



EAO Product Information

Series 03



Index

Series 03

	Description	Page 35
	Product Assembly	Page 36
	Product Range	
	- pushbuttons for standard mounting	Page 37
	- accessories / spare parts	Page 47
	Technical Data	Page 54
	Technical Drawing / Dimension	Page 56
	Circuit Drawing	Page 59
	Typical Applications	Page 63
	Marking	Page 64

General Notes

The pushbuttons of series 03 are noteworthy for the robust design of their case, their operational reliability and the large marking and illuminated area.

The pushbuttons contain one or two separately operating snap-action switching elements.

For technical data see page 54.

The illuminated pushbuttons 03, with two independent lamps, permit different modes of indication.

- Indication of two different functions
- Indication in two colours of two different functions
- Enhanced reliability of indication with two lamps

Furthermore, series 03 can be equipped with two switching systems operating independently or mechanically interlocked.

Switches with free choice of bezel

The free choice of bezel enables users to match switches in front design to suit different purposes.

These bezels protect against unintentional switching. Bezels can be obtained in black.

Mounting

The switches, which are pushed into the opening in the panel from the front, are fixed with a plastic sleeve with a maximum effort of 20 Ncm. (For mounting dimensions and spacing, see pages 56.)

Lenses

The flat lenses, made of polymethyl methacrylate, are obtainable in various colours, as well as transparent and translucent. For series 03 we can supply lenses in two colours or for separately operated switching mechanisms (2 lenses per switch). Also a number of special lenses are available with special illumination facilities, e.g. for dark rooms. All lenses can be exchanged without affecting the switch position.

Marking

For engravings, hot stamping and film inserts, see under "Marking" on page 64.

Illumination

Perfect illumination of the different coloured lenses is assured by lamps T 6,8 (6-60 V).

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, because of the high surface temperature. Multi-LED lamps T 6,8 (6, 12, 24, 48 V) are available in the colours, white, red, yellow and green.

Keylock switch

1 standard no. YB1. If the lock number is not specified, we supply no. YB1.

Additional 9 locks are available on request.

Two keys are supplied with each switch.

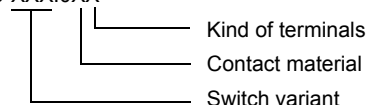
Spare keys may be ordered by quoting no. 02-989.

All dimensions in mm.

We reserve the right to modify technical data.

Number structure

03-XXX.OXX



03-9XX.X

Lens

03-9XX.X

Other accessories

Example:

-Illuminated pushbutton;
momentary action, free choice of front frame;
plug-in terminals 2,8; 1 switching element
03-616.012

-Lens red

03-901.2

-Front frame, black

03-967.0

Specimen order

Indicator

- indicator, screw terminal 03-021.001

Recommended accessories:

- lens one-part in one colour,
for pushbutton one-part,
transparent, clear 03-941.7
- holder one-part, clear 03-908.7
- diffusor plate one part 03-909
- front bezel flat, black 03-965.0
- LED, 6 chips, 6 VDC, yellow 10-5206.3254

illuminated pushbutton



- 1 lens
- 2 switch housing
- 3 fixing bezel
- 4 front bezel



indicator

with two independent lamp bases



recommended accessories:

- 🛒 lens one-part, in one colour for pushbutton one-part page 47
- 🛒 holder one-part page 49
- 🛒 diffuser plate one-part page 50
- 🛒 lens one-part, in two colours for pushbutton one-part page 48
- 🛒 holder halved page 49
- 🛒 diffuser plate halved page 49
- 🛒 front bezel flat page 50
- 🛒 filament lamp page 51
- 🛒 LED page 52

	connection method	 24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
indicator	PT 2.8	03-021.002	1	1	1	0,045
	PT 4.8	03-021.003	1	1	1	0,045
	ST	03-021.001	1	1	1	0,045

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8
circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

pushbutton one-part



- recommended accessories:
- 🛒 lens one-part, in one colour for pushbutton one-part page 47
 - 🛒 lens one-part, in two colours for pushbutton one-part page 48
 - 🛒 front bezel flat page 50

	switching system	contacts	switching action	connection method	<div><div></div>24 x 48 mm Typ-Nr.</div>	circuit drawing	technical drawing	mounting dimensions	<div><div></div></div>
pushbutton one-part	SA	1 C	M	PT 2.8	03-611.012	2	2	1	0,055
				PT 4.8	03-611.013	2	2	1	0,055
				ST	03-611.011	2	2	1	0,055
			MA	PT 2.8	03-613.012	4	2	1	0,055
				PT 4.8	03-613.013	4	2	1	0,055
				ST	03-613.011	4	2	1	0,055
		2 C	M	PT 2.8	03-612.012	3	2	1	0,065
				PT 4.8	03-612.013	3	2	1	0,065
				ST	03-612.011	3	2	1	0,065
			momentary-/maintained action	PT 2.8	03-615.012	6	2	1	0,065
				PT 4.8	03-615.013	6	2	1	0,065
				ST	03-615.011	6	2	1	0,065
			MA	PT 2.8	03-614.012	5	2	1	0,065
				PT 4.8	03-614.013	5	2	1	0,065
				ST	03-614.011	5	2	1	0,065

switching system : snap-action switching element = SA
contacts : changeover = C, 2 changeover = 2 C
switching action : momentary action = M, maintained action = MA
connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8
circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

pushbutton two-part



recommended accessories:

🛒 lens halved for pushbutton two-part page 47

🛒 front bezel flat page 50

	switching system	contacts	switching action	connection method	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
pushbutton two-part	SA	2 independent changeover	M	PT 2.8	03-621.012	7	2	1	0,065
				PT 4.8	03-621.013	7	2	1	0,065
				ST	03-621.011	7	2	1	0,065
			momentary-/maintained action	PT 2.8	03-623.012	9	2	1	0,065
				PT 4.8	03-623.013	9	2	1	0,065
				ST	03-623.011	9	2	1	0,065
			MA	PT 2.8	03-622.012	8	2	1	0,065
				PT 4.8	03-622.013	8	2	1	0,065
				ST	03-622.011	8	2	1	0,065

switching system : snap-action switching element = SA

switching action : momentary action = M, maintained action = MA

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

pushbutton, locked mechanically



- recommended accessories:**
- lens halved for pushbutton locked mechanically page 47
 - front bezel flat page 50

	switching system	contacts	switching action	connection method	<div> 24 x 48 mm Typ-Nr.</div>	circuit drawing	technical drawing	mounting dimensions	
pushbutton, locked mechanically	SA	2 C	MA	PT 2.8	03-629.012	8	3	1	0,075
				PT 4.8	03-629.013	8	3	1	0,075
				ST	03-629.011	8	3	1	0,075

switching system : snap-action switching element = SA
contacts : 2 changeover = 2 C
switching action : maintained action = MA
connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8
circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58



illuminated pushbutton one-part

with two independent lamp bases



recommended accessories:

- 🛒 lens one-part, in one colour for pushbutton one-part page 47
- 🛒 holder one-part page 49
- 🛒 diffuser plate one-part page 50
- 🛒 lens one-part, in two colours for pushbutton one-part page 48
- 🛒 holder halved page 49
- 🛒 diffuser plate halved page 49
- 🛒 front bezel flat page 50
- 🛒 filament lamp page 51
- 🛒 LED page 52

	switching system	contacts	switching action	connection method	 24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
illuminated pushbutton one-part	SA	1 C	M	PT 2.8	03-616.012	10	2	1	0,070
				PT 4.8	03-616.013	10	2	1	0,070
				ST	03-616.011	10	2	1	0,070
			MA	PT 2.8	03-618.012	12	2	1	0,070
				PT 4.8	03-618.013	12	2	1	0,070
				ST	03-618.011	12	2	1	0,070
		2 C	M	PT 2.8	03-617.012	11	2	1	0,075
				PT 4.8	03-617.013	11	2	1	0,075
				ST	03-617.011	11	2	1	0,075
			momentary-/maintained action	PT 2.8	03-620.012	14	2	1	0,075
				PT 4.8	03-620.013	14	2	1	0,075
				ST	03-620.011	14	2	1	0,075
			MA	PT 2.8	03-619.012	13	2	1	0,075
				PT 4.8	03-619.013	13	2	1	0,075
				ST	03-619.011	13	2	1	0,075

switching system : snap-action switching element = SA

contacts : changeover = C, 2 changeover = 2 C

switching action : momentary action = M, maintained action = MA

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

illuminated pushbutton two-part

with two independent lamp bases



recommended accessories:

- 🛒 lens halved for pushbutton two-part page 47
- 🛒 holder halved page 49
- 🛒 diffuser plate halved page 49
- 🛒 front bezel flat page 50
- 🛒 filament lamp page 51
- 🛒 LED page 52

	switching system	contacts	switching action	connection method	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
illuminated pushbutton two-part	SA	1 changeover/1 indicator	M	PT 2.8	03-627.012	10	2	1	0,075
				PT 4.8	03-627.013	10	2	1	0,075
				ST	03-627.011	10	2	1	0,075
			MA	PT 2.8	03-628.012	18	2	1	0,075
				PT 4.8	03-628.013	18	2	1	0,075
				ST	03-628.011	18	2	1	0,075
		2 independent changeover	M	PT 2.8	03-624.012	15	2	1	0,080
				PT 4.8	03-624.013	15	2	1	0,080
				ST	03-624.011	15	2	1	0,080
			momentary-/maintained action	PT 2.8	03-626.012	17	2	1	0,080
				PT 4.8	03-626.013	17	2	1	0,080
				ST	03-626.011	17	2	1	0,080
			MA	PT 2.8	03-625.012	16	2	1	0,080
				PT 4.8	03-625.013	16	2	1	0,080
				ST	03-625.011	16	2	1	0,080

switching system : snap-action switching element = SA

switching action : momentary action = M, maintained action = MA

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

illuminated pushbutton, locked mechanically

with two independent lamp bases



recommended accessories:

- 🛒 lens halved for pushbutton locked mechanically page 47
- 🛒 front bezel flat page 50
- 🛒 filament lamp page 51
- 🛒 LED page 52

	switching system	contacts	switching action	connection method	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
illuminated pushbutton, locked mechanically	SA	2 C	M	PT 2.8	03-630.012	15	3	1	0,090
				PT 4.8	03-630.013	15	3	1	0,090
				ST	03-630.011	15	3	1	0,090
			momentary-/maintained action	PT 2.8	03-632.012	17	3	1	0,090
				PT 4.8	03-632.013	17	3	1	0,090
				ST	03-632.011	17	3	1	0,090
			MA	PT 2.8	03-631.012	16	3	1	0,090
				PT 4.8	03-631.013	16	3	1	0,090
				ST	03-631.011	16	3	1	0,090

switching system : snap-action switching element = SA

contacts : 2 changeover = 2 C

switching action : momentary action = M, maintained action = MA

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

pushbutton with mushroom-head cap



recommended accessories:

🛒 mushroom-head cap page 49

🛒 front bezel flat page 50

	switching system	contacts	switching action	connection method	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
pushbutton with mushroom-head cap	SA	1 C	M	PT 2.8	03-611.012	10	4	1	0,055
				PT 4.8	03-611.013	10	4	1	0,055
				ST	03-611.011	10	4	1	0,055
			MA	PT 2.8	03-613.012	19	4	1	0,055
				PT 4.8	03-613.013	19	4	1	0,055
				ST	03-613.011	19	4	1	0,055
		2 C	M	PT 2.8	03-612.012	11	4	1	0,065
				PT 4.8	03-612.013	11	4	1	0,065
				ST	03-612.011	11	4	1	0,065
			momentary-/maintained action	PT 2.8	03-615.012	14	4	1	0,065
				PT 4.8	03-615.013	14	4	1	0,065
				ST	03-615.011	14	4	1	0,065
			MA	PT 2.8	03-614.012	13	4	1	0,065
				PT 4.8	03-614.013	13	4	1	0,065
				ST	03-614.011	13	4	1	0,065

switching system : snap-action switching element = SA

contacts : changeover = C, 2 changeover = 2 C

switching action : momentary action = M, maintained action = MA

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

keylock switch 2 positions



recommended accessories:

front bezel flat page 50

<div> <div>maint. 90°</div> </div>	switching system	contacts	can be locked	connection method	key removable in	<div> 24 x 48 mm Typ-Nr. </div>	circuit drawing	technical drawing	mounting dimensions	
keylock switch 2 positions	SA	2 C	pos. A + C, pos. A, not actuated, pos. C, actuated	PT 2.8	A	03-695.012	20	5	1	0,065
				PT 4.8	A	03-695.013	20	5	1	0,065
				ST	A	03-695.011	20	5	1	0,065
			pos. A, actuated	PT 2.8	A	03-690.012	20	5	1	0,065
				PT 4.8	A	03-690.013	20	5	1	0,065
				ST	A	03-690.011	20	5	1	0,065
			pos. A, actuated or non-actuated	PT 2.8	A	03-692.012	20	5	1	0,065
				PT 4.8	A	03-692.013	20	5	1	0,065
				ST	A	03-692.011	20	5	1	0,065
			pos. A, actuated or non-actuated (can be used with protective cover 03-925)	PT 2.8	A	03-198.012	20	5	1	0,065
				PT 4.8	A	03-198.013	20	5	1	0,065
				ST	A	03-198.011	20	5	1	0,065
			pos. A, non- actuated	PT 2.8	A	03-691.012	20	5	1	0,065
				PT 4.8	A	03-691.013	20	5	1	0,065
				ST	A	03-691.011	20	5	1	0,065

switching system : snap-action switching element = SA

contacts : 2 changeover = 2 C

connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8

After turning the key 90° clockwise, the switch can be operated.

In the unlocked positions the switch always performs a momentary action.

circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

keylock switch with mushroom-head cap, 2 positions



recommended accessories:
🛒 front bezel flat page 50

maint.
90°

	switching system	contacts	can be locked	connection method	key removable in	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
keylock switch with mushroom-head cap, 2 positions	SA	2 C	pos. A, actuated	PT 2.8	A	03-199.012	20	6	1	0,065
				PT 4.8	A	03-199.013	20	6	1	0,065
				ST	A	03-199.011	20	6	1	0,065

switching system : snap-action switching element = SA
contacts : 2 changeover = 2 C
connection method : screw terminal = ST, plug-in terminal 2.8 mm = PT 2.8, plug-in terminal 4.8 mm = PT 4.8
circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

buzzer




	operation voltage	front cap	connection method	example for using	24 x 48 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
buzzer	10-50 VAC/10-75 VDC	plastic black	ST	1	03-810.001	21	7	1	0,060

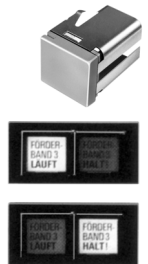
connection method : screw terminal = ST
circuit drawings from page 59, technical drawings from page 56, mounting dimensions from page 58

at front

lens halved for pushbutton two-part


order 2 pcs.

	shape	lens	colour	24 x 48 mm Typ-Nr.	
lens halved for pushbutton two-part 18 x 19 mm (for film insert use a holder)	flat	transparent, not ribbed	colourless, clear	03-943.7	0,005
18 x 19 mm (not for film insert and illumination)	flat	opaque	grey	03-921.8	0,005
			black	03-921.0	0,005
18 x 19 mm (not for film insert and LED)	flat	translucent, ribbed	blue	03-921.6	0,005
			yellow	03-921.4	0,005
			green	03-921.5	0,005
			orange	03-921.3	0,005
			smoked	03-921.1	0,005
			red	03-921.2	0,005
			white	03-921.9	0,005
		transparent, ribbed	colourless, clear	03-921.7	0,005
18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	opaque	smoked	03-954.1	0,005
		transparent, not ribbed	colourless, clear	03-953.7	0,005




lens halved for pushbutton locked mechanically

order 2 pcs.

	shape	lens	colour	24 x 48 mm Typ-Nr.	
lens halved for pushbutton locked mechanically 18 x 19 mm (not for film insert and illumination)	flat	opaque	grey	03-923.8	0,003
			black	03-923.0	0,003
18 x 19 mm (not for film insert and LED)	flat	translucent, ribbed	blue	03-923.6	0,003
			yellow	03-923.4	0,003
			green	03-923.5	0,003
			orange	03-923.3	0,003
			red	03-923.2	0,003
			white	03-923.9	0,003
		transparent, ribbed	colourless, clear	03-923.7	0,003



lens one-part, in one colour for pushbutton one-part

	shape	lens	colour	24 x 48 mm Typ-Nr.	
lens one-part, in one colour for pushbutton one-part 18 x 38 mm (for film insert use a holder)	flat	transparent, not ribbed	colourless, clear	03-941.7	0,009
18 x 38 mm (not for film insert and illumination)	flat	opaque, ribbed	grey	03-901.8	0,009
			black	03-901.0	0,009
18 x 38 mm (not for film insert and LED)	flat	translucent, ribbed	blue	03-901.6	0,009
			yellow	03-901.4	0,009
			green	03-901.5	0,009
			orange	03-901.3	0,009
			red	03-901.2	0,009
			white	03-901.9	0,009
		transparent, ribbed	colourless, clear	03-901.7	0,009
			smoked	03-901.1	0,009
18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	transparent, not ribbed	colourless, clear	03-946.7	0,009
			smoked	03-947.1	0,009





lens one-part, in two colours for pushbutton one-part

	shape	lens	colour	24 x 48 mm Typ-Nr.	0,010
lens one-part, in two colours for pushbutton one-part 18 x 38 mm, with light barrier (for film insert use a holder)	flat	transparent, not ribbed	colourless, clear/colourless, clear	03-942.7/7	0,010
	flat	translucent, ribbed	blue/blue	03-902.6/6	0,010
18 x 38 mm, with light barrier (not for film insert and LED)	flat	translucent, ribbed	blue/colourless, clear	03-902.6/7	0,010
			blue/grey	03-902.6/8	0,010
			blue/white	03-902.6/9	0,010
			colourless, clear/colourless, clear	03-902.7/7	0,010
			colourless, clear/grey	03-902.7/8	0,010
			colourless, clear/white	03-902.7/9	0,010
			yellow/blue	03-902.4/6	0,010
			yellow/colourless, clear	03-902.4/7	0,010
			yellow/yellow	03-902.4/4	0,010
			yellow/grey	03-902.4/8	0,010
			yellow/green	03-902.4/5	0,010
			yellow/white	03-902.4/9	0,010
			grey/grey	03-902.8/8	0,010
			grey/white	03-902.8/9	0,010
			green/blue	03-902.5/6	0,010
			green/colourless, clear	03-902.5/7	0,010
			green/grey	03-902.5/8	0,010
			green/green	03-902.5/5	0,010
			green/white	03-902.5/9	0,010
			orange/blue	03-902.3/6	0,010
			orange/colourless, clear	03-902.3/7	0,010
			orange/yellow	03-902.3/4	0,010
			orange/grey	03-902.3/8	0,010
			orange/green	03-902.3/5	0,010
			orange/orange	03-902.3/3	0,010
			orange/white	03-902.3/9	0,010
			smoked/smoked	03-902.1/1	0,010
			red/blue	03-902.2/6	0,010
			red/colourless, clear	03-902.2/7	0,010
			red/yellow	03-902.2/4	0,010
			red/grey	03-902.2/8	0,010
			red/green	03-902.2/5	0,010
			red/orange	03-902.2/3	0,010
			red/red	03-902.2/2	0,010
			red/white	03-902.2/9	0,010
			black/blue	03-902.0/6	0,010
			black/colourless, clear	03-902.0/7	0,010
			black/yellow	03-902.0/4	0,010
			black/grey	03-902.0/8	0,010
			black/green	03-902.0/5	0,010
			black/orange	03-902.0/3	0,010
			black/red	03-902.0/2	0,010
			black/black	03-902.0/0	0,010
			black/white	03-902.0/9	0,010
			white/white	03-902.9/9	0,010
18 x 38 mm, with black rim (prevents lateral light escape), (for film insert use a holder)	flat	transparent, not ribbed	colourless, clear/colourless, clear	03-951.7/7	0,010
			smoked/smoked	03-952.1/1	0,010



mushroom-head cap

use flat front bezel

	mushroom	colour	 24 x 48 mm Typ-Nr.	
mushroom-head cap 23 x 47 mm	opaque	yellow	03-930.4	0,018
		green	03-930.5	0,018
		red	03-930.2	0,018
		black	03-930.0	0,018



keylock front bezel

for standard lock YB1, other lock numbers on request

	part no.	
keylock front bezel grey	03-980.1	0,010
grey, for keylock switch 03-695.	03-982.1	0,010



keylock front bezel for keylock switches with mushroom-head cap


for standard lock YB1, other lock numbers on request

	part no.	
keylock front bezel for keylock switches with mushroom-head cap red	03-981.1	0,020



holder halved


for film insert; order 2 pcs.

	colour	part no.	
holder halved translucent for lens two colours and halved (03-943.7; 03-951.7/7; 03-952.1/1)	blue	03-922.6	0,001
	colourless, clear	03-922.7	0,001
	yellow	03-922.4	0,001
	green	03-922.5	0,001
	orange	03-922.3	0,001
	red	03-922.2	0,001
	white	03-922.9	0,001



holder one-part


for use with film insert

	colour	part no.	
holder one-part translucent, for lens one-part, in one colour (03- 941.7; 03-946.7; 03-947.1)	blue	03-908.6	0,001
	colourless, clear	03-908.7	0,001
	yellow	03-908.4	0,001
	green	03-908.5	0,001
	orange	03-908.3	0,001
	red	03-908.2	0,001
	white	03-908.9	0,001



diffuser plate halved


for film insert; order 2 pcs.

	part no.	
diffuser plate halved lettering only visible when illuminated, for lens in two colours and halved	03-926	0,001



diffuser plate one-part

for film insert

	part no.	
diffuser plate one-part lettering only visible when illuminated, for lens one-part in one colour	03-909	0,001



front bezel flat

	material	colour	 24 x 48 mm Typ-Nr.	
front bezel flat	plastic	black	03-965.0	0,001



light barrier

	photo	part no.	
light barrier		03-907	0,002



protective cover

use with flat front bezel 03-965


	 24 x 48 mm Typ-Nr.	technical drawing	
protective cover hinged, transparent, with means for sealing	03-925	8	0,001

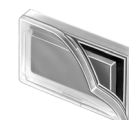


technical drawings from page 56

sprayproof cover

front protection IP 65, use flat front bezel

	front shape	material	part no.	technical drawing	mounting dimensions	
sprayproof cover three-part	rectangular	PVC (-20°C to + 60°C)	03-924	9	2	0,005



technical drawings from page 56, mounting dimensions from page 58

blind plug

		24 x 48 mm Typ-Nr.	mounting dimensions	
	colour			
blind plug	grey	03-949.8	1	0,005
	black	03-949.0	1	0,005



mounting dimensions from page 58

spare key

	part no.	
spare key for standard lock YB1, other lock numbers on request	02-989.001	0,001



front bezel raised on all sides

	material	colour	24 x 48 mm Typ-Nr.	
front bezel raised on all sides lens only removable with lens remover 98-969	plastic	black	03-967.0	0,001



at back

terminal cover

	use	part no.	
terminal cover	all terminals	03-929	0,007



for illumination

Filament lamp


order 2 pcs.

	voltage/current	part no.	
Filament lamp base T 6.8	6 AC/DC/200 mA	10-1206.1369	0,001
	12 AC/DC/100 mA	10-1209.1329	0,001
	12 AC/DC/50 mA	10-1209.1279	0,001
	24 AC/DC/25 mA	10-1212.1199	0,001
	24 AC/DC/50 mA	10-1212.1279	0,001
	28 AC/DC/40 mA	10-1213.1249	0,001
	30 AC/DC/40 mA	10-1214.1249	0,001
	36 AC/DC/35 mA	10-1216.1229	0,001
	48 AC/DC/25 mA	10-1219.1199	0,001



LED


order 2 pcs.

	number of chips	voltage/current	colour	part no.	
LED base T 6.8 Note: For optimal illumination we strongly recommend using our new single-chip LEDs. For new designs, only the new single-chip LEDs should be chosen. They can be found on page 669.	1 chip	12 VDC/14 mA	white	10-2209.3139	0,001
		24 VDC/14 mA	white	10-2212.3139	0,001
		28 VDC/14 mA	white	10-2213.3139	0,001
	6 chips	6 VDC/45 mA	yellow	10-5206.3254	0,001
			green	10-5206.3255	0,001
			red	10-5206.3252	0,001
		12 VDC/30 mA	yellow	10-5209.3204	0,001
			green	10-5209.3205	0,001
			red	10-5209.3202	0,001
		24 VDC/15 mA	yellow	10-5212.3144	0,001
			green	10-5212.3145	0,001
			red	10-5212.3142	0,001
		28 VDC/15 mA	yellow	10-5213.3144	0,001
			green	10-5213.3145	0,001
			red	10-5213.3142	0,001
		48 VDC/13 mA	yellow	10-5219.3124	0,001
			green	10-5219.3125	0,001
			red	10-5219.3122	0,001
	8 chips (too long for holders)	6 VDC/60 mA	yellow	10-6206.3284	0,001
			green	10-6206.3285	0,001
			red	10-6206.3282	0,001
		12 VDC/30 mA	yellow	10-6209.3204	0,001
			green	10-6209.3205	0,001
			red	10-6209.3202	0,001
		24 VDC/15 mA	yellow	10-6212.3144	0,001
			green	10-6212.3145	0,001
			red	10-6212.3142	0,001
		28 VDC/15 mA	yellow	10-6213.3144	0,001
			green	10-6213.3145	0,001
			red	10-6213.3142	0,001
		48 VDC/11 mA	yellow	10-6219.3094	0,001
			green	10-6219.3095	0,001
			red	10-6219.3092	0,001



capacitor

for lamp voltage reduction


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

Please keep to the country specific security rules.



series resistor

for lamp voltage reduction


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

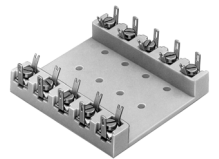
Please keep to the country specific security rules.




terminal plate empty

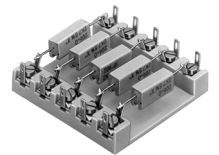
for fitting with series resistors and capacitors

	no. of spaces	part no.	
terminal plate empty	5 spaces	02-912.1	0,035
	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.	
terminal plate with capacitor use with 60 VAC/20 mA lamp rating	0.27 μ F/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



Please keep to the country specific security rules.


assembling

lens remover

	part no.	
lens remover Standard	02-905	0,011
for front bezel 4-full face raised	98-968	0,004




lamp remover

	part no.	
lamp remover	02-906	0,002
CAUTION A switching process might be released when replacing the lamp!		



LED remover

	part no.	
LED remover	51-996	0,024
CAUTION A switching process might be released when replacing the LED!		



actuator with snap-action switching element

switching system

switching system

1 or 2 self-cleaning, snap-action switching elements.
1 or 2 double-throw contacts

material

material of contacts

standard version: silver (U>20 V)
special versions: (on request)
gold/silver 700 Au/300 Ag (U<50 V)
silver/ palladium 700 Ag/300 Pd (U>20 V) for atmospheres containing sulphur

switching element

thermosetting material, heat-resistant

indicator housing

polyamide

mechanical characteristics

connection method

screw terminal (with self-lifting clip):
max. wire cross-section: 2 x 2.5 mm²
max. wire cross-section of stranded cable: 2 x 1.5 mm²

plug-in terminal: 2.8 x 0.8 mm:
max. wire cross-section of stranded cable: 1 mm² and can also be used as soldering terminal:
max. wire cross-section: 2 x 1 mm²
max. wire cross-section of stranded cable: 2 x 0.75 mm²

plug-in terminal: 4.8 x 0.8 mm:
max. wire cross-section of stranded cable: 2.5 mm² and can also be used as soldering terminal:
max. wire cross-section: 2 x 1 mm²
max. wire cross-section of stranded cable: 2 x 0.75 mm²

actuating force

6-12 N

storage temperature

-30°C to + 85°C
(as per DIN IEC 68-)

mechanical life

momentary action 2 million operations
maintained action 1 million operations

travel

5 mm

degree of protection

front as per IEC 529:
IP 40
IP 65 with spray cover

resistance to vibration

10 g at 10-2000 Hz, amplitude 1.0 mm as per IEC 68-2-6

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-)

electrical characteristics

rated insulation voltage

380 VAC/440 VDC as per VDE 0110, group B

continuous thermal current I_{th2}

10 A

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

switch rating

400 VAC/10 A (cos.φ 0.3)
250 VAC/10 A (as per UL)

switch rating AC, cos. φ 0.7 as per AC 11 (IEC 337):

voltage	125 V	250 V	380 V
current	8 A	5 A	3 A

switch rating DC (inductive), L:R=30 ms as per DC 11 (IEC 337):

voltage	24 V	60 V	110 V	220 V
current	6 A	1.5 A	0.4 A	0.2 A

electric strength

2500 VAC, 50 Hz, 1 min. between all terminals and earth, as per IEC 512-2-11.

approvals

approvals

- CSA 300 VAC
- UL
- CB
- CE (declaration of conformity)
- ENEC
- German Lloyd
- German Navy, SAK-page no. 3337-... on request

buzzer

switching system

switching system

- contactless electronic buzzer
- with IC oscillator

buzzer system

system

electronic non-contacting buzzer
with IC oscillator

material

alarm buzzer case

duroplastic

front cap

polycarbonate
polymethylcrylat
polymethylcrylat

electrical characteristics

frequency (tone)

ca. 2.8 kHz

sound pressure

part no. 03-810.001:

85 dB \pm 10 at a distance of 0.1 m

Volume variable with a 1 M Ω potentiometer or corresponding fixed resistor.

part no. 03-811.001:

90 dB \pm 5 at a distance of 0.1 m

Volume variable with a 1 M Ω potentiometer or corresponding fixed resistor.

operation voltage/current

part no. 03-810.001

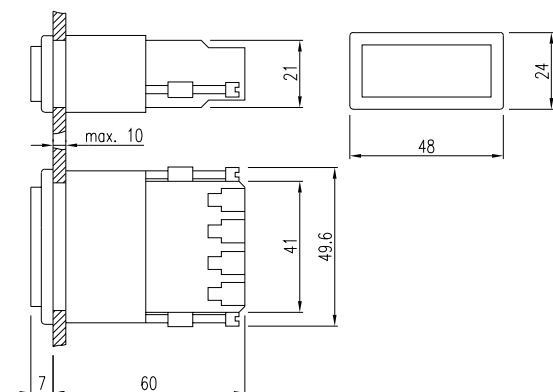
typ. 10-50 VAC; 25 mA

typ. 10-75 VDC; 15 mA

technical drawings

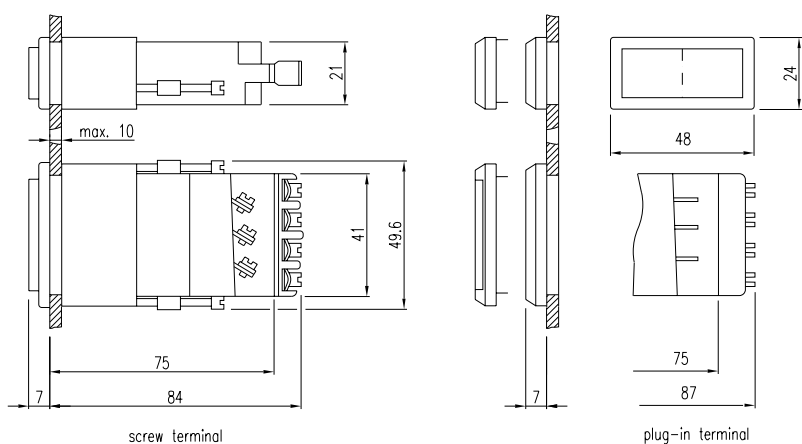
1 indicator

page 37



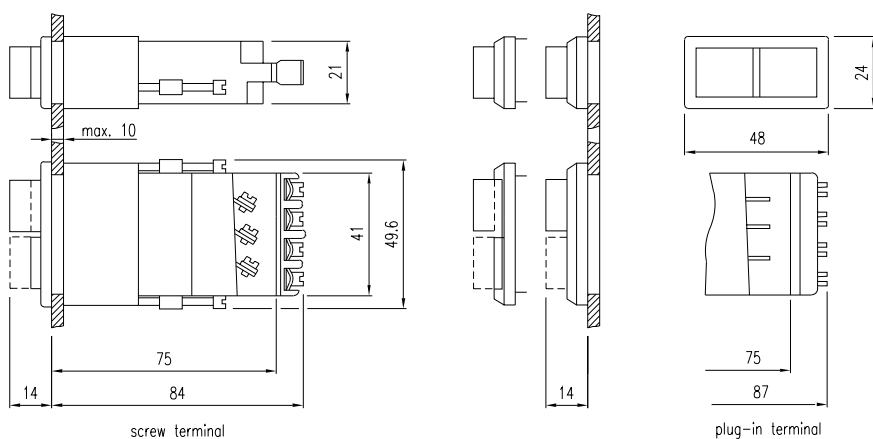
2 pushbutton one-part, pushbutton two-part, illuminated pushbutton one-part, illuminated pushbutton two-part

page 38, 39, 41, 42

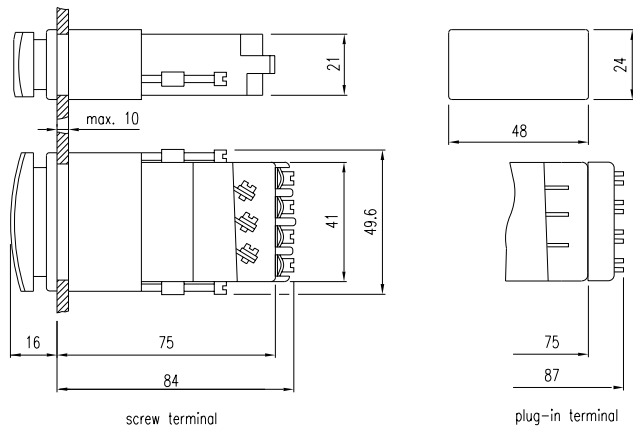


3 pushbutton, locked mechanically, illuminated pushbutton, locked mechanically

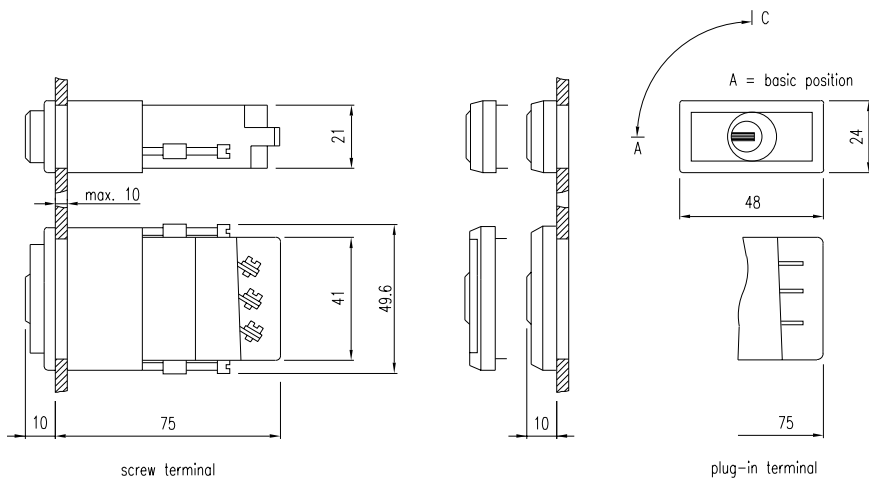
page 40, 43



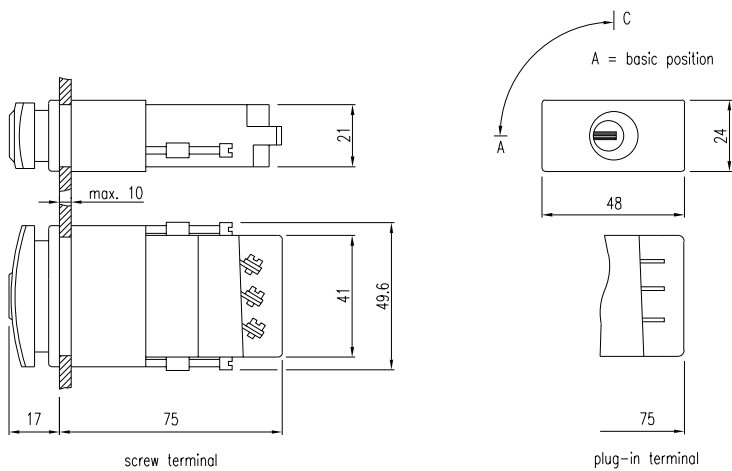
4 pushbutton with mushroom-head cap page 44



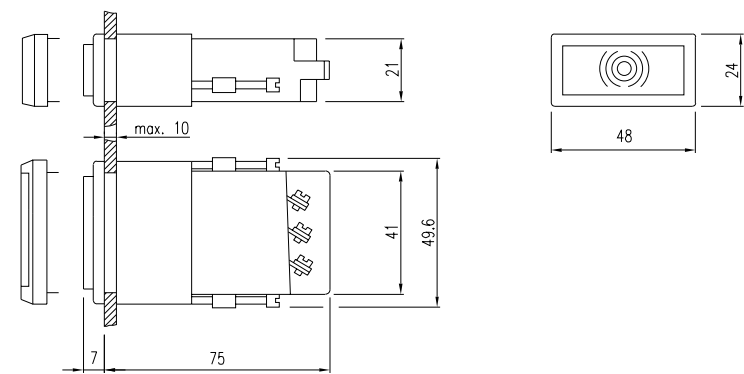
5 keylock switch 2 positions page 45



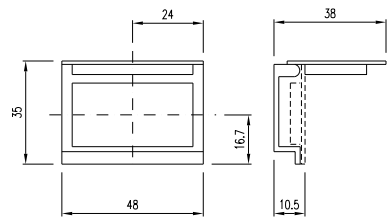
6 keylock switch with mushroom-head cap, 2 positions page 46



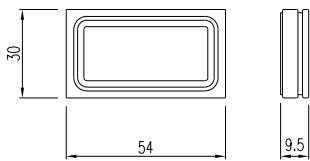
7 buzzer
page 46



8 protective cover
page 50

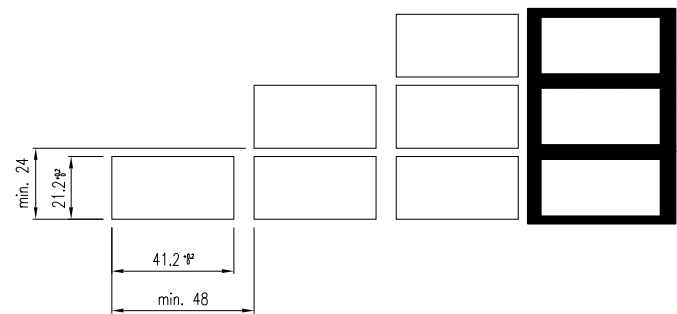


9 sprayproof cover
page 50



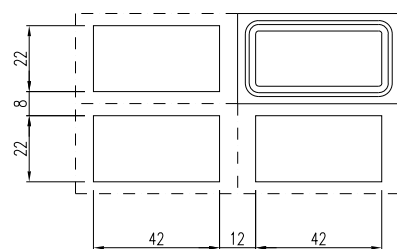
mounting dimensions

1 indicator, pushbutton one-part, pushbutton two-part, pushbutton, locked mechanically, illuminated pushbutton one-part, illuminated pushbutton two-part, illuminated pushbutton, locked mechanically, pushbutton with mushroom-head cap, keylock switch 2 positions, keylock switch with mushroom-head cap, 2 positions, buzzer, blind plug
page 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 46, 51



2 sprayproof cover

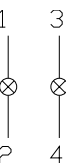
page 50



circuit drawings

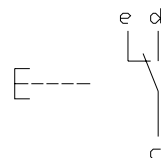
1 indicator

page 37



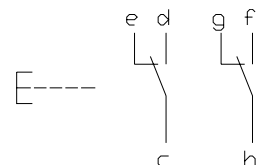
2 pushbutton one-part

page 38



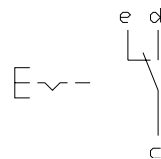
3 pushbutton one-part

page 38



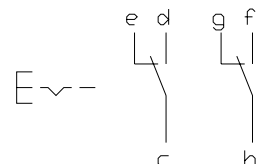
4 pushbutton one-part

page 38



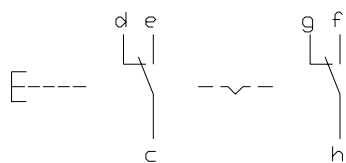
5 pushbutton one-part

page 38



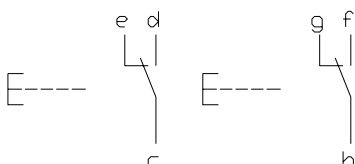
6 pushbutton one-part

page 38



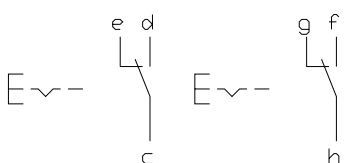
7 pushbutton two-part

page 39



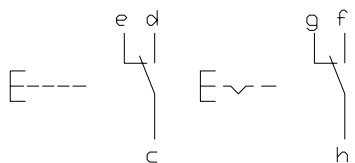
8 pushbutton two-part, pushbutton, locked mechanically

page 39, 40



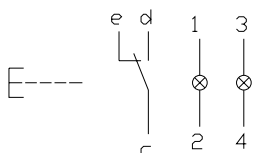
9 pushbutton two-part

page 39



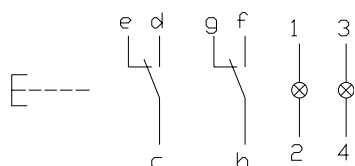
10 illuminated pushbutton one-part, illuminated pushbutton two-part, pushbutton with mushroom-head cap

page 41, 42, 44



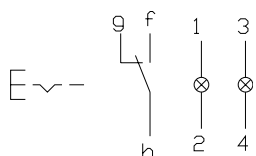
11 illuminated pushbutton one-part, pushbutton with mushroom-head cap

page 41, 44



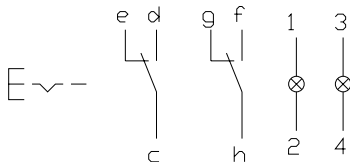
12 illuminated pushbutton one-part

page 41



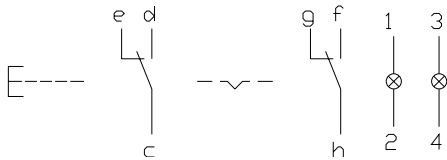
13 illuminated pushbutton one-part, pushbutton with mushroom-head cap

page 41, 44



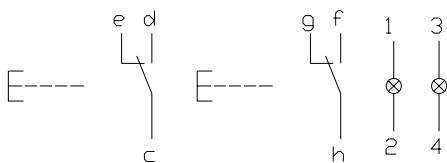
14 illuminated pushbutton one-part, pushbutton with mushroom-head cap

page 41, 44



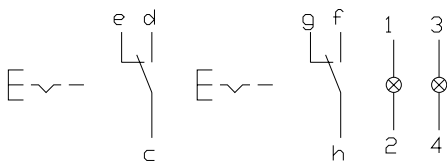
15 illuminated pushbutton two-part, illuminated pushbutton, locked mechanically

page 42, 43



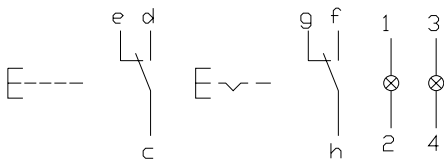
16 illuminated pushbutton two-part, illuminated pushbutton, locked mechanically

page 42, 43



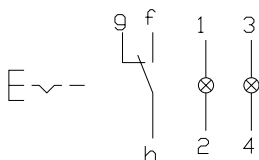
17 illuminated pushbutton two-part, illuminated pushbutton, locked mechanically

page 42, 43



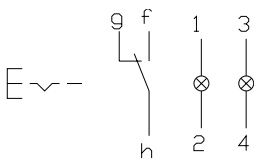
18 illuminated pushbutton two-part

page 42



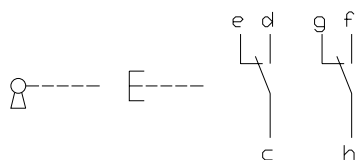
19 pushbutton with mushroom-head cap

page 44



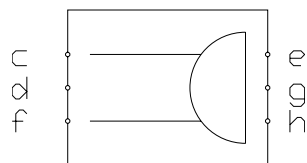
20 keylock switch 2 positions, keylock switch with mushroom-head cap, 2 positions

page 45

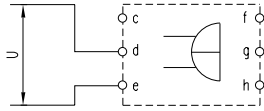


21 buzzer

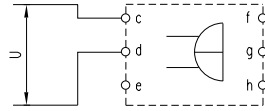
page 46



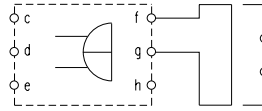
1 buzzer



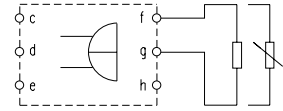
1. Speisespannung I
Dauerton
 $U = 10-35 \text{ VAC}$
 $U = 10-50 \text{ VDC}$



2. Speisespannung II
Dauerton
 $U = 35-55 \text{ VAC}$
 $U = 35-75 \text{ VDC}$

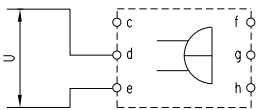


3. Intervallton
Intervalldauer ca. 3 Hz

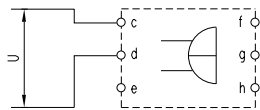


4. Lautstärkenregelung

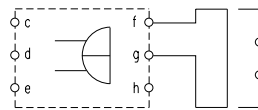
2 buzzer



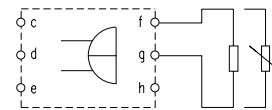
1. Speisespannung I
Dauerton
 $U = 110/115 \text{ VAC/DC}$



2. Speisespannung II
Dauerton
 $U = 230 \text{ VAC}$



3. Intervallton
Intervalldauer ca. 3 Hz



4. Lautstärkenregelung

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

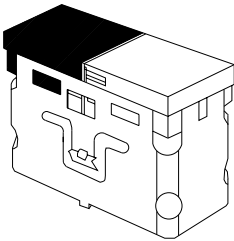
Specify the infill colour, character height and the text or symbol orientation.

Symbols

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

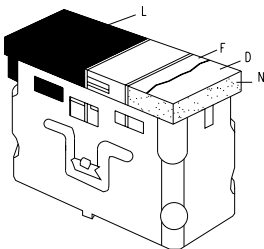
2. Hot stamping

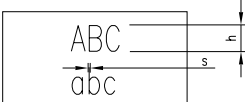
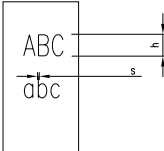
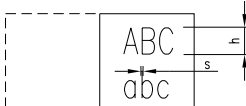
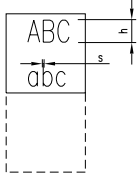
For large batches it is worth while to have the lettering produced by hot stamping.
Typefaces
For letters and figures, typefaces with 2,5 mm, 3 mm and 4 mm are available.
Symbols
A list of the symbols available can be supplied on request.



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 lens lights. The film (F) is inserted in the cap. To ensure even illumination a diffuser (D) is recommended, which is inserted beneath the film. If, on the other hand, the diffuser is inserted above the film, the lettering only becomes legible when the lamp is alight. To hold the film and diffuser in position, the use of a holder (N) is advised.
Film dimensions
max. 34,3 x 14,3 mm
(for type No. 03-941/03-946/03-947)
max. 15,6 x 14,3 mm
(for type No. 03-942/03-943/03-951/03-952/03-953/03-954)
Film thickness 0,2 mm



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
h	s		(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)
3	0,4	4	16	18	8	6	8	4	7-8	9-10	4	7-8	9-10
4	0,5	2	11	13	4	4	5	2	5	6	2	5	6
5	0,5	2	8	10	4	3	4	2	4	4	2	4	4
6	0,6	1	7	9	3	3	3	1	3	4	1	3	4
8	0,6	1	5	6	2	2	2	1	2	2	1	2	2

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