

EAO Product Information

Series 19



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Series 19

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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 (mounting dimensions and spacing see page 233.)
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

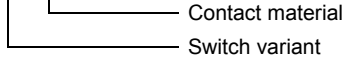
Perfect illumination of the different coloured lenses is assured by filament lamps bipin T1 longlife (6 - 24 V) or LED bi-pin T1. LED are available in the colours white, red, yellow, and green.

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

19-XXX.0X5



19-9XX.X

Lens

19-9XX.X

Other accessories

Example:

-Illuminated pushbutton; round, momentary action, gold-plated silver contact, soldering terminals
19-139.035

-Lens, round, red
19-931.2

Specimen order

Indicator

- indicator, 25mm, 9mm dia. 19-030.005

Recommended accessories:

- lens, blue, 9mm dia. 19-931.6

- LED, 1 chip, white 10-2603.3179C

All dimensions in mm.

We reserve the right to modify technical data.

illuminated-/pushbutton



- 1 lens
- 2 switch housing
- 3 fixing nut

indicator



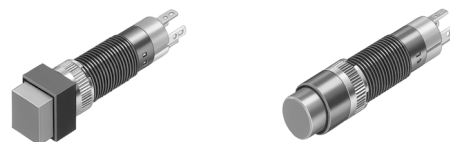
- 🛒 lens page 228
- 🛒 filament lamp page 229
- 🛒 LED page 229

	mounting depth	connection method	9 x 9 mm Typ-Nr.	9 mm dia. Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	component layout	
indicator	25 mm	-	19-050.005	19-030.005	1	1	1	1	0,001
	33 mm	-	19-051.005	19-031.005	1	2	1	1	0,002

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

circuit drawings from page 233, technical drawings from page 232, mounting dimensions from page 232, component layouts from page 233

illuminated-/pushbutton



- 🛒 lens page 228
- 🛒 filament lamp page 229
- 🛒 LED page 229

	switching system	contacts	switching action	connection method	9 x 9 mm Typ-Nr.	9 mm dia. Typ-Nr.	circuit drawing	technical drawing	mounting dimensions	component layout	
illuminated-/pushbutton	LL	1 NO Au	M	-	19-451.035	19-431.035	2	3	1	2	0,002
			MA	-	19-481.035	19-471.035	3	3	1	2	0,002
		1 NC Au	M	-	19-452.035	19-432.035	4	3	1	2	0,002
			MA	-	19-482.035	19-472.035	5	3	1	2	0,002
	SA	1 NO Ag	M	-	19-159.015	19-139.015	2	3	1	2	0,002
			MA	-	19-289.015	19-279.015	3	3	1	2	0,002
		1 NO Au	M	-	19-159.035	19-139.035	2	3	1	2	0,002
			MA	-	19-289.035	19-279.035	3	3	1	2	0,002

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

contacts


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

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

circuit drawings from page 233, technical drawings from page 232, mounting dimensions from page 232, component layouts from page 233


for illumination

Filament lamp

	voltage/current	part no.	
Filament lamp base T 1 Bi-Pin max. PIN length 5 mm	6 AC/DC/70mA	10-1606.1309 (19-903.00)	0,001
	12 AC/DC/25 mA	10-1609.1199 (19-903.10)	0,001
	24 AC/DC/20 mA	10-1612.1179 (19-903.30)	0,001



LED

	number of chips	voltage/current	colour	part no.	
LED base T 1 Bi-Pin max. PIN length 5 mm	4 chips	28 VDC/12 mA	yellow	10-4613.3104B (11-968.34)	0,001
			green	10-4613.3105B (11-968.35)	0,001
			orange	10-4613.3103B (11-968.33)	0,001
			red	10-4613.3102B (11-968.32)	0,001
base T 1 Bi-Pin max. PIN length 8 mm	1 chip	2.2 VDC/20 mA	yellow	10-2602.3174C (19-943.04)	0,001
			green	10-2602.3175C (19-943.05)	0,001
			red	10-2602.3172C (19-943.02)	0,001
		3.6 VDC/20 mA	white	10-2603.3179C	0,001




assembling

fixing nut

	part no.	
fixing nut 9 x 13 mm dia. only for sheet < 3 mm thick	19-991	0,001



dressung tool

	part no.	
dressung tool for aligning buttons	19-906	0,011




lens remover

	part no.	
lens remover	19-910	0,002




lamp remover

	part no.	
lamp remover	11-906	0,003




mounting tool

	part no.	
mounting tool for tightening (or loosening) fixing nuts starting torque fixing nut max. 20 Ncm	19-905	0,011




at front

lens

	shape	lens/support	colour	9 x 9 mm Typ-Nr.	9 mm dia. Typ-Nr.	
lens plastic	flat	transparent/translucent	blue	19-951.6	19-931.6	0,001
			yellow	19-951.4	19-931.4	0,001
			green	19-951.5	19-931.5	0,001
			red	19-951.2	19-931.2	0,001
			white	19-951.9	19-931.9	0,001
of plastic, opaque/translucent (not for film insert and illumination)	flat	opaque/translucent	grey	19-951.8	19-931.8	0,001
			black	19-951.0	19-931.0	0,001
plastic, transparent/transparent (not recommended for film insert)	flat	transparent/transparent	blue	19-952.6	19-932.6	0,001
			colourless, clear	19-952.7	19-932.7	0,001
			yellow	19-952.4	19-932.4	0,001
			green	19-952.5	19-932.5	0,001
			red	19-952.2	19-932.2	0,001




blind plug

	colour	9 x 9 mm Typ-Nr.	9 mm dia. Typ-Nr.	
blind plug	black	19-948.0	19-949.0	0,001

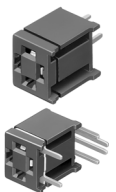


at back


PCB plug-in base

	for	pin orientation	part no.	technical drawing	component layout	
PCB plug-in base	plug-in terminal	right-angled	19-941	5	4	0,001
		axial	19-940	4	3	0,001

technical drawings from page 232, component layouts from page 233



cable shoe

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



insulation socket

	part no.	
insulation socket for cable shoe 31-945	31-928	0,001



switching system

switching system

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

material

material of contacts

gold plated silver, silver plated

switching element

polyetherimide PEI, self-extinguishing

actuator case

polyphenyleneoxid, self-extinguishing, colour black

mechanical characteristics

connection method

universal terminal:
max. wire diameter: 2 of 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.

starting torque

for fixing nut max. 20 Ncm

actuating force

1.6 N

storage temperature

-40°C to + 85°C
(as per DIN IEC 68-)

mechanical life

2 million operations

travel

2.8 mm ± 0.2 mm

degree of protection

front as per IEC 529: IP 40

ambient air temperature

without illumination - 25°C to + 65°C
with incandescent lamp - 25°C to + 45°C
with LED - 25°C to + 65°C
for indicators and illuminated pushbuttons mounted as a block,
make sure the heat can escape freely
(as per DIN IEC 68-)

electrical characteristics

switch rating

silver plated
max.: 50 VAC/72 VDC, 0.8 A or 50 W
min.: 20V, 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 512-2-11.

actuator with Low Level switching element

switching system

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 contacts

gold-plated

actuator case

polyphenyleneoxid, self-extinguishing, colour black

mechanical characteristics

connection method

universal terminal:
max. wire diameter: 2 of 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.

starting torque

for fixing nut max. 20 Ncm

actuating force

1.8 N ± 0.3

storage temperature

-40°C to + 85°C
(as per DIN IEC 68-)

mechanical life

5 million operations

rebound time

type. < 100 µs

travel

2.8 mm ± 0.2 mm

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

ambient air temperature

without illumination - 25°C to + 65°C

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

with LED - 25°C to + 65°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**

$\leq 50 \text{ m}\Omega$ starting value (initial) as per IEC 512-2, test 2b

switch rating

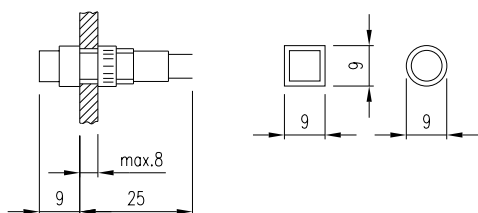
10 μA /100 μV to 100 mA at 42 VAC/VDC

electric strength

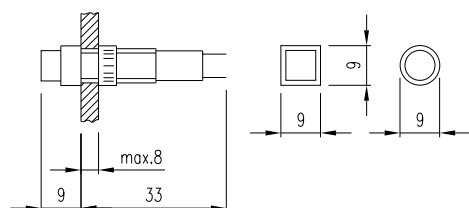
2500 VAC, 50 Hz, 1 min. between all terminals and earth, as per IEC 512-2-11.

technical drawings

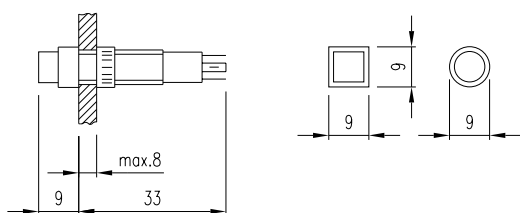
1 indicator



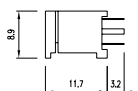
2 indicator



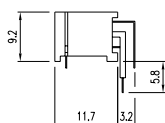
3 illuminated-/pushbutton



4 PCB plug-in base

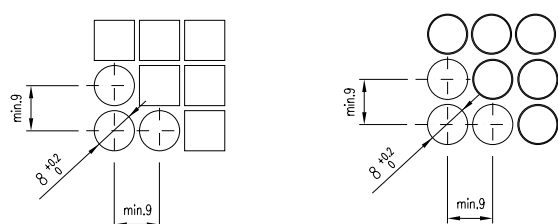


5 PCB plug-in base



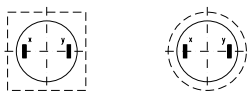
mounting dimensions

1 indicator, illuminated-/pushbutton

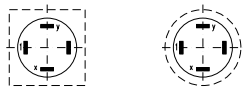


component layouts

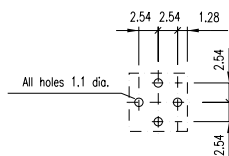
1 indicator



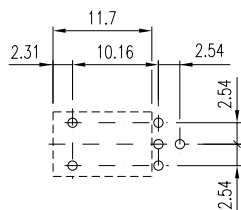
2 illuminated-/pushbutton



3 PCB plug-in base



4 PCB plug-in base

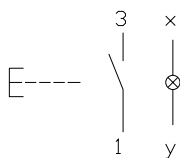


circuit drawings

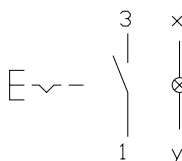
1 indicator



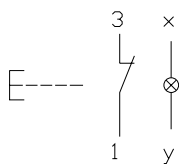
2 illuminated-/pushbutton



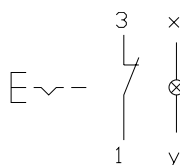
3 illuminated-/pushbutton



4 illuminated-/pushbutton



5 illuminated-/pushbutton



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