

Devices raised mounting

Illuminated pushbutton actuator



| Illuminated pushbutton actuator | Front protection | Switching system | Contacts | Diode (1N 4007) | Switching action | Terminals | Ø 18 x 18 mm Typ-Nr. | Ø 18 x 24 mm Typ-Nr. | Ø 18 mm Typ-Nr. | Component layout | Mounting dimensions | Technical drawing | Circuit drawing | EPA | |
|---------------------------------|------------------|------------------|-------------|-----------------|------------------|-------------|-------------------------|-------------------------|--------------------|------------------|---------------------|-------------------|-----------------|-------|-------|
| | | | | | | | | | | | | | | | |
| 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 stachable, 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 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 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 mm²

Plug-in terminal: 2.0 x 0.5 mm

Actuating force

3 N ... 3,5 N

Actuating travel

3 mm

Rebound time

Typ. <100 μs

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 μA , 100 μV to 100 mA at 42 VAC/VDC

Electric strength

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

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

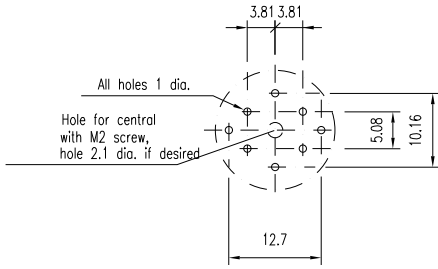
Standard condition, as per IEC 60068-2-3 and 2-30

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

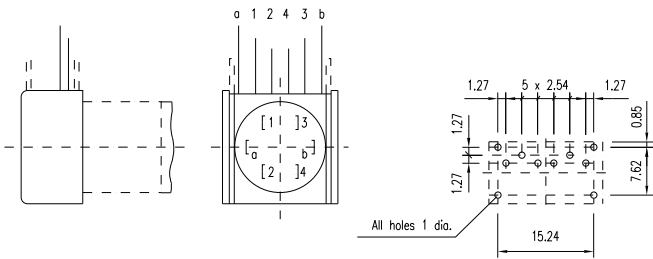
Drawings

Component layout

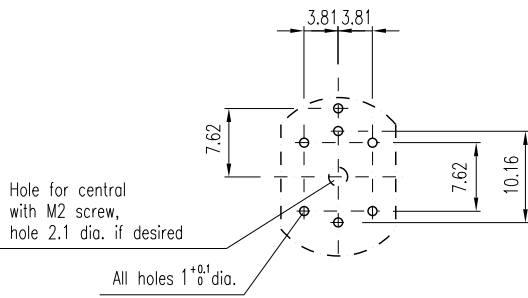
1 PCB plug-in base page 10



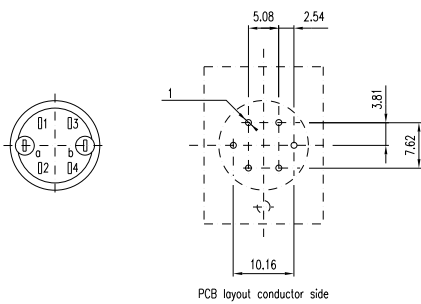
2 PCB plug-in base page 10



3 PCB plug-in base page 10



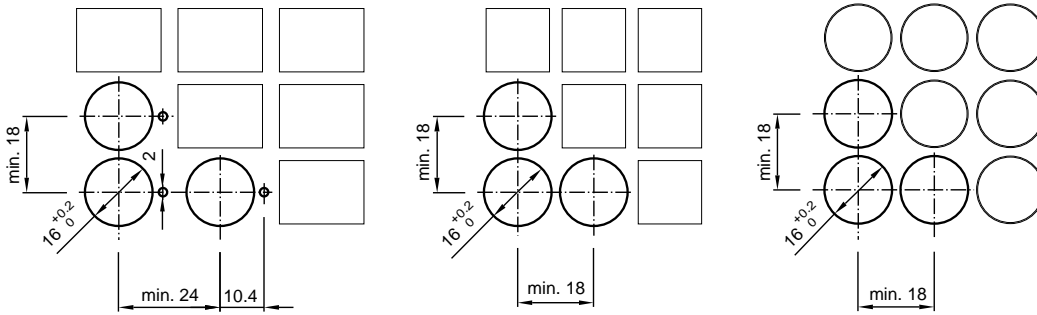
4 Indicator actuator page 6 | Illuminated pushbutton actuator page 7



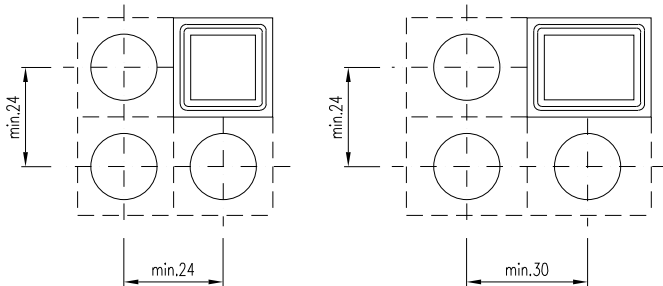
Drawings

Mounting dimensions

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

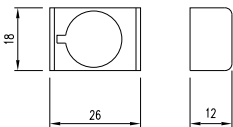


2 Front protective cap page 9

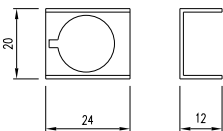


Technical drawing

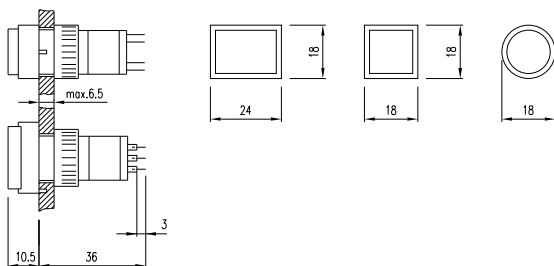
1 Protective guard page 9



2 Protective guard page 9

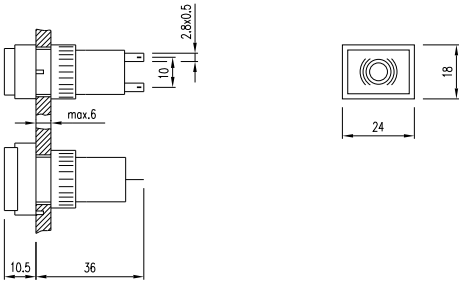


3 Indicator actuator page 6 | Illuminated pushbutton actuator page 7

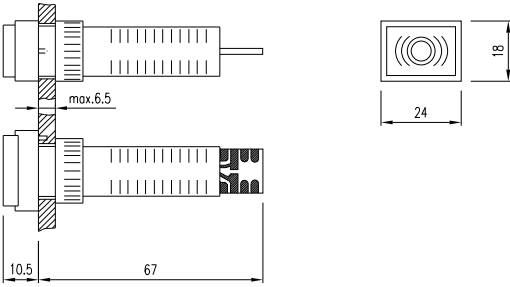


Drawings

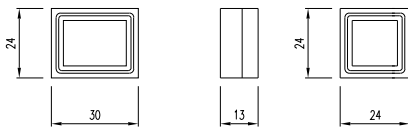
4 Buzzer page 6



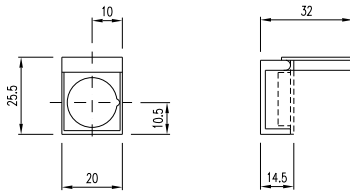
5 Buzzer page 6



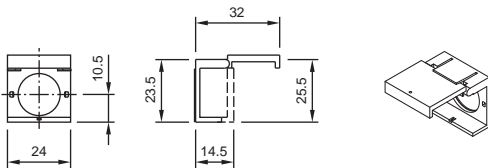
6 Front protective cap page 9



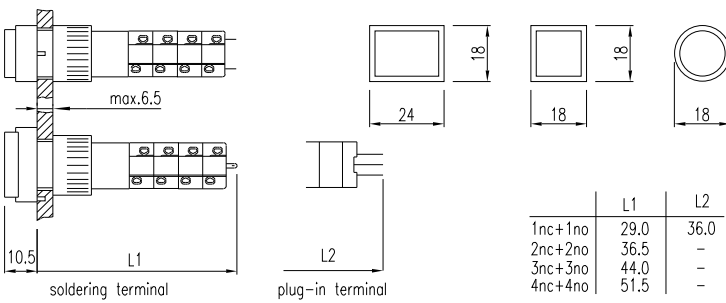
7 Protective cover page 8



8 Protective cover page 8

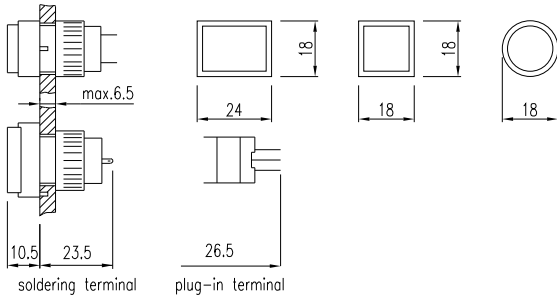


9 Illuminated pushbutton actuator page 7

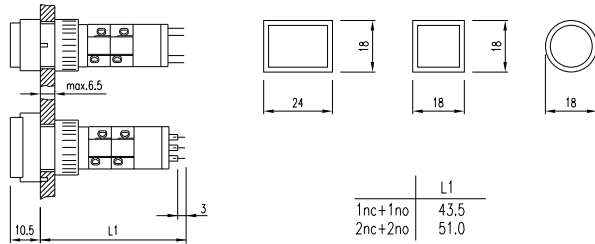


Drawings

10 Indicator actuator page 6

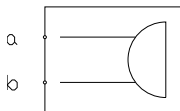


11 Illuminated pushbutton actuator page 7

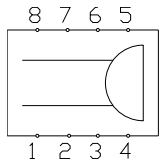


Circuit drawing

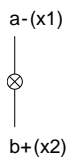
1 Buzzer page 6



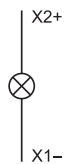
2 Buzzer page 6



3 Indicator actuator page 6



4 Indicator actuator page 6



5 Illuminated pushbutton actuator page 7

