.0292 .....	10				
52-748.0292 .....	10				
52-749.0292 .....	10				
52-750.0292 .....	10				
52-928.0 .....	12				
52-928.20 .....	12				
52-928.30 .....	12				
52-928.40 .....	12				
52-928.50 .....	12				
52-928.60 .....	12				
52-929.20 .....	12				
52-929.30 .....	12				
52-929.40 .....	12				
52-929.50 .....	12				
52-929.60 .....	12				
52-929.8 .....	12				
52-929.9 .....	12				
52-950.0 .....	13				
52-952.0 .....	13				
61-9740.0 .....	17				

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