

## General Notes

The Series 01 illuminated pushbuttons are equipped with snap-action, low level switching elements.

In addition to the standard contacts (gold-plated silver), on request silver contacts for switching elements 2.8 mm plug-in terminals are available. The front dimensions of these units are 18 x 24 mm, 18 x 18 mm or 18 mm dia.

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

## Mounting

Mount from the front through the mounting hole.

The universal terminals of the low-level switching elements permit them to be mounted on printed circuit boards (PCB).

These terminals are also suitable for dip soldering. 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. All rectangular switches are secured against rotation.

## Lenses

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

## Marking

For engraving, hot stamping and film inserts, see under "Marking" on page 33.

## Illumination

Perfect illumination of the different coloured lenses is assured by lamps T 5,5 (6-60 V).

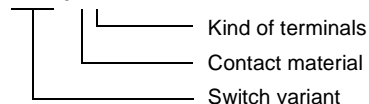
For supply voltages above 60 V, it is necessary to use a voltage reduction element (external series resistor, capacitor, or transformer). Do not solder the terminals directly, because of the high surface temperature. Multi-LED lamps T 5,5 (6, 12, 24, 48 V) are available in the colours white, red, yellow 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

01-XXX.OXX



01-9XX.X

Lens

Example:

-Illuminated pushbutton, circular; momentary action, gold-plated silver contact; soldered terminals, 1 switching element  
01-131.025

-Lens red

01-983.2

## Specimen order

### Indicator:

- indicator, soldering terminals, 18 x 24 mm 01-040.005

### Recommended accessories:

- lens, blue, 18 x 24 mm 01-982.6

- LED, 1 chip, 12 VDC, white 10-2109.3139

All dimensions in mm.

We reserve the right to modify technical data.

## illuminated-/pushbutton



### recommended accessories:

lens → 19

incandescent lamp → 21; LED → 22

illuminated-/pushbutton	switching system	contacts	diode (1N 4007)	switching action	connection method	18 x 24 mm			circuit drawing	technical drawing	mounting dimension	components layout		
						part no.	part no.	part no.						
illuminated-/pushbutton	LL	1NC	-	main	UT	01-466.036	01-486.036	01-476.036	14	3	1	1	0,009	
				mom	UT	01-426.036	01-456.036	01-436.036	28	3	1	1	0,009	
		1NC + 1NO	-	main	UT	01-463.036	01-483.036	01-473.036	17	3	1	1	0,009	
				mom	UT	01-423.036	01-453.036	01-433.036	31	3	1	1	0,009	
		1NO	-	main	UT	01-465.036	01-485.036	01-475.036	16	3	1	1	0,009	
				mom	UT	01-425.036	01-455.036	01-435.036	30	3	1	1	0,009	
		2NC	-	main	UT	01-462.036	01-482.036	01-472.036	15	3	1	1	0,009	
				mom	UT	01-422.036	01-452.036	01-432.036	29	3	1	1	0,009	
		2NO	-	main	UT	01-461.036	01-481.036	01-471.036	18	3	1	1	0,009	
				mom	UT	01-421.036	01-451.036	01-431.036	32	3	1	1	0,009	
		SA	1NC + 1NO	-	main	ST/PT	01-261.022	01-281.022	01-271.022	10	4	1	-	0,008
						ST	01-261.025	01-281.025	01-271.025	13	4	1	-	0,008
	mom				ST/PT	01-121.022	01-151.022	01-131.022	24	4	1	-	0,008	
					ST	01-121.025	01-151.025	01-131.025	27	4	1	-	0,008	
	1			main	UT	01-713.029	01-717.029	01-747.029	11	5	1	1	0,010	
					UT	01-705.029	01-709.029	01-743.029	25	5	1	1	0,010	
	2			main	UT	01-714.029	01-718.029	01-748.029	12	5	1	1	0,010	
					UT	01-706.029	01-710.029	01-744.029	26	5	1	1	0,010	
	2NC + 2NO			-	main	ST	01-262.025	01-282.025	01-272.025	9	4	1	-	0,010
						ST	01-122.025	01-152.025	01-132.025	23	4	1	-	0,010
				1	main	UT	01-715.029	01-719.029	01-749.029	7	5	1	1	0,012
						UT	01-707.029	01-711.029	01-745.029	21	5	1	1	0,012
		2	main	UT	01-716.029	01-720.029	01-750.029	8	5	1	1	0,012		
				UT	01-708.029	01-712.029	01-746.029	22	5	1	1	0,012		
3NC + 3NO	-	main	ST	01-263.025	01-283.025	01-273.025	6	4	1	-	0,012			
			ST	01-123.025	01-153.025	01-133.025	20	4	1	-	0,012			
4NC + 4NO	-	main	ST	01-264.025	01-284.025	01-274.025	5	4	1	-	0,014			
			ST	01-124.025	01-154.025	01-134.025	19	4	1	-	0,014			

switching system: LL = Low Level switching element, SA = snap-action switching element

switching action: main = maintained action, mom = momentary action

connection method: ST = soldering terminal; PT = plug-in terminal; UT = universal terminal; PCB plug-in base page 20

contacts: NC = normally closed, NO = normally open

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

marking see page 33

technical drawing as of page 27, mounting dimensions, components layouts as of page 29, circuit drawing as of page 31

## 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 not stachable, only 1 switching element can be on a pushbutton.

### material

#### actuator case

polyphenylene PPO, self-extinguishing

#### 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

### mechanical characteristics

#### actuating force

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

#### actuating travel

3 mm

#### 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-)

#### connection method

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

max. wire diameter: 2 wires of 1.2 mm

max. wire cross-section of stranded cable: 1x 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: 2 wires of 1 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>

#### degree of protection

front as per IEC 529:

IP 40

IP 67 with spray cover

#### mechanical life

momentary action 2 million cycles of operation

maintained action 1 million cycles of operation

#### rebound time

<= 5ms

#### 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

#### resistance to shock

(single impacts, semi-sinusoidal)

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

#### resistance to vibration

(sinusoidal)

10 g at 0-2000 Hz, amplitude 1.5 mm as per IEC 512-4-4, IEC 68-2-6

#### storage temperature

-40°C to + 85°C

(as per DIN IEC 68-)

### electrical characteristics

#### continuous thermal current I<sub>th2</sub>

5 A

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

#### electric strength

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

#### protection class

II

#### rated current

5 A

#### rated voltage

250 VAC/VDC

#### 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

#### volume resistance

starting value (initial) <= 50 mΩ

### rules

IEC 1058 EN 61 058

### approvals

- SEV 250 VAC/5A

- CSA 300 VAC

- UL

## actuator with Low Level switching element

### switching system

This low level switching element was designed for switching low powers in electronic circuits. The mechanism assures reliable switching of loads ranging from a few μA/μV up to 100 mA/42 VAC/ 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

#### actuator case

polyphenylene PPO, self-extinguishing

#### material of contacts

gold-plated

# Technical Data

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## switching element

polysulfone, heat-resistant and self-extinguishing

## mechanical characteristics

### actuating force

3-3.5 N

### actuating travel

3 mm

### 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-)

### 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 mm<sup>2</sup>

plug-in terminal:

2.0 x 0.5 mm

### degree of protection

front as per IEC 529:

IP 40

IP 67 with spray cover

### mechanical life

momentary action 5 mio. cycles of operation

maintained action 1 mio. cycles of operation

### rebound time

Typ. < 100 µs

### 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

### resistance to shock

(single impacts, semi-sinusoidal)

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

### storage temperature

-40°C to + 85°C

(as per DIN IEC 68-)

## electrical characteristics

### electric strength

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

### protection class

II

### switch rating

10 µA/100 µV to 100 mA at 42 VAC/VDC

### volume resistance

starting value (initial) <= 50 mΩ

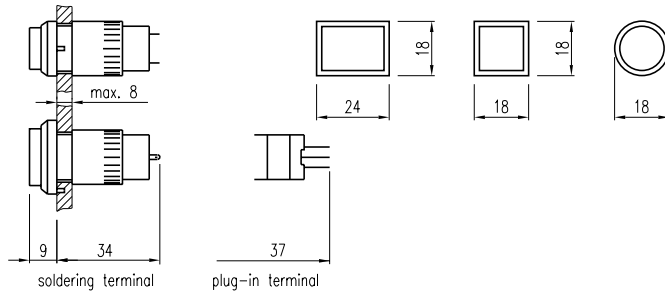
## rules

EN 61 058

## technical drawing

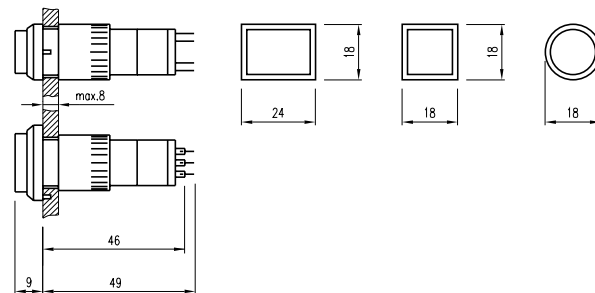
### 1 indicator

page 17



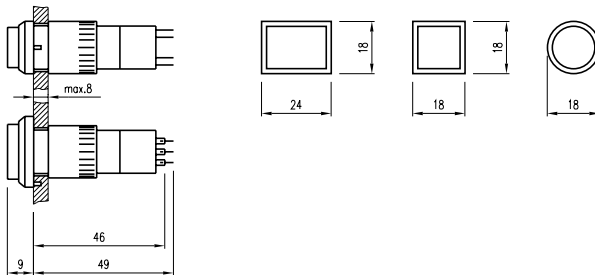
### 2 indicator

page 17



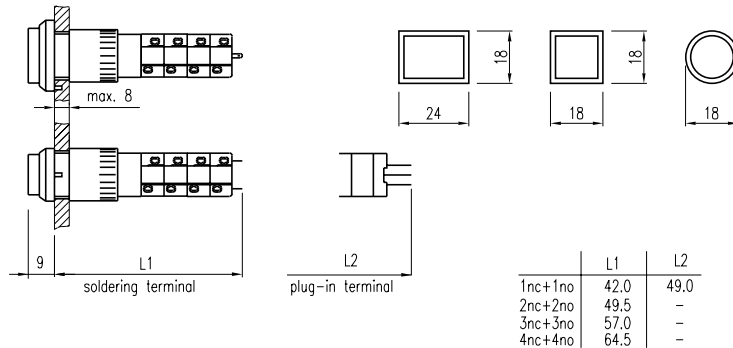
### 3 indicator, illuminated-/pushbutton

page 17, 18



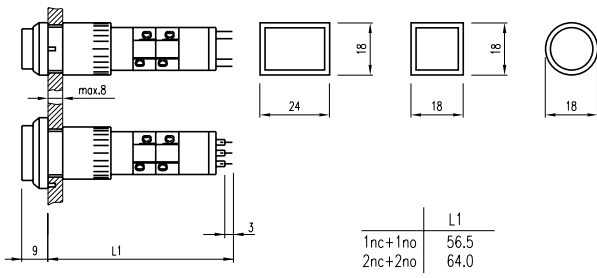
### 4 illuminated-/pushbutton

page 18



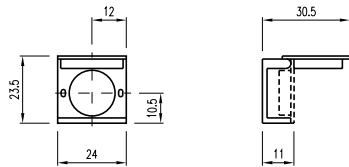
## 5 illuminated-/pushbutton

page 18



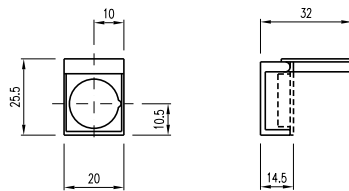
## 6 protective cover

page 19



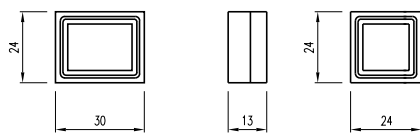
## 7 protective cover

page 19



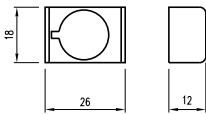
## 8 sprayproof cover

page 19



## 9 protective guard

page 20



## 10 protective guard

page 20

