

EAO Product Information

Series 19

eao ■



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Product Information

General notes

The series contains indicators and illuminated pushbuttons with maintained and momentary action and one contact which may be normally closed or normally open (snap-action element for closing). The illuminated pushbuttons are fitted with snap-action or low-level switching systems.

The front dimensions are 9 x 9 mm or 9 mm dia.

Mounting

Mounting from the front through the mounting hole is assured even when the wiring has already been attached.

The units are equipped with soldering/plug-in terminals.

Lenses

The flat lenses, made of polycarbonate, are obtainable in various colours. The transparent lens is available with translucent or transparent support.

Marking

A limited amount of marking can be provided.

Illumination

Perfect illumination of the different coloured lenses is assured by filament lamps Bi-Pin T1 longlife (6 - 24 V) or LED bi-pin T1. LED are available in the colours white, red, yellow, orange and green.

Luminosity and wave length scattering caused by the technology used in the LED manufacturing processes may lead to visual differences in our products.

Position indication

The status of a maintained action switch can be determined by the position of the lens.

Specimen order

Indicator :

- Indicator actuator, 9 mm dia., soldering terminal 19-030.005

Essential accessories :

- Lens plastic blue, transparent, flush, 9 mm dia. 19-931.6
- Single-LED, T1 Bi-Pin, 3.6 VDC, weiss 10-2603.3179C

*We reserve the right to modify technical data
All dimensions in mm*

Pushbutton illuminative, raised mounting



- 1 Lens
- 2 Switch housing
- 3 Fixing nut

Indicator actuator



Essential Accessories:

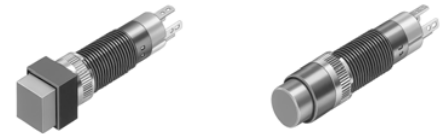
- Lens page 8
- Single-LED page 10

	Front protection	Terminals	\varnothing 9 x 9 mm Typ-Nr.	\varnothing 9 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	
Indicator actuator Mounting depth : 25 mm	IP 40	S/P	19-050.005	19-030.005	1	1	1	1	0.001
Mounting depth : 33 mm	IP 40	S/P	19-051.005	19-031.005	1	1	3	1	0.002

Terminals: S/P = Soldering-/plug-in terminal

Component layout from page 14, Mounting dimensions from page 14, Technical drawing from page 14, Circuit drawing from page 15

Illuminated pushbutton actuator



Essential Accessories:

- Lens page 8
- Single-LED page 10

	Front protection	Switching system	Contact material	Contacts	Switching action	Terminals	\varnothing 9 x 9 mm Typ-Nr.	\varnothing 9 mm Typ-Nr.	Component layout	Mounting dimensions	Technical drawing	Circuit drawing	
Illuminated pushbutton actuator	IP 40	LL	Au	1 NC	MA	S/P	19-482.035	19-472.035	2	1	2	2	0.002
					M	S/P	19-452.035	19-432.035	2	1	2	4	0.002
				1 NO	MA	S/P	19-481.035	19-471.035	2	1	2	3	0.002
					M	S/P	19-451.035	19-431.035	2	1	2	5	0.002
		SA	Au	1 NC	MA	S/P	19-289.035	19-279.035	2	1	2	3	0.002
					M	S/P	19-159.035	19-139.035	2	1	2	5	0.002
				1 NO	MA	S/P	19-289.015	19-279.015	2	1	2	3	0.002
					M	S/P	19-159.015	19-139.015	2	1	2	5	0.002

Switching system: LL = Low level switching element, SA = Snap-action switching element

Contact material: Au = Gold, Ag = Silver

Contacts: NC = Normally closed, NO = Normally open


Switching action: MA = Maintained action, M = Momentary action

Terminals: S/P = Soldering-/plug-in terminal

Component layout from page 14, Mounting dimensions from page 14, Technical drawing from page 14, Circuit drawing from page 15


Front

Lens

	Lens	□ 9 x 9 mm Typ-Nr.	∅ 9 mm Typ-Nr.	
illuminative	Plastic flush transparent blue	19-951.6	19-931.6	0.001
	Plastic flush transparent green	19-951.5	19-931.5	0.001
	Plastic flush transparent red	19-951.2	19-931.2	0.001
	Plastic flush transparent white	19-951.9	19-931.9	0.001
	Plastic flush transparent yellow	19-951.4	19-931.4	0.001
illuminative (not recommended for film insert)	Plastic flush transparent blue	19-952.6	19-932.6	0.001
	Plastic flush transparent colourless	19-952.7	19-932.7	0.001
	Plastic flush transparent green	19-952.5	19-932.5	0.001
	Plastic flush transparent red	19-952.2	19-932.2	0.001
non-illuminative	Plastic flush opaque black	19-951.0	19-931.0	0.001
	Plastic flush opaque grey	19-951.8	19-931.8	0.001



Blind plug


	Blind plug	□ 9 x 9 mm Typ-Nr.	∅ 9 mm Typ-Nr.	Mounting dimensions	
Blind plug	Plastic black	19-948.0	19-949.0	1	0.001

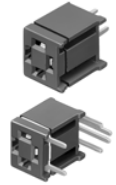


Mounting dimensions from page 14

Backside


PCB plug-in base

	Terminals	Typ-Nr.	Component layout		Technical drawing	
PCB plug-in base Pins axial	P	19-940	4	4	0.001	
Pins bent at right-angles	P	19-941	3	5	0.001	




Terminals: P = PCB terminal
Component layout from page 14, Technical drawing from page 14

Flat receptacle

	Typ-Nr.	
Flat receptacle 2.0 x 0.5 mm for Universal terminal	31-945	0.001




Insulation sleeve

	Typ-Nr.	
Insulation sleeve for Flat receptacle 31-945	31-928	0.001



Illumination

Filament lamp

	Socket	Operating voltage/-current	Typ-Nr.	
Filament lamp max. PIN length 5 mm	T1 Bi-Pin	12 VAC/DC, 25 mA	10-1609.1199	0.001
		24 VAC/DC, 20 mA	10-1612.1179	0.001
		6 VAC/DC, 70 mA	10-1606.1309	0.001




Single-LED

	Socket	Light colour	Operating voltage/-current	Typ-Nr.	
Single-LED max. PIN length 8 mm	T1 Bi-Pin	green	2.2 VDC, 20 mA	10-2602.3175C	0.001
		red	2.2 VDC, 20 mA	10-2602.3172C	0.001
		white	3.6 VDC, 20 mA	10-2603.3179C	0.001
		yellow	2.2 VDC, 20 mA	10-2602.3174C	0.001




Multi-LED

	Socket	Light colour	Operating voltage/-current	Typ-Nr.	
Multi-LED max. PIN length 5 mm	T1 Bi-Pin	green	28 VDC, 12 mA	10-4613.3105B	0.001
		orange	28 VDC, 12 mA	10-4613.3103B	0.001
		red	28 VDC, 12 mA	10-4613.3102B	0.001
		yellow	28 VDC, 12 mA	10-4613.3104B	0.001




Assembling

Fixing nut

	Typ-Nr.	
Fixing nut 9 x 13 mm dia., only for sheet <3 mm panel thickness	19-991	0.001




Dressing tool

	Typ-Nr.	
Dressing tool for aligning buttons	19-906	0.011




Lens remover

	Typ-Nr.	
Lens remover	19-910	0.002



Lamp remover


	Typ-Nr.	
Lamp remover	11-906	0.003



CAUTION

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

Mounting tool

	Typ-Nr.	
Mounting tool for tightening or loosening of the Fixing nut	19-905	0.011



Actuator with snap-action switching element

Switching system

Single-break, snap-action switching system.
1 normally open contact

Material

Material of contact

Gold plated Silver, Silver plated

Switch housing

Polyetherimide (PEI), self-extinguishing

Actuator housing

Polyphenyleneoxide (PPO), self-extinguishing, colour black

Mechanical characteristics

Terminals

Universal terminal:
Max. wire diameter 2 x 0.8 mm
Max. wire cross-section of stranded cable 1 x 0.75 mm²

Plug-in terminal: 2.0 x 0.5 mm

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.

Tightening torque

for fixing nut max. 20 Ncm

Actuating force

1.6 N

Actuating travel

2.8 mm ±0.2 mm

Mechanical lifetime

2 million operations

Electrical characteristics

Switch rating

Silver plated:
Max. 50 VAC / 72 VDC, 0.8 A or 50 W
Min. 20 V, 10 mA
Gold plated:
Max. 50 VAC / 72 VDC, 100 mA or 5 W
Min. 100 µV, 50 µA

Electric strength

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

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Service temperature

without illumination -25 °C ... +65 °C
with incandescent lamp -25 °C ... +45 °C
with LED -25 °C ... +65 °C
for indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely

Protection degree

IP 40 front side, as per IEC 60529

Approvals

RoHS compliant

Actuator with low level switching element

Switching system

This low-level switching system was designed for switching low powers in electronic circuits. The switching system assures reliable switching of loads.

Single-break momentary contact, as normally open or normally closed with 4 independent points of contact.

Special features are the long life, extremely short rebound time and stable contact resistance.

1 normally open or 1 normally closed contact.

Material

Material of contact

Gold plated

Actuator housing

Polyphenyleneoxide (PPO), self-extinguishing, colour black

Mechanical characteristics

Terminals

Universal terminal:
Max. wire diameter 2 x 0.8 mm
Max. wire cross-section of stranded cable 1 x 0.75 mm²

Plug-in terminal: 2.0 x 0.5 mm

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.

Tightening torque

for fixing nut max. 20 Ncm

Actuating force

1.8 N ±0.3 N

Actuating travel

2.8 mm ±0.2 mm

Rebound time

Typ. <100 µs

Mechanical lifetime

5 million operations

Electrical characteristics

Contact resistance

≤50 mΩ starting value (initial) as per IEC 60512-2-2b

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

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Service temperature

without illumination -25 °C ... +65 °C

with incandescent lamp -25 °C ... +45 °C

with LED -25 °C ... +65 °C

for indicators and illuminated pushbuttons mounted as a block,
make sure the heat can escape freely

Protection degree

IP 40 front side, as per IEC 60529

Shock resistance

(Single impacts, semi-sinusoidal)

15 g for 11 ms, as per IEC 60512-4-3, IEC 60068-2-27

Approvals

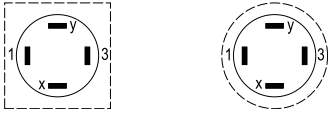
RoHS compliant

Component layout

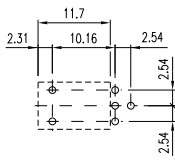
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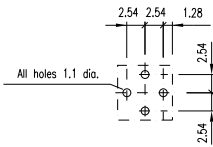
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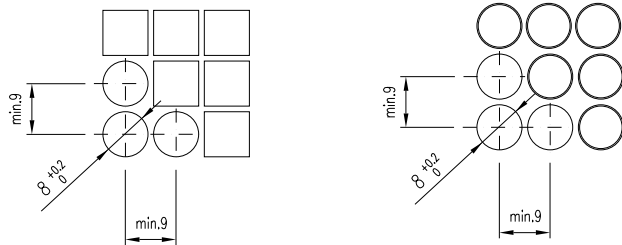


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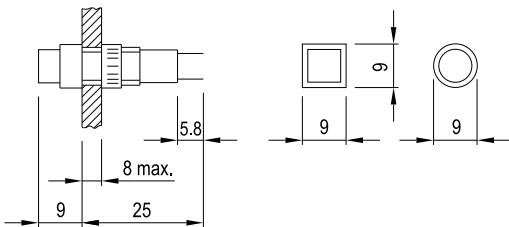
Mounting dimensions

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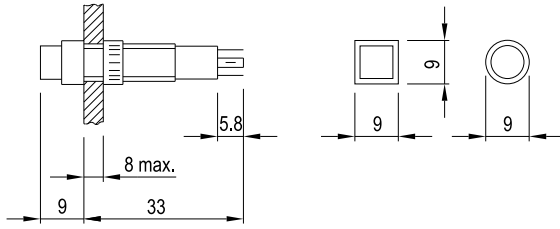


Technical drawing

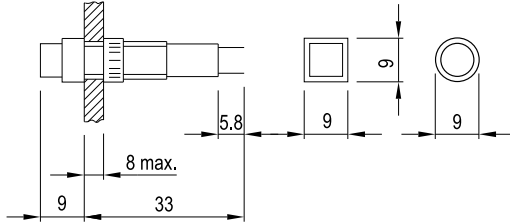
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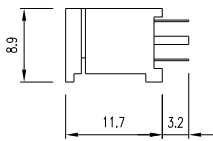
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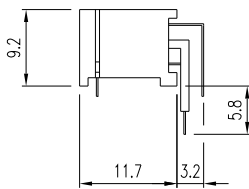
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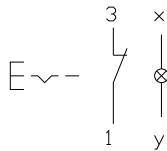


Circuit drawing

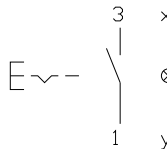
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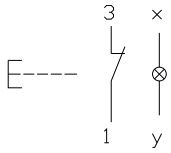
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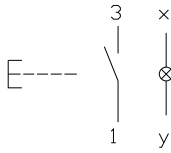
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4 Illuminated pushbutton actuator page 7



5 Illuminated pushbutton actuator page 7



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10-2602.3175C	10				
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