



EAO Product Information

Series 84



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Series 84

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General information

The 84 series is a modular system of pushbuttons consisting of lenses, actuator elements, switching units and a variety of means of connection and mounting. The front protection IP 67 ensures that the illuminated pushbuttons are suited for industrial use. The IP 40 version is available for reduced protection.

Mounting

The actuators of the series 84 are inserted in the mounting hole 22.5 mm dia. and the switching units are clipped on to the rear of the actuators. The torque with which the fixing sleeve is tightened is max. 80 Ncm. The pushbutton system can be mounted as a complete unit (actuator and switching unit). Mounting from the front with the wiring already attached is also possible.

When mounted on printed circuit boards the actuators are inserted in the mounting hole 22.5 mm dia. and the switching elements are fixed on the board. The PCB is connected to the preassembled actuator by means of the mounting flange. There is no need for subsequent adjustment or spacing studs.

Lenses

The flat lenses are available in various colours and made either from plastic, or anodized aluminium.

Marking

The actuators of the series 84 can be marked by any of the following methods: engraving, hot pressing, laser, marking plate.

Please provide marking details.

Illumination

To ensure full illumination, the switching elements can be supplied with an integrated Multi-LED in any of the colours red, yellow, orange or green. LED load 20 mA (24 VDC) or 40 mA (12 VDC). Series resistor integrated.

Switching system

Snap-action blade switching system with 2 independent contact points and tactile operation. Guarantees reliable switching even of very light loads. Fitted with 1 normally open contact.

Specimen orderIndicator

- indicator actuator, IP40	84-2101.0
Recommended accessories:	
- lens plastic, yellow	84-7111.400
- indicator element, IP40, Multi-LED, yellow, soldering-/ plug-in terminal	84-8102.4620

or

Indicator with PCB terminal

- indicator actuator, IP40	84-2101.0
<u>Recommended accessories:</u>	
- lens plastic yellow	84-7111.400
- indicator element with PCB terminal	92-800.042
- LED, 1 chip, yellow	10-2602.3174D
- mounting flange	92-960.0

All dimensions in mm.

We reserve the right to modify technical data.

indicator, illuminated-/pushbutton 25 mm dia.



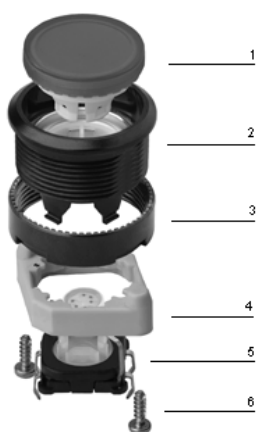
- 1 lens
- 2 actuator case
- 3 fixing nut
- 4 switching element with soldering-/plug-in terminal

indicator, illuminated-/pushbutton 40 mm dia.

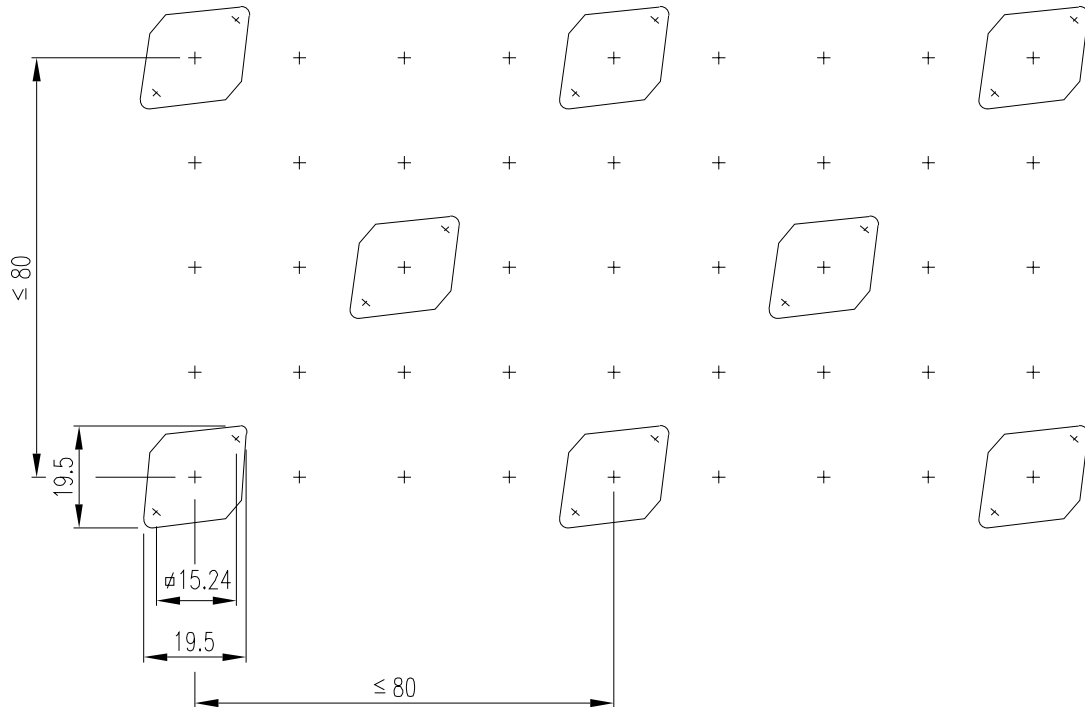


- 1 actuator
- 2 fixing nut
- 3 switching element with flat ribbon cable

indicator, illuminated-/pushbutton PCB version



- 1 lens
- 2 actuator case
- 3 fixing nut
- 4 mounting flange
- 5 switching element for PCB terminal
- 6 fixing screw



The arrangement of the mounting flanges and their number is determined by the size of the front panel or PCB. To ensure uniform, tactile switching, we recommend a layout of the mounting flanges as per the adjacent sketch. For large PCBs with several switching elements we recommend the following mounting procedure:

1. Fit the actuator to the front panel
 2. Clip the mounting flange to the rear of the intended actuator
 3. Screw the PCB with the components soldered to it to the assembled mounting flange
- This arrangement applies to PCBs 1.6 mm thick.

indicator actuator



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	degree of protection	front ring	25 mm dia. Typ-Nr.	technical drawing mounting dimensions		
indicator actuator	IP 40	plastic black	84-3100.0	1	1	0,008
	IP 67	aluminium natural	84-0200.7	1	1	0,008
		plastic black	84-0100.0	1	1	0,008

technical drawings from page 551, mounting dimensions from page 553

illuminated-/pushbutton actuator



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	switching action	degree of protection	front ring	25 mm dia.	40 mm dia.	circuit drawing			technical drawing	mounting dimensions	Eco
				Typ-Nr.	Typ-Nr.						
illuminated-/pushbutton actuator	M	IP 40	plastic black	84-2101.0		1	1	1	0,008		
		IP 67	aluminium natural	84-1201.7		1	1	1	0,008		
					84-1221.7	1	2	2	0,015		
			plastic black	84-1101.0		1	1	1	0,008		

switching action : momentary action = M

circuit drawings from page 554, technical drawings from page 551, mounting dimensions from page 553

at front


lens plastic

	shape	lens	colour	25 mm dia. Typ-Nr.	
lens plastic	flat	opaque	grey	84-7121.800	0,001
			black	84-7121.000	0,001
		transparent	blue	84-7111.600	0,001
			colourless, clear	84-7111.700	0,001
			yellow	84-7111.400	0,001
			green	84-7111.500	0,001
			orange	84-7111.300	0,001
			red	84-7111.200	0,001




marking plate

for lens, plastic

	front shape	marking plate	colour	part no.	
marking plate can be hot pressed	round	transparent	clear	61-9707.7	0,001




lens metal with window

	shape	lens	colour	25 mm dia. Typ-Nr.	
lens metal with window	flat	aluminium anodized	natural	84-7211.800	0,002




lens metal

	shape	lens	colour	25 mm dia. Typ-Nr.	
lens metal	flat	aluminium anodized	blue	84-7201.600	0,001
			yellow	84-7201.400	0,001
			green	84-7201.500	0,001
			natural	84-7201.800	0,001
			red	84-7201.200	0,001
			black	84-7201.000	0,001




blind plug

	colour	28 mm dia. Typ-Nr.	
blind plug for mounting hole 22 mm dia.	black	704.960.7	0,004



protective front membrane cap

	material	colour	part no.	
protective front membrane cap	silicone natural	transparent	84-9103.7	0,001



at back

indicator element

incl. illumination

indicator element	degree of protection	illumination	operation voltage	colour of LED	connection method	part no.	circuit drawing		technical drawing
indicator element	IP 40	Multi-LED	24 VDC/20 mA	yellow	F 300 mm	84-8102.4640	2	1	0,030
					-	84-8102.4620	2	1	0,030
				green	F 300 mm	84-8102.5640	2	1	0,030
					-	84-8102.5620	2	1	0,030
				orange	F 300 mm	84-8102.3640	2	1	0,030
					-	84-8102.3620	2	1	0,030
		red	F 300 mm	84-8102.2640	2	1	0,030		
			-	84-8102.2620	2	1	0,030		
		single-LED	24 VDC/20 mA	yellow	F 300 mm	84-8101.4640	2	1	0,030
					-	84-8101.4620	2	1	0,030
				green	F 300 mm	84-8101.5640	2	1	0,030
					-	84-8101.5620	2	1	0,030
				orange	F 300 mm	84-8101.3640	2	1	0,030
					-	84-8101.3620	2	1	0,030
		red	F 300 mm	84-8101.2640	2	1	0,030		
			-	84-8101.2620	2	1	0,030		
		white	F 300 mm	84-8101.9640	2	1	0,030		
			-	84-8101.9620	2	1	0,030		
	IP 67	Multi-LED	12 VDC/40 mA	yellow	F 300 mm	84-8002.4340	2	1	0,030
					-	84-8002.4320	2	1	0,030
				green	F 300 mm	84-8002.5340	2	1	0,030
					-	84-8002.5320	2	1	0,030
				orange	F 300 mm	84-8002.3340	2	1	0,030
					-	84-8002.3320	2	1	0,030
			red	F 300 mm	84-8002.2340	2	1	0,030	
				-	84-8002.2320	2	1	0,030	
			24 VDC/20 mA	yellow	F 300 mm	84-8002.4640	2	1	0,030
					-	84-8002.4620	2	1	0,030
				green	F 300 mm	84-8002.5640	2	1	0,030
					-	84-8002.5620	2	1	0,030
		orange		F 300 mm	84-8002.3640	2	1	0,030	
				-	84-8002.3620	2	1	0,030	
		red	F 300 mm	84-8002.2640	2	1	0,030		
			-	84-8002.2620	2	1	0,030		
		single-LED	12 VDC/20 mA	white	F 300 mm	84-8001.9340	2	1	0,030
					-	84-8001.9320	2	1	0,030
24 VDC/20 mA	white			F 300 mm	84-8001.9640	2	1	0,030	
			-	84-8001.9620	2	1	0,030		
	-		84-8001.9620	2	1	0,030			

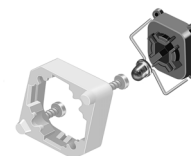


circuit drawings from page 554, technical drawings from page 551

indicator element with PCB terminal

illumination and mounting flange to be ordered separately

	part no.	technical drawing	component layout	kg
indicator element with PCB terminal	92-800.042	3	1	0,001



technical drawings from page 551, component layouts from page 553




switching element incl. illumination

	degree of protection	illumination	operation voltage	colour of LED	connection method	part no.	circuit drawing	technical drawing	kg
switching element incl. illumination momentary action 1 NO	IP 40	Multi-LED	24 VDC/20 mA	yellow	F 300 mm	84-8612.4640	3	1	0,090
				-	-	84-8612.4620	3	1	0,090
				green	F 300 mm	84-8612.5640	3	1	0,090
				-	-	84-8612.5620	3	1	0,090
				orange	F 300 mm	84-8612.3640	3	1	0,090
				-	-	84-8612.3620	3	1	0,090
				red	F 300 mm	84-8612.2640	3	1	0,090
		-	-	84-8612.2620	3	1	0,090		
		single-LED	24 VDC/20 mA	yellow	F 300 mm	84-8611.4640	3	1	0,090
		-		-	84-8611.4620	3	1	0,090	
		green		F 300 mm	84-8611.5640	3	1	0,090	
		-		-	84-8611.5620	3	1	0,090	
		orange		F 300 mm	84-8611.3640	3	1	0,090	
		-		-	84-8611.3620	3	1	0,090	
	red	F 300 mm		84-8611.2640	3	1	0,090		
	-	-	84-8611.2620	3	1	0,090			
	white	F 300 mm	84-8611.9640	3	1	0,090			
	-	-	84-8611.9620	3	1	0,090			
	IP 67	Multi-LED	12 VDC/40 mA	yellow	F 300 mm	84-8512.4340	3	1	0,090
				-	-	84-8512.4320	3	1	0,090
				green	F 300 mm	84-8512.5340	3	1	0,090
				-	-	84-8512.5320	3	1	0,090
				orange	F 300 mm	84-8512.3340	3	1	0,090
				-	-	84-8512.3320	3	1	0,090
				red	F 300 mm	84-8512.2340	3	1	0,090
			-	-	84-8512.2320	3	1	0,090	
			24 VDC/20 mA	blue	F 300 mm	84-8512.6640	3	1	0,090
			-	-	84-8512.6620	3	1	0,090	
yellow			F 300 mm	84-8512.4640	3	1	0,090		
-			-	84-8512.4620	3	1	0,090		
green			F 300 mm	84-8512.5640	3	1	0,090		
-			-	84-8512.5620	3	1	0,090		
orange		F 300 mm	84-8512.3640	3	1	0,090			
-		-	84-8512.3620	3	1	0,090			
red		F 300 mm	84-8512.2640	3	1	0,090			
-		-	84-8512.2620	3	1	0,090			
single-LED		12 VDC/20 mA	white	F 300 mm	84-8511.9340	3	1	0,090	
-		-	84-8511.9320	3	1	0,090			
24 VDC/20 mA		white	F 300 mm	84-8511.9640	3	1	0,090		
-		-	84-8511.9620	3	1	0,090			



circuit drawings from page 554, technical drawings from page 551

switching element without illumination

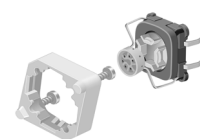
	degree of protection	connection method	photo	part no.	circuit drawing	technical drawing	
switching element without illumination momentary action 1 NO	IP 40	F 300 mm		84-8610.0040	4	1	0,090
		-		84-8610.0020	4	1	0,090
	IP 67	F 300 mm		84-8510.0040	4	1	0,090
		-		84-8510.0020	4	1	0,090

circuit drawings from page 554, technical drawings from page 551

switching element with PCB terminal


illumination and mounting flange to be ordered separately

	part no.	circuit drawing	technical drawing	component layout	
switching element with PCB terminal momentary action, 1 NO, front protection IP 40	92-851.342	5	4	2	0,001




circuit drawings from page 554, technical drawings from page 551, component layouts from page 553

cable shoe

	connection method	part no.	
cable shoe	plug-in terminal 2.8 x 0.8 mm	84-9420	0,001



insulation socket


	part no.	
insulation socket for connector 84-9420	31-929	0,001



for illumination

LED

for indicator/switching element with PCB terminal

	number of chips	voltage/current	colour	part no.	
LED base T 1 Bi-Pin	1 chip	2.2 VDC/20 mA	yellow	10-2602.3174D (92-948.4)	0,001
			green	10-2602.3175D (92-948.5)	0,001
			orange	10-2602.3173D (92-948.3)	0,001
			red	10-2602.3172D (92-948.2)	0,001
			white	10-2603.3179D	0,001
			3.6 VDC/20 mA		
	6 chips	12.0 VDC/20 mA	yellow	10-5609.3174D (92-945.4)	0,001
			orange	10-5609.3173D (92-945.3)	0,001
			red	10-5609.3172D (92-945.2)	0,001
			yellow	10-5606.3244D (92-944.4)	0,001
			orange	10-5606.3243D (92-944.3)	0,001
			red	10-5606.3242D (92-944.2)	0,001



assembling

mounting flange

for indicator/switching element with PCB terminal

	part no.	technical drawing	kg
mounting flange	92-960.0	5	0,001



technical drawings from page 551

lens remover

	part no.	kg
lens remover	61-9730.0	0,011



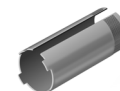
dismantling tool

	part no.	kg
dismantling tool for dismantling of actuator/switching element/mounting flange	84-998	0,002



mounting tool

	part no.	kg
mounting tool for tightening (or loosening) fixing nut starting torque fixing nut max. 80 Ncm	84-997	0,027



for stop request pushbutton

housing for stop request pushbutton for pole mounting 35 mm dia.

	colour	part no.	technical drawing
housing for stop request pushbutton for pole mounting 35 mm dia.	yellow RAL 1023	84-9500.4	6
	grey RAL 7016	84-9500.8	6



technical drawings from page 551

adaptor round 35 - 25 mm

for housing for stop request pushbutton for pole mounting 35 mm dia.

	colour	part no.	technical drawing
adaptor round 35 - 25 mm	yellow RAL 1023	84-9300.4	7
	grey RAL 7016	84-9300.8	7



technical drawings from page 551

housing for stop request pushbutton for pole mounting 38 mm dia.

	colour	part no.	technical drawing
housing for stop request pushbutton for pole mounting 38 mm dia.	yellow RAL 1023	84-9600.4	
	grey RAL 7016	84-9600.8	



adaptor round 38 - 35 mm

for housing for stop request pushbutton for pole mounting 38 mm dia.

	colour	part no.	technical drawing
adaptor round 38 - 35 mm	yellow RAL 1023	84-9700.4	7
	grey RAL 7016	84-9700.8	7



technical drawings from page 551

housing for stop request pushbutton for wall mounting

	colour	part no.	technical drawing
housing for stop request pushbutton for wall mounting	yellow RAL 1023	84-9800.4	
	grey RAL 7016	84-9800.8	



switching element

switching system

Short-travel switching system with 2 independent contact points and tactile operation.
Guarantees reliable switching even of very light loads.
Fitted with 1 normally open contact.

material

material of contacts
gold

switching element
thermoplastic polyester PET, PBT and polyacetale POM

mechanical characteristics

connection method
plug-in/soldering terminals 2.8 x 0.8 mm
flat ribbon cable connectors
PCB terminals

wire cross-section
0,5 mm²

actuating force
4.0 N ± 0.2 (measured at the lens)

actuating travel
switching element 0.5 mm

storage temperature
-40°C to + 85°C
(as per DIN IEC 68-)

resistance to heat of soldering
260°C/5 s as per IEC 68-2-20 (PCB assembly)
350°C/10 s as per IEC 68-2-20 (when using a soldering iron)

mechanical life
>= 1 million operations as per IEC 512-5, test 9a

rebound time
<=1 ms

resistance to shock
50 g for 11 ms as per IEC 68-2-29 and 27

resistance to vibration
10 g at 10-2000 Hz, amplitude 0.75 mm as per IEC 68-2-6

service temperature
-25°C to + 70°C
(as per DIN IEC 68-)

electrical characteristics

contact resistance
starting value (initial) <= 100 mΩ as per IEC 512-2, test 2b

electrical life
>= 500.000 operations at 42 VDC/50 mA as per IEC 512-5, test 9c

insulation resistance
>= 1.000.000.000 ohm between all terminals at 100 VDC, as per IEC 512-2, test 3a

switch rating

switching voltage VDC/VAC	min. 50 mV, max. 42 V
switching current VDC/VAC	min. 10 mA, max. 100 mA
power rating	max. 2 W

electric strength

500 VAC, 50 Hz, 1 min, as per IEC 512-2, test 3a

actuator with snap-action switching element

material

lenses
polycarbonate PC or aluminium

actuator case
polyetherimide PEI or aluminium

mechanical characteristics

actuating force
4.0 N ± 0.2 (measured at the lens)

actuating travel
total switching travel 1.2 mm

storage temperature
-40°C to + 85°C
(as per DIN IEC 68-)

mechanical life
>= 1 million operations as per IEC 512-5, test 9a

degree of protection
front as per IEC 529
IP 67, IP 65 and IP40

service temperature
-25°C to + 70°C
(as per DIN IEC 68-)

electrical characteristics

electrostatic breakdown value

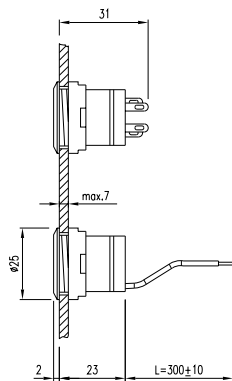
plastic case	>= 15 kV as per IEC 801-2
aluminium case	>= 5 kV as per IEC 801-2

(mounted in plastic front panel)

technical drawings

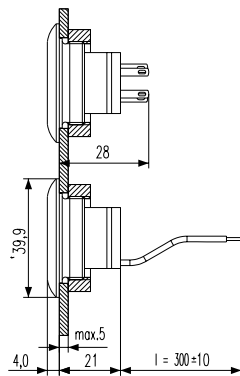
1 indicator actuator, illuminated-/pushbutton actuator, indicator element, switching element incl. illumination, switching element without illumination

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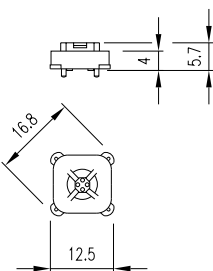
2 illuminated-/pushbutton actuator

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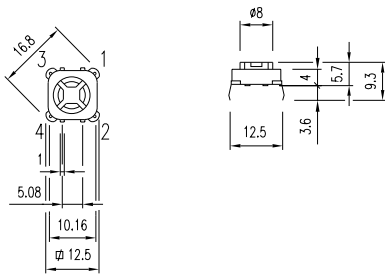
3 indicator element with PCB terminal

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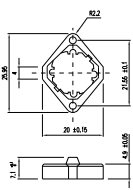
4 switching element with PCB terminal

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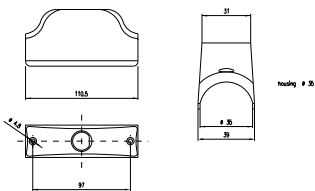
5 mounting flange

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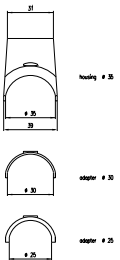
6 housing for stop request pushbutton for pole mounting 35 mm dia.

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7 adaptor round 35 - 25 mm, adaptor round 38 - 35 mm

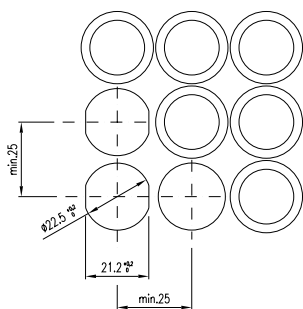
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mounting dimensions

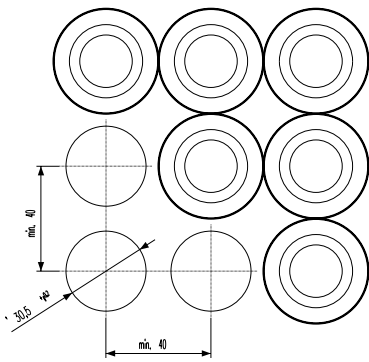
1 indicator actuator, illuminated-/pushbutton actuator

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2 illuminated-/pushbutton actuator

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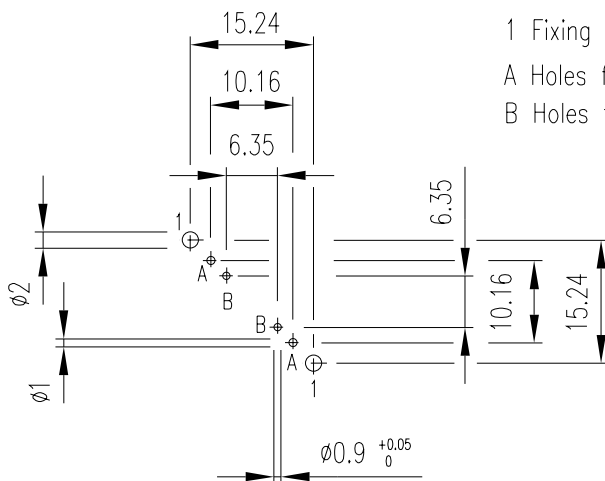


component layouts

1 indicator element with PCB terminal

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Drilling plan (conductor side of board)



1 Fixing holes for mounting flange

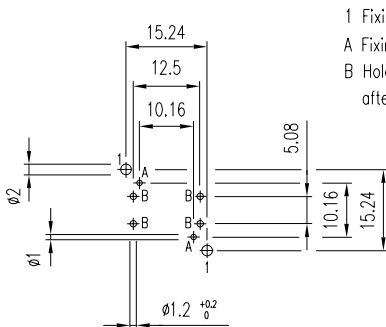
A Holes for LED

B Holes for centering pin

2 switching element with PCB terminal

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Drilling plan(conductor side of board)



1 Fixing holes for mounting flange

A Fixing holes for LED

B Holes for centering pins, diameter after tinning max. 2mm

* Final diameter after tinning

circuit drawings

1 illuminated-/pushbutton actuator

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2 indicator element

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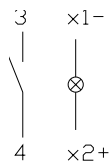
x1-



x2+

3 switching element incl. illumination

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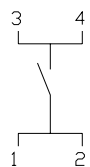
4 switching element without illumination

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5 switching element with PCB terminal

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