



EAO Product Information

Series 31



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Series 31

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General Notes

The series 31 illuminated pushbuttons are equipped with snap-action or low-level switching elements.

Besides the standard contacts (gold-plated silver) silver contacts for switching elements 2.8 mm plug-in terminals can be supplied on request.

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

In addition to a number of illuminated pushbuttons, the customer can choose from a range of other units and accessories having the same front and mounting dimensions: indicators, flashers, buzzers, etc.

(For keylock switches see series 51 or 61.)

Mounting

All switch actuators are mounted from the front by pushing them through the mounting hole in the front panel. They are then fixed from the back with a fixing nut and the mounting tool typ no. 01-907. Max. tightening torque 50 Ncm. For mounting dimensions and grid size see as of page 272.

The preassembled switching element with the connecting wires in a single plane can be clipped on afterwards. For block or series mounting aids are available.

For switching elements with 2.8 mm plug-in terminals, we offer plug-in bases, which when soldered to a PCB enable a plug-in connection to the button. All actuators are provided with an anti-rotation device.

Lenses

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

Marking

For engravings, hot stamping and film inserts, see under "Marking" on page 281.

Illumination

Perfect illumination of the different coloured lenses is assured by midjet-grooved lamps T 1 3/4 (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.

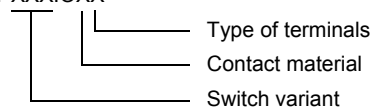
Multi-LED midjet-grooved lamps T 1 3/4 (6, 12, 24, 48 V) are available in the colours red, white, yellow and green.

Position Indication

When a switch with maintained action is actuated, the lens remains in the depressed position mechanically. The state of the switch is apparent at all times from the position of the lens.

Number structure

31-XXX.OXX



31-9XX.X

Example:

Lens

-Illuminated pushbutton, round, with momentary action; gold-plated silver contact;

1 switching element

31-131.025

-Lens, red

31-933.2

Specimen order

Indicator

- indicator, soldering terminal, 18 x 24 mm 31-040.005

Recommended accessories:

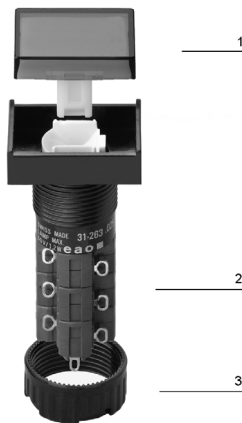
- lens, blue, 18 x 24 mm 31-903-6

- LED, 1 chip, 24 VDC, white 10-2312.3139

All dimensions in mm.

We reserve the right to modify technical data.

illuminated-/pushbutton



- 1 lens
- 2 switch housing
- 3 fixing nut

buzzer



	operation voltage	front cap	connection method	example for using	18 x 24 mm Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	
buzzer with continuous and intermittent tone	10-26 VDC	plastic black	-	1	31-801.002	1	1	1	0,015
	10-55 VAC/10-75 VDC	plastic black	S	2	31-810.005	2	2	1	0,015

connection method : soldering-/plug-in terminal = -, soldering terminal = S

circuit drawings from page 274, technical drawings from page 270, mounting dimensions from page 272

indicator



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- 🛒 filament lamp page 264
- 🛒 LED page 264

	diode (1N 4007)	connection method	18 x 24 mm Typ-Nr.	18 x 18 mm Typ-Nr.	18 mm dia. Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	component layout	
indicator	-	S	31-040.005	31-050.005	31-030.005	6	3	1		0,004
	-	-	31-040.002	31-050.002	31-030.002	3	3	1		0,004
		UT	31-041.006	31-051.006	31-031.006	3	5	1	1	0,005
	1	UT	31-701.006	31-703.006	31-741.006	4	4	1	1	0,006
	2	UT	31-702.006	31-704.006	31-742.006	5	4	1		0,006

connection method : soldering-/plug-in terminal = -, universal terminal = UT, soldering terminal = S

circuit drawings from page 274, technical drawings from page 270, mounting dimensions from page 272, component layouts from page 273

illuminated-/pushbutton



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🛒 filament lamp page 264

🛒 LED page 264

	switching system	contacts	diode (1N 4007)	switching action	connection method	18 x 24 mm Typ-Nr.	18 x 18 mm Typ-Nr.	18 mm dia. Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	component layout	kg
illuminated-/pushbutton	LL	1 NO	-	M	UT	31-425.036	31-455.036	31-435.036	17	5	1	1	0,007
				MA	UT	31-465.036	31-485.036	31-475.036	22	5	1	1	0,007
		1 NC	-	M	UT	31-426.036	31-456.036	31-436.036	19	5	1	1	0,007
				MA	UT	31-466.036	31-486.036	31-476.036	24	5	1	1	0,007
		1 NC + 1 NO	-	M	UT	31-423.036	31-453.036	31-433.036	21	5	1	1	0,007
				MA	UT	31-463.036	31-483.036	31-473.036	26	5	1	1	0,007
		2 NO	-	M	UT	31-421.036	31-451.036	31-431.036	18	5	1	1	0,007
				MA	UT	31-461.036	31-481.036	31-471.036	23	5	1	1	0,007
		2 NC	-	M	UT	31-422.036	31-452.036	31-432.036	20	5	1	1	0,007
				MA	UT	31-462.036	31-482.036	31-472.036	25	5	1	1	0,007
	SA	1 NC + 1 NO	-	M	S	31-121.0252	31-151.0252	31-131.0252	27	6	1		0,006
				-		31-121.022	31-151.022	31-131.022	7	6	1		0,006
				MA	S	31-261.0252	31-281.0252	31-271.0252	31	6	1		0,006
				-		31-261.022	31-281.022	31-271.022	8	6	1		0,006
			1	M	UT	31-705.0292	31-709.0292	31-743.0292	9	7	1	1	0,008
				MA	UT	31-713.0292	31-717.0292	31-747.0292	13	7	1	1	0,008
			2	M	UT	31-706.0292	31-710.0292	31-744.0292	10	7	1	1	0,008
				MA	UT	31-714.0292	31-718.0292	31-748.0292	14	7	1	1	0,008
		2 NC + 2 NO	-	M	S	31-122.0252	31-152.0252	31-132.0252	28	6	1		0,008
				MA	S	31-262.0252	31-282.0252	31-272.0252	32	6	1		0,008
			1	M	UT	31-707.0292	31-711.0292	31-745.0292	11	7	1		0,010
				MA	UT	31-715.0292	31-719.0292	31-749.0292	15	7	1		0,010
			2	M	UT	31-708.0292	31-712.0292	31-746.0292	12	7	1		0,010
				MA	UT	31-716.0292	31-720.0292	31-750.0292	16	7	1		0,010
		3 NC + 3 NO	-	M	S	31-123.0252	31-153.0252	31-133.0252	29	6	1		0,010
				MA	S	31-263.0252	31-283.0252	31-273.0252	33	6	1		0,010
		4 NC + 4 NO	-	M	S	31-124.0252	31-154.0252	31-134.0252	30	6	1		0,012
				MA	S	31-264.0252	31-284.0252	31-274.0252	34	6	1		0,012

switching system : snap-action switching element = SA, low level switching element = LL

contacts : normally closed = NC, normally open = NO, 1 normally open = 1 NO, 1 normally closed = 1 NC

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

connection method : soldering-/plug-in terminal = -, universal terminal = UT, soldering terminal = S

power rating: Low Level switching element: 42 V/100 mA, snap-action switching element: 250 V/5 A

circuit drawings from page 274, technical drawings from page 270, mounting dimensions from page 272, component layouts from page 273

at front

lens

	shape	lens/support	colour	18 x 24 mm Typ-Nr.	18 x 18 mm Typ-Nr.	18 mm dia. Typ-Nr.	kg
lens of plastic	flat	transparent/trans- lucent	blue	31-903.6	31-953.6	31-933.6	0,001
			colourless, clear	31-903.7	31-953.7	31-933.7	0,001
			yellow	31-903.4	31-953.4	31-933.4	0,001
			green	31-903.5	31-953.5	31-933.5	0,001
			orange	31-903.3	31-953.3	31-933.3	0,001
			smoked	31-903.1	31-953.1	31-933.1	0,001
	concave	transparent/trans- lucent	red	31-903.2	31-953.2	31-933.2	0,001
			blue	31-904.6	31-954.6		0,001
			colourless, clear	31-904.7	31-954.7		0,001
			yellow	31-904.4	31-954.4		0,001
			green	31-904.5	31-954.5		0,001
			orange	31-904.3	31-954.3		0,001
			red	31-904.2	31-954.2		0,001
of plastic (not recommen- ded for film insert)	flat	transparent/trans- parent	colourless, clear	31-905.7	31-955.7	31-935.7	0,001
			yellow	31-905.4	31-955.4	31-935.4	0,001
			green	31-905.5	31-955.5	31-935.5	0,001
			red	31-905.2	31-955.2	31-935.2	0,001
	concave	transparent/trans- parent	colourless, clear	31-906.7	31-956.7		0,001
			yellow	31-906.4	31-956.4		0,001
			green	31-906.5	31-956.5		0,001
			red	31-906.2	31-956.2		0,001
of plastic (not for film insert and illumination)	flat	opaque/translu- cent	grey	31-901.8	31-951.8	31-931.8	0,001
			black	31-901.0	31-951.0	31-931.0	0,001
	concave	opaque/translu- cent	grey	31-902.8	31-952.8		0,001
			black	31-902.0	31-952.0		0,001
of plastic (not for film insert and LED)	flat	translucent/trans- lucent	blue	31-901.6	31-951.6	31-931.6	0,001
			yellow	31-901.4	31-951.4	31-931.4	0,001
			green	31-901.5	31-951.5	31-931.5	0,001
			orange	31-901.3	31-951.3	31-931.3	0,001
			red	31-901.2	31-951.2	31-931.2	0,001
			white	31-901.9	31-951.9	31-931.9	0,001
	concave	translucent/trans- lucent	blue	31-902.6	31-952.6		0,001
			yellow	31-902.4	31-952.4		0,001
			green	31-902.5	31-952.5		0,001
			orange	31-902.3	31-952.3		0,001
			red	31-902.2	31-952.2		0,001
			white	31-902.9	31-952.9		0,001



AML adaptor

	front shape	part no.	technical drawing	kg
AML adaptor for American panel cutout	square	31-948	8	0,002
	rectangular	31-949	9	0,002



technical drawings from page 270

protective cover


	 18 x 24 mm Typ-Nr.	 18 x 18 mm Typ-Nr.	technical drawing	
protective cover hinged, transparent, with means for sealing	31-925	31-920	10	0,002
			11	0,002



technical drawings from page 270

sprayproof cover


front protection IP 65

	front shape	material	part no.	technical drawing	mounting dimensions	
sprayproof cover two-part	square	made of PVC	31-923	12	2	0,003
	rectangular	made of silicone	31-924.2	12	2	0,003



technical drawings from page 270, mounting dimensions from page 272




protective guard

	construction	part no.	technical drawing	
protective guard matt chromium-plated	broad sides bent upwards	01-927	14	0,011
	narrow ends bent upwards	01-926	13	0,011



technical drawings from page 270

blind plug


	colour	 18 x 24 mm Typ-Nr.	 18 x 18 mm Typ-Nr.	18 mm dia. Typ-Nr.	mounting dimensions	
blind plug	black	01-947.0	01-948.0	01-949.0	1	0,001

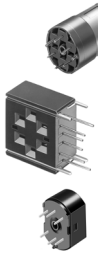


mounting dimensions from page 272

at back


PCB plug-in base

	for	pin orientation	part no.	component layout	
PCB plug-in base 17.9 x 8.4 mm high With the extendable mounting the distance between PCB plug-in base and PCB can be varied up to 3 mm.	low level switching element	right-angled	31-941	3	0,004
16.4 mm dia. x 9.8 mm high	low level switching element	axial	31-940	2	0,002
17.8 mm dia. x 9.8 mm high	snap-action switching element 2.8 mm	axial	31-942	4	0,002




component layouts from page 273

cable shoe

	connection method	part no.	
cable shoe	plug-in terminal 2.8 x 0.5 mm	31-946	0,001
	universal terminal 2.0 x 0.5 mm	31-945	0,001




insulation socket

	part no.	
insulation socket for snap-action switching element 2.8 mm to cover the plug-in terminals	01-928	0,001
for connector 31-945	31-928	0,001
for connector 31-946	31-929	0,001



terminal cover


for snap-action switching element

	part no.	
terminal cover	01-929	0,010




for illumination

Filament lamp

	voltage/current	part no.	
Filament lamp base MG T 1 3/4	6 VAC/VDC/125 mA	10-1306.1349	0,001
	6.3 VAC/VDC/200 mA	10-1307.1369	0,001
	12 VAC/VDC/75 mA	10-1309.1309	0,001
	14 VAC/VDC/80 mA	10-1310.1319	0,001
	18 VAC/VDC/40 mA	10-1311.1249	0,001
	24 VAC/VDC/35 mA	10-1312.1229	0,001
	28 VAC/VDC/30 mA	10-1313.1209	0,001
	28 VAC/VDC/40 mA	10-1313.1249	0,001
	36 VAC/VDC/20 mA	10-1316.1179	0,001
	36 VAC/VDC/30 mA	10-1316.1209	0,001
	48 VAC/VDC/20 mA	10-1319.1179	0,001
	48 VAC/VDC/25 mA	10-1319.1199	0,001



LED

	number of chips	voltage/current	colour	part no.	
LED base MG T 1 3/4	1 chip	24 VDC/14 mA	white	10-2312.3139	0,001
		28 VDC/14 mA	white	10-2313.3139	0,001
	6 chips	6 VDC/45 mA	yellow	10-5306.3254	0,001
			green	10-5306.3255	0,001
			red	10-5306.3252	0,001
		12 VDC/30 mA	yellow	10-5309.3204	0,001
			green	10-5309.3205	0,001
			red	10-5309.3202	0,001
		24 VAC/DC/12.5 mA	yellow	10-5312.1114	0,001
			green	10-5312.1115	0,001
			red	10-5312.1112	0,001
		24 VDC/14 mA	yellow	10-5312.3134	0,001
			green	10-5312.3135	0,001
			red	10-5312.3132	0,001
		28 VAC/DC/12.5 mA	yellow	10-5313.1114	0,001
			green	10-5313.1115	0,001
			red	10-5313.1112	0,001
		28 VDC/14 mA	yellow	10-5313.3134	0,001
			green	10-5313.3135	0,001
			red	10-5313.3132	0,001
		48 VDC/12 mA	yellow	10-5319.3104	0,001
			green	10-5319.3105	0,001
			red	10-5319.3102	0,001
	8 chips	6 VDC/48 mA	yellow	10-6306.3264	0,001
			green	10-6306.3265	0,001
			red	10-6306.3262	0,001
		12 VDC/24 mA	yellow	10-6309.3184	0,001
			green	10-6309.3185	0,001
			red	10-6309.3182	0,001
		24 VDC/12 mA	yellow	10-6312.3104	0,001
			green	10-6312.3105	0,001
			red	10-6312.3102	0,001
		28 VDC/12 mA	yellow	10-6313.3104	0,001
			green	10-6313.3105	0,001
			red	10-6313.3102	0,001



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..

capacitor

for lamp voltage reduction


	value	part no.	
capacitor use with 60 VAC/20 mA, 50 Hz lamp voltage	230 VAC/0.27 μ F	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, 50 Hz lamp voltage	110 V/2.7 k Ω	02-904.0	0,003
	125 V/3.3 k Ω	02-904.1	0,003
	145 V/4.7 k Ω	02-904.3	0,003
	230-240 V/10.0 k Ω	02-904.7	0,003

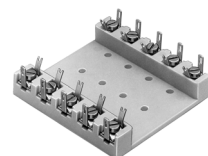


Please keep to the country specific security rules.


terminal plate empty

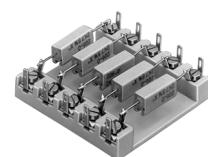
for fitting with series resistors and capacitors

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




terminal plate with capacitor

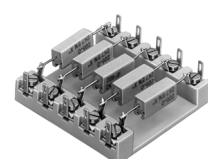
	value	no. of components	part no.	
terminal plate with capacitor use with 60 VAC/20 mA lamp rating	0.27 μ F/230 VAC/60 VAC	5 spaces	02-914.10	0,045
		10 spaces	02-914.20	0,090
		15 spaces	02-914.30	0,135
		20 spaces	02-914.40	0,180



Please keep to the country specific security rules.

terminal plate with series resistor


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



Please keep to the country specific security rules.


assembling

lens remover

	part no.	
lens remover	02-905	0,011




lamp/LED remover

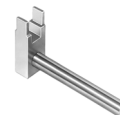
	part no.	
lamp/LED remover	61-9740.0	0,002

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



dressings tool

	part no.	
dressings tool for aligning buttons	01-906	0,030



mounting tool

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



actuator with snap-action switching element

switching system

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 stackable, only 1 switching element can be on a pushbutton.

material

material of contacts

gold-plated silver

switching element

axial plug-in-/soldering terminal 2.8 mm:
diallyl phthalate DAP, polyamide 66, polysulfone, heat-resistant and self-extinguishing
soldering terminal: PA 6.6 Ultramid

actuator case

polyetherimide, self-extinguishing

mechanical characteristics

connection method

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 mm².
snap-action switching element with axial plug-in terminals, which can also be used as soldering terminals:
plug-in terminal: 2.8 x 0.5 mm

soldering terminal:

max. wire diameter: 1 wire of 1.5 mm²
max. wire cross-section of stranded cable: 2 x 0.75 mm² or 1 x 1.0 mm²

actuating force

2-5.5 N, depending on the number of switching elements

actuating travel

3 mm

resistance to climate

standard condition as per IEC 68-2-3 and 2-30
changing condition as per IEC 68-2-14 and 2-33

storage temperature

-40°C to + 85°C
(as per DIN IEC 68-)

mechanical life

momentary action 2 million cycles of operation
maintained action 1 million cycles of operation

rebound time

≤ 5ms

resistance to shock

(single impacts, semi-sinusoidal)
15 g for 11 ms as per IEC 512-4-3, IEC 68-2-27

degree of protection

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

resistance to vibration

(sinusoidal)
10 g at 0-2000 Hz, amplitude 1.5 mm as per IEC 512-4-4, 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 voltage

250 VAC/VDC

rated current

5 A

contact resistance

starting value (initial) ≤ 50 mΩ

continuous thermal current I_{th2}

5 A

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

switch rating

250 VAC/5 A (cos φ 1)
250 VAC/3 A (cos φ 0.3)

switch rating AC, cos φ 0.7:

voltage	125 V	250 V
current	3 A	2 A

switch rating DC (inductive), L:R = 30 ms:

voltage	24 V	60 V	110 V	220 V
current	2 A	0.7 A	0.2 A	0.1 A

protection class

II

electric strength

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

rules

rules

IEC 1058 EN 61 058

approvals

approvals

- CSA 300 VAC
- UL
- CB
- ENEC
- German Lloyd
- CE (declaration of conformity)

actuator with Low Level switching element

switching system

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 $\mu\text{A}/\mu\text{V}$ up to 100 mA/42 VAC/VDC.

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 contacts

gold-plated

switching element

polysulfone, heat-resistant and self-extinguishing

actuator case

polyetherimide, self-extinguishing

mechanical characteristics

connection method

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 mm²

plug-in terminal:

2.0 x 0.5 mm

actuating force

3-3.5 N

actuating travel

3 mm

resistance to climate

standard condition as per IEC 68-2-3 and 2-30

changing condition as per IEC 68-2-14 and 2-33

storage temperature

-40°C to + 85°C

(as per DIN IEC 68-)

mechanical life

momentary action 5 million cycles of operation

maintained action 1 million cycles of operation

rebound time

type. < 100 μs

resistance to shock

(single impacts, semi-sinusoidal)

15 g for 11 ms as per IEC 512-4-3, IEC 68-2-27

degree of protection

front as per IEC 529:

IP 40

IP 65 with spray cover

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

contact resistance

starting value (initial) $\leq 50 \text{ m}\Omega$

switch rating

10 $\mu\text{A}/100 \mu\text{V}$ to 100 mA at 42 VAC/VDC

protection class

II

electric strength

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

rules

rules

EN 61 058

buzzer Part No. 31-810.005

switching system

buzzer system

electronic non-contacting buzzer
with IC oscillator

material

alarm buzzer case

polyetherimides

front bezel

polyamide

mechanical characteristics

connection method

soldering terminal

operating temperature

-25°C to + 55°C

storage temperature

-40°C to + 85°C

(as per DIN IEC 68-)

degree of protection

IP 40 as per IEC 529

electrical characteristics

frequency (tone)

ca. 2.8 kHz

interval frequency

2 Hz

sound pressure

88 dB (A) \pm 8 at a distance of 0.1 m

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

operation voltage/current

typ. 10-55 VAC; 25 mA

typ. 10-75 VDC; 15 mA

buzzer Part No. 31-801.002**switching system****buzzer system**

electronic non-contacting buzzer
with IC oscillator

material**alarm buzzer case**

polyetherimides

front bezel

polyamide

mechanical characteristics**connection method**

plug-in terminal 2.8 x 0.5 mm

operating temperature

- 25°C to + 55°C

storage temperature

- 25°C to + 55°C

(as per DIN IEC 68-)

degree of protection

IP 40 as per IEC 529

electrical characteristics**frequency (tone)**

ca. 2.0 kHz

interval frequency

2 Hz

sound pressure

88 db (A) \pm 8 at a distance of 0.1 m

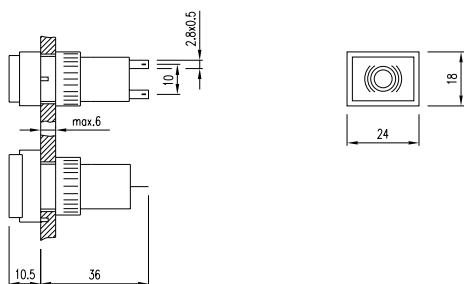
operation voltage/current

10-26 VDC; \leq 30 mA

technical drawings

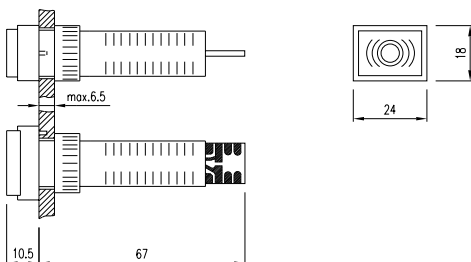
1 buzzer

page 259



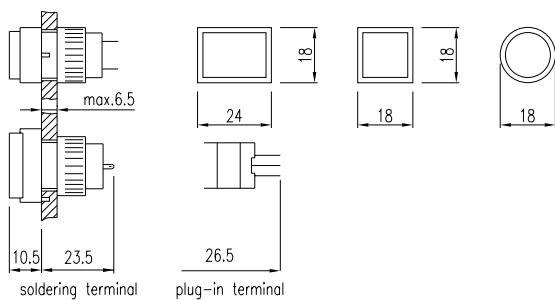
2 buzzer

page 259



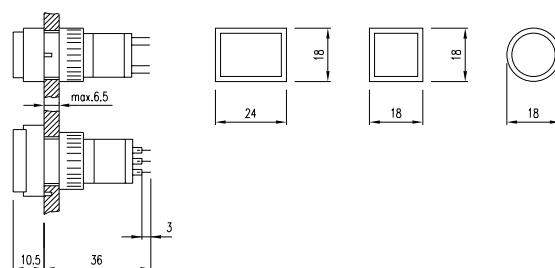
3 indicator

page 259



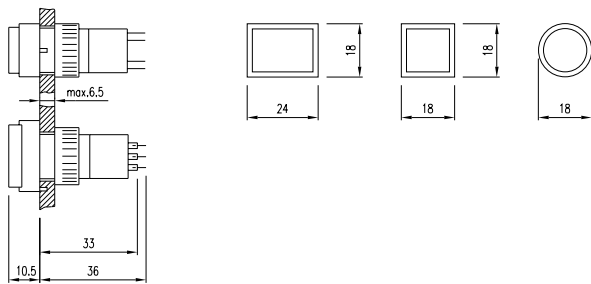
4 indicator

page 259



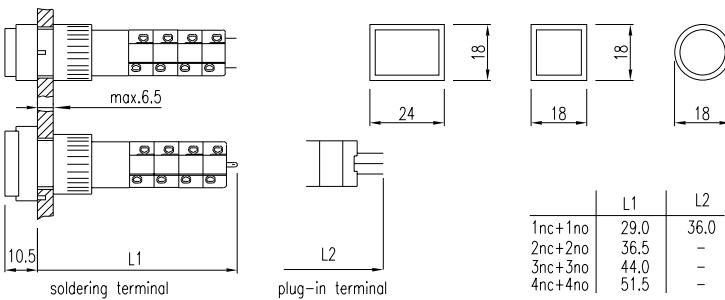
5 indicator, illuminated-/pushbutton

page 259, 260



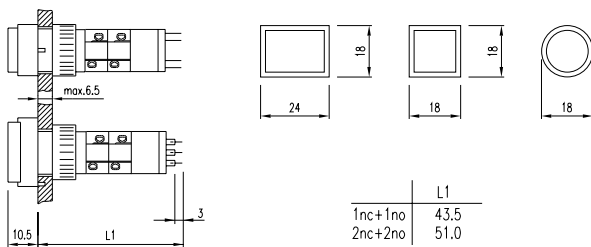
6 illuminated-/pushbutton

page 260



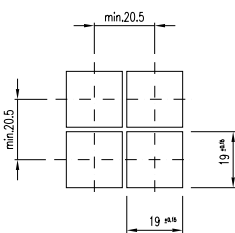
7 illuminated-/pushbutton

page 260



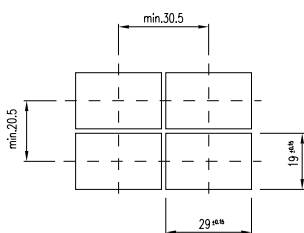
8 AML adaptor

page 261

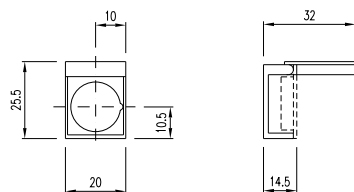


9 AML adaptor

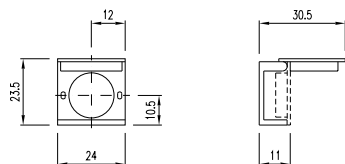
page 261



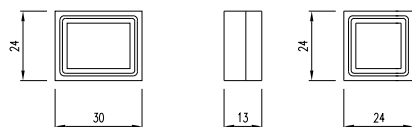
10 protective cover page 262



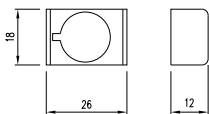
11 protective cover page 262



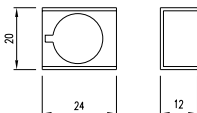
12 sprayproof cover page 262



13 protective guard page 262

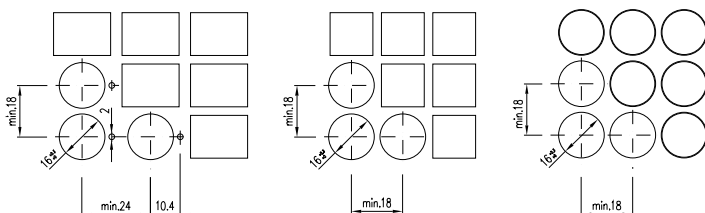


14 protective guard page 262

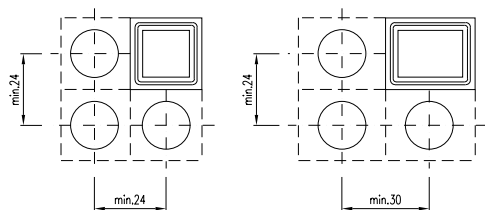


mounting dimensions

1 buzzer, indicator, illuminated-/pushbutton, blind plug page 259, 259, 260, 262

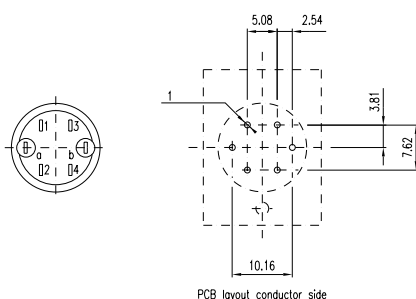


2 sprayproof cover page 262

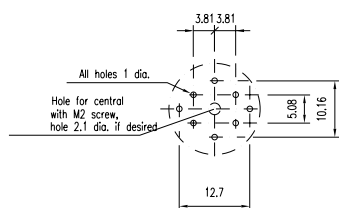


component layouts

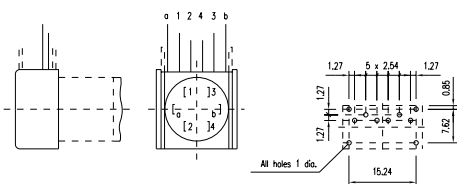
1 indicator, illuminated-/pushbutton page 259, 259



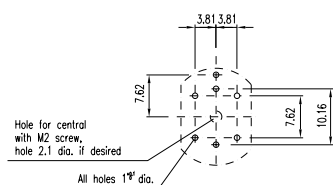
2 PCB plug-in base page 263



3 PCB plug-in base page 263

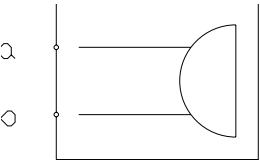


4 PCB plug-in base page 263

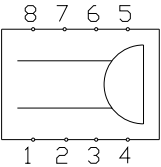


circuit drawings

1 buzzer
259



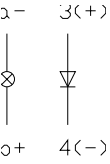
2 buzzer
page 259



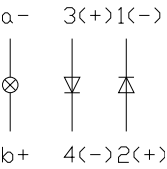
3 indicator
page 259



4 indicator
page 259



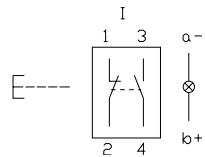
5 indicator
page 259



6 indicator
page 259

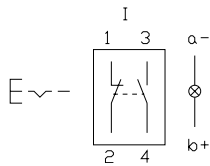


7 illuminated-/pushbutton
page 260



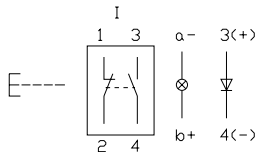
8 illuminated-/pushbutton

page 260



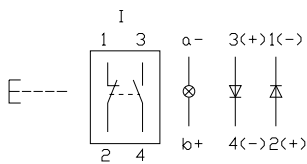
9 illuminated-/pushbutton

page 260



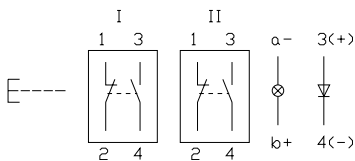
10 illuminated-/pushbutton

page 260



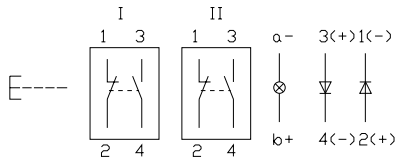
11 illuminated-/pushbutton

page 260



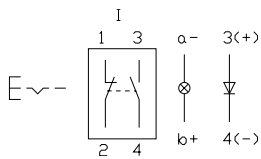
12 illuminated-/pushbutton

page 260



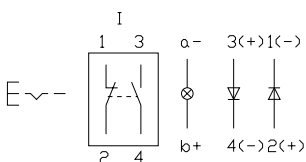
13 illuminated-/pushbutton

page 260



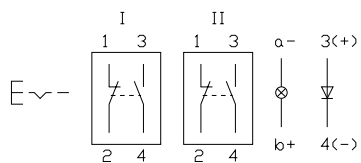
14 illuminated-/pushbutton

page 260



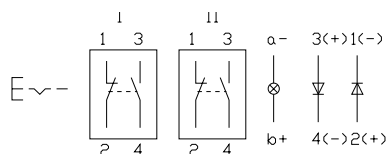
15 illuminated-/pushbutton

page 260



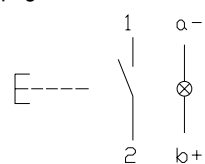
16 illuminated-/pushbutton

page 260



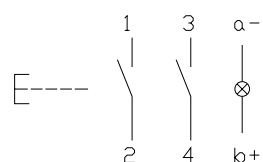
17 illuminated-/pushbutton

page 260



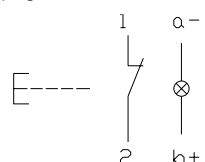
18 illuminated-/pushbutton

page 260



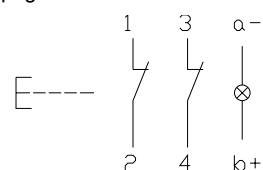
19 illuminated-/pushbutton

page 260



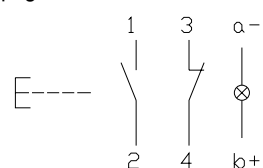
20 illuminated-/pushbutton

page 260



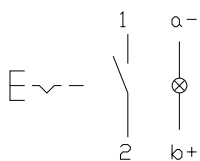
21 illuminated-/pushbutton

page 260



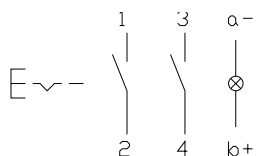
22 illuminated-/pushbutton

page 260



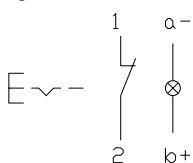
23 illuminated-/pushbutton

page 260



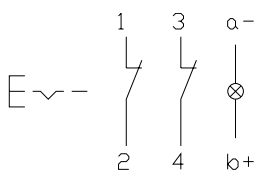
24 illuminated-/pushbutton

page 260



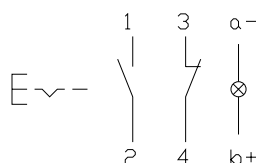
25 illuminated-/pushbutton

page 260



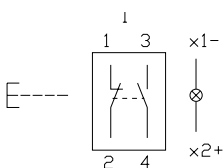
26 illuminated-/pushbutton

page 260



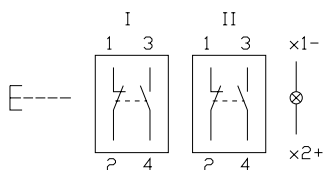
27 illuminated-/pushbutton

page 260



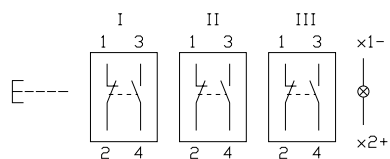
28 illuminated-/pushbutton

page 260



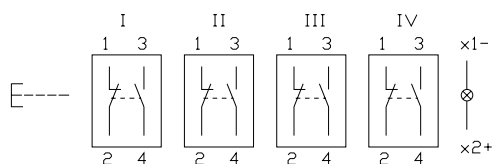
29 illuminated-/pushbutton

page 260



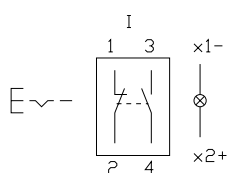
30 illuminated-/pushbutton

page 260



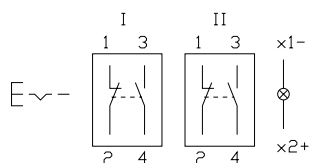
31 illuminated-/pushbutton

page 260



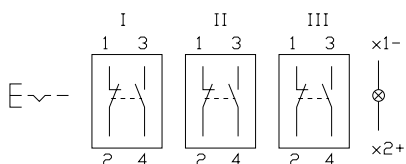
32 illuminated-/pushbutton

page 260



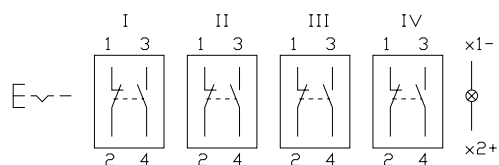
33 illuminated-/pushbutton

page 260

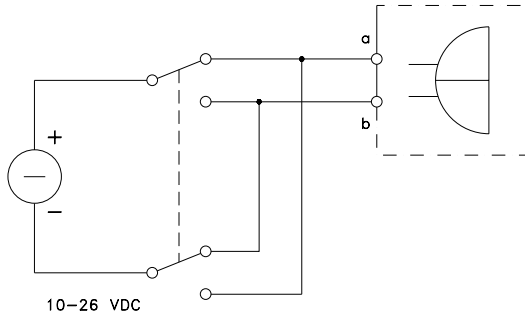


34 illuminated-/pushbutton

page 260

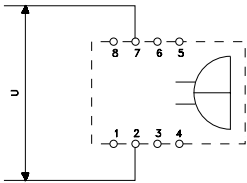


1. buzzer (31-801.002)

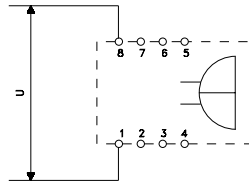


Depending on how the terminals are connected, the buzzer can operate with a continuous tone a(-) b(+) or with intermittent tone a(+) b(-)

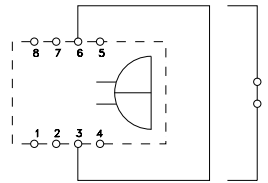
2. buzzer (31-810.005)



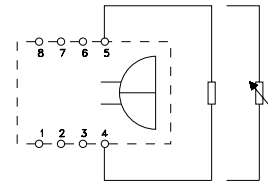
1. Speisespannung I
Dauerton
U = 10-35 VAC
U = 10-50 VDC



2. Speisespannung II
Dauerton
U = 35-55 VAC
U = 35-75 VDC



3. Intervallton
Intervalldauer ca. 3 Hz

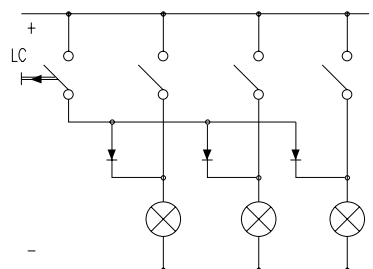


4. Lautstärkeregelung

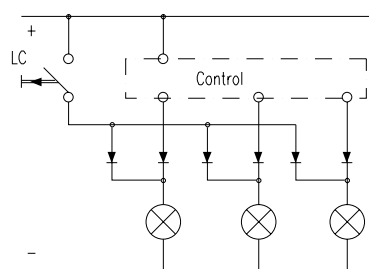
Indicators and illuminated pushbuttons with built-in diodes

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

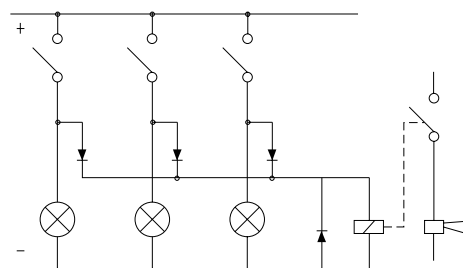
lamp check



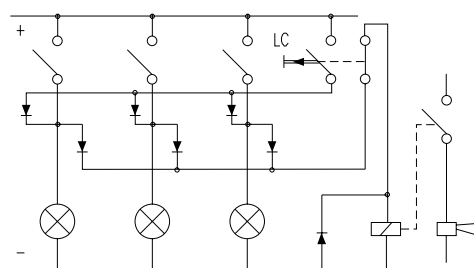
lamp check with blocking diodes



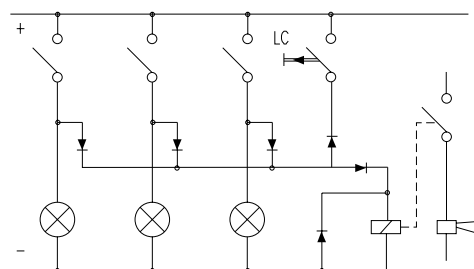
alarm circuit from fault
annunciating system



lamp check and alarm circuit



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



LC = lamp check

1. Engraving

Typefaces

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

Coloured filling of engraving

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

Symbols

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

2. Hot stamping

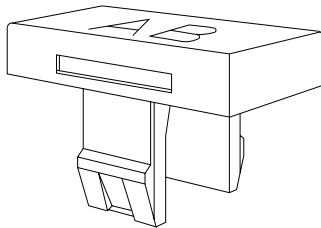
For large batches it is worth while to have the lettering produced by hot stamping.

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 lamp lights. To insert the film, the feet of the lens support have to be pushed together far enough to enable the lens to be lifted off easily.

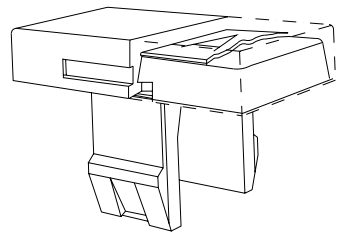
Film dimensions

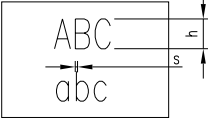
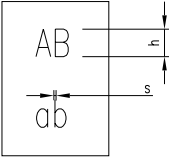
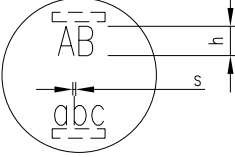
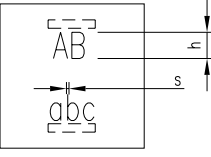
max. 12,7 x 18,7 mm
12,7 x 12,7 mm
12,8 mm

Film thickness 0,2 mm

Important!

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



													
Height of letters mm	Thickness of letters mm	Horizontal mounting			Vertical mounting			Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line
		Number of lines	Number of letters per line	Number of letters per line	Number of lines	Number of letters per line	Number of letters per line						
h	s		(caps)	(small)		(caps)	(small)		(caps)	(small)		(caps)	(small)
2,5	0,4	4	11	12	5	7-8	8	3	6	6	4	7-8	8
3	0,4	3	9-10	10-11	4	6-7	7	2	5	6	3	6-7	7
4	0,5	2	7	7-8	3	4-5	5	2	3	4	2	4-5	5
5	0,5	2	5-6	6	2	3-4	4	1	2	3	2	3-4	4
6	0,6	1	4-5	5	2	3	3-4	1	2	2	1	3	3-4

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