

# Devices raised mounting

## Illuminated pushbutton actuator



	Front protection	Switching system	Contacts	Diode (1N 4007)	Switching action	Terminals	⌀ 18 x 18 mm	⌀ 18 x 24 mm	Ø 18 mm	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	kg	
							Typ-Nr.	Typ-Nr.	Typ-Nr.						
Illuminated pushbutton actuator	IP 40	LL	1 NC	-	MA	UT	31-486.036	31-466.036	31-476.036	4	1	3	14	0.007	
					M	UT	31-456.036	31-426.036	31-436.036	4	1	3	28	0.007	
			1 NC + 1 NO	-	MA	UT	31-483.036	31-463.036	31-473.036	4	1	3	17	0.007	
					M	UT	31-453.036	31-423.036	31-433.036	4	1	3	31	0.007	
			1 NO	-	MA	UT	31-485.036	31-465.036	31-475.036	4	1	3	16	0.007	
					M	UT	31-455.036	31-425.036	31-435.036	4	1	3	30	0.007	
		2 NC	-	MA	UT	31-482.036	31-462.036	31-472.036	4	1	3	15	0.007		
				M	UT	31-452.036	31-422.036	31-432.036	4	1	3	29	0.007		
		2 NO	-	MA	UT	31-481.036	31-461.036	31-471.036	4	1	3	18	0.007		
				M	UT	31-451.036	31-421.036	31-431.036	4	1	3	32	0.007		
		SA	1 NC + 1 NO	1 D		MA	UT	31-717.0292	31-713.0292	31-747.0292	4	1	11	11	0.008
						M	UT	31-709.0292	31-705.0292	31-743.0292	4	1	11	25	0.008
	2 D				MA	UT	31-718.0292	31-714.0292	31-748.0292	4	1	11	12	0.008	
					M	UT	31-710.0292	31-706.0292	31-744.0292	4	1	11	26	0.008	
	-				MA	S	31-281.0252	31-261.0252	31-271.0252		1	9	13	0.006	
					S1	31-281.022	31-261.022	31-271.022		1	9	10	0.006		
	M			S	31-151.0252	31-121.0252	31-131.0252		1	9	27	0.006			
				S1	31-151.022	31-121.022	31-131.022		1	9	24	0.006			
	2 NC + 2 NO		1 D		MA	UT	31-719.0292	31-715.0292	31-749.0292	4	1	11	7	0.010	
					M	UT	31-711.0292	31-707.0292	31-745.0292	4	1	11	21	0.010	
			2 D		MA	UT	31-720.0292	31-716.0292	31-750.0292	4	1	11	8	0.010	
					M	UT	31-712.0292	31-708.0292	31-746.0292	4	1	11	22	0.010	
		-		MA	S	31-282.0252	31-262.0252	31-272.0252		1	9	9	0.008		
				M	S	31-152.0252	31-122.0252	31-132.0252		1	9	23	0.008		
3 NC + 3 NO	-		MA	S	31-283.0252	31-263.0252	31-273.0252		1	9	6	0.010			
			M	S	31-153.0252	31-123.0252	31-133.0252		1	9	20	0.010			
4 NC + 4 NO	-		MA	S	31-284.0252	31-264.0252	31-274.0252		1	9	5	0.012			
			M	S	31-154.0252	31-124.0252	31-134.0252		1	9	19	0.012			

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

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 19, Mounting dimensions from page 20, Technical drawing from page 20, Circuit drawing from page 22

# Technical Data

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

### Material

#### Material of contact

Gold plated silver

#### Switch housing

Axial plug-in-/soldering terminal 2.8 mm:  
Diallylphthalate (DAP), Polyamide (PA66), Polysulfone, heat-resistant and self-extinguishing  
Soldering terminal: PA 6.6 Ultramide

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

#### Actuating force

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

#### Actuating travel

3 mm

#### Rebound time

≤5ms

#### Mechanical lifetime

Momentary action 2 million cycles of operation  
Maintained action 1 million 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

### 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

Front as per:  
IP 40  
IP 65 with spray cover

#### 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 0-2000 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

# Technical Data

## 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  $\mu\text{A}/\mu\text{V}$  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 force

3 N ... 3,5 N

#### Actuating travel

3 mm

#### Rebound time

Typ. <100  $\mu\text{s}$

#### Mechanical lifetime

Momentary action 5 million cycles of operation

Maintained action 1 million cycles of operation

### Electrical characteristics

#### Standards

EN 61058

#### 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

#### 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

Front as per:

IP 40

IP 65 with spray cover

#### 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 0-2000 Hz, amplitude 1.5 mm, as per IEC 60512-4-4, IEC 60068-2-6

#### Climate resistance

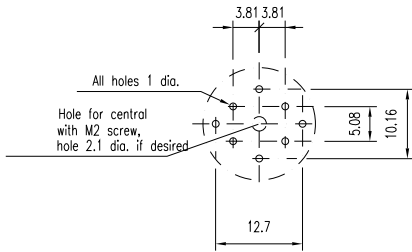
Standard condition, as per IEC 60068-2-3 and 2-30

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

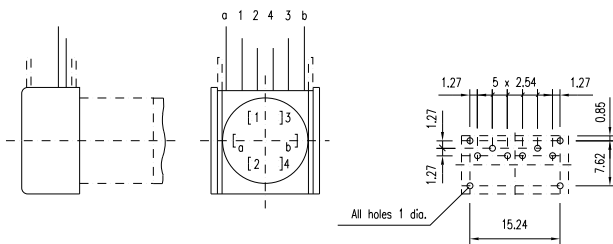
# Drawings

## Component layout

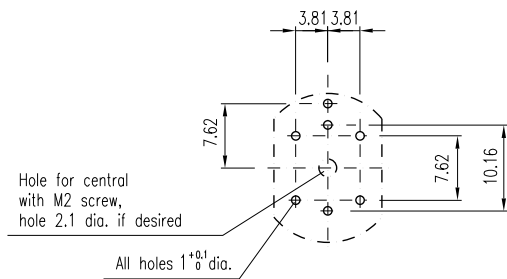
### 1 PCB plug-in base page 10



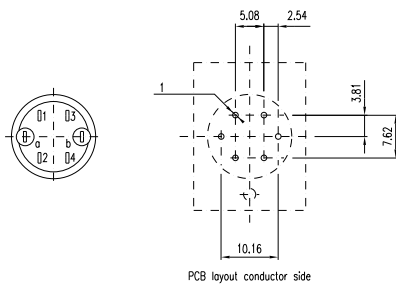
### 2 PCB plug-in base page 10



### 3 PCB plug-in base page 10



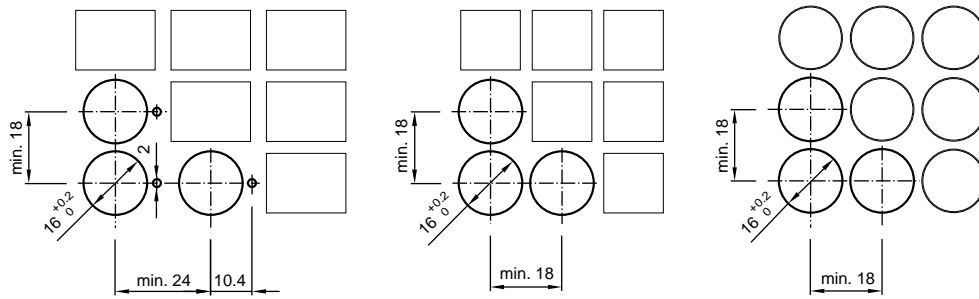
### 4 Indicator actuator page 6 | Illuminated pushbutton actuator page 7



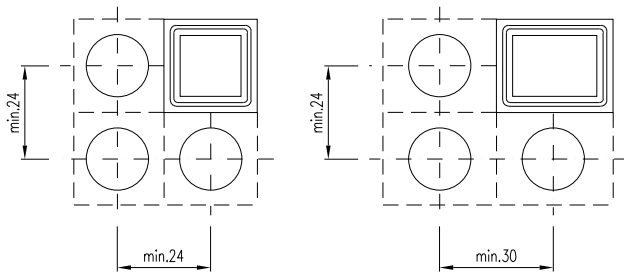
# Drawings

## Mounting dimensions

1 Indicator actuator page 6 | Buzzer page 6 | Illuminated pushbutton actuator page 7 | Blind plug page 9

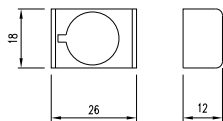


2 Front protective cap page 9

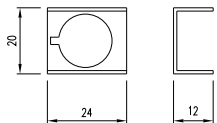


## Technical drawing

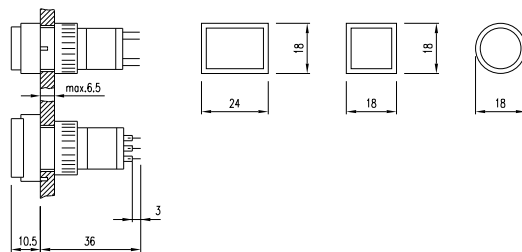
1 Protective guard page 9



2 Protective guard page 9

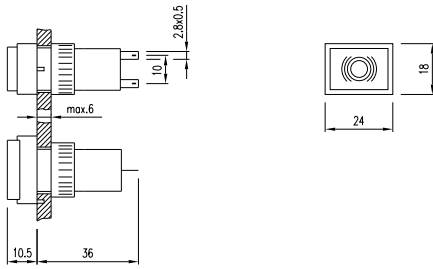


3 Indicator actuator page 6 | Illuminated pushbutton actuator page 7

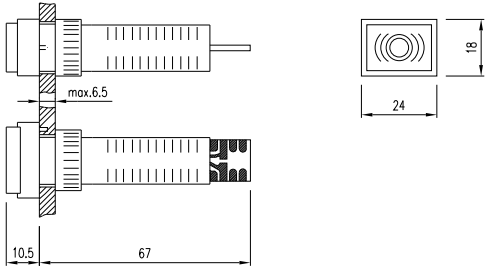


# Drawings

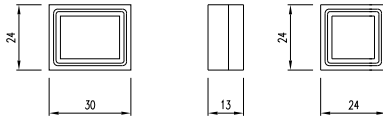
## 4 Buzzer page 6



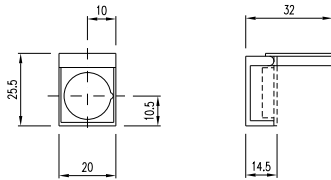
## 5 Buzzer page 6



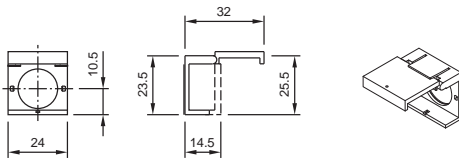
## 6 Front protective cap page 9



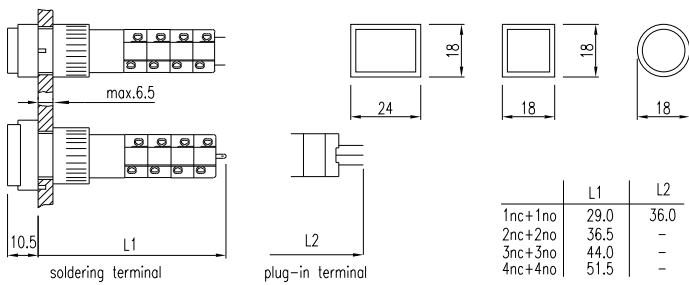
## 7 Protective cover page 8



## 8 Protective cover page 8

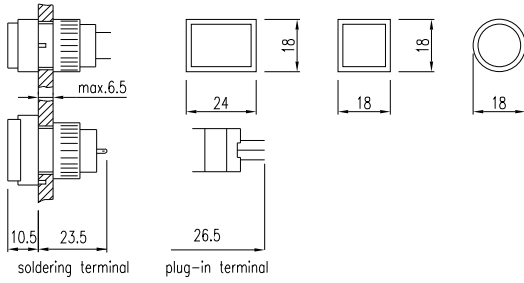


## 9 Illuminated pushbutton actuator page 7

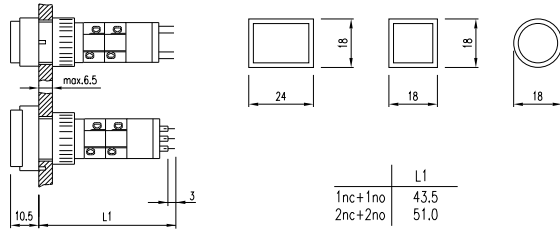


# Drawings

## 10 Indicator actuator page 6

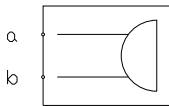


## 11 Illuminated pushbutton actuator page 7

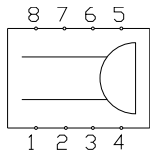


## Circuit drawing

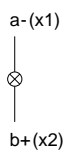
### 1 Buzzer page 6



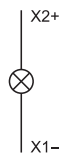
### 2 Buzzer page 6



### 3 Indicator actuator page 6



### 4 Indicator actuator page 6



### 5 Illuminated pushbutton actuator page 7

