

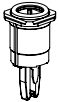



Illuminated pushbutton square, IP 65


Equipment consisting of (schematic overview)


**Lens**
page 715


**Single-LED**
page 730

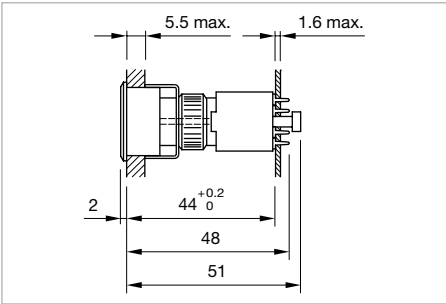
**Actuator**

**Front bezel set**
page 720

**Fixing nut**

**Switching element**
page 727

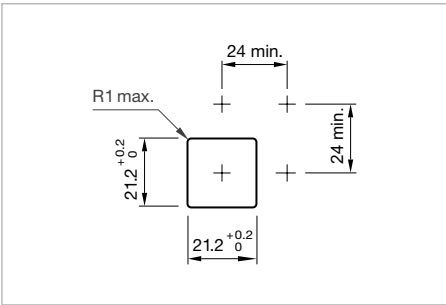
**Interlocking pin**



Dimensions [mm]



Product can differ from the current configuration.



Mounting cut-outs [mm]


- Additional Information**
- For front dimension 24 x 24 mm
 - Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5


Each Part Number listed below includes all the black components shown in the 3D-drawing.

To obtain a complete unit, please select the red components from the pages shown.

Switching action	Part No.	Wiring diagram	Weight
 Illuminated pushbutton actuator square			
B	71-611.0	1	0.005 kg
C	71-612.0	2	0.005 kg

Switching action: B = Momentary, C = Maintain


Wiring diagram 1

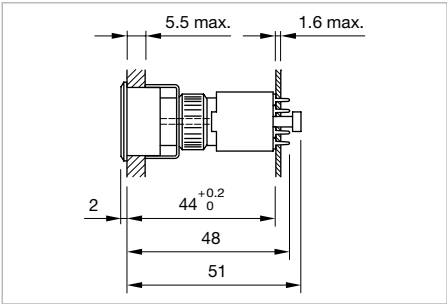

Wiring diagram 2

71 Flush design

Illuminated pushbutton rectangular, IP 65



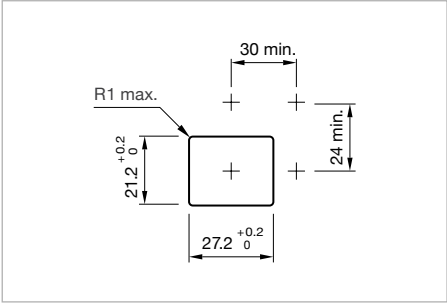
Product can differ from the current configuration.



Dimensions [mm]

Additional Information

- For front dimension 24 x 30 mm
- Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5



Mounting cut-outs [mm]

Equipment consisting of (schematic overview)

	Lens	page 715
	Single-LED	page 730
	Actuator	
	Front bezel set	page 720
	Fixing nut	
	Switching element	page 727
	Interlocking pin	

Each Part Number listed below includes all the black components shown in the 3D-drawing.

To obtain a complete unit, please select the red components from the pages shown.


Switching action	Part No.	Wiring diagram	Weight
Illuminated pushbutton actuator rectangular			
B	71-611.0	1	0.005 kg
C	71-612.0	2	0.005 kg


Switching action: B = Momentary, C = Maintain

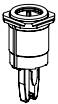
Wiring diagram 1	Wiring diagram 2


Illuminated pushbutton round, IP 65


Equipment consisting of (schematic overview)

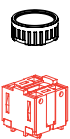
**Lens**
page 715


**Single-LED**
page 730

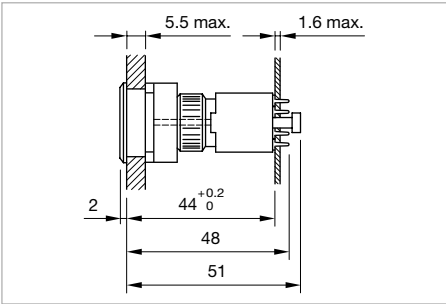
**Actuator**

**Front bezel set**
page 720

**Fixing nut**

**Switching element**
page 727

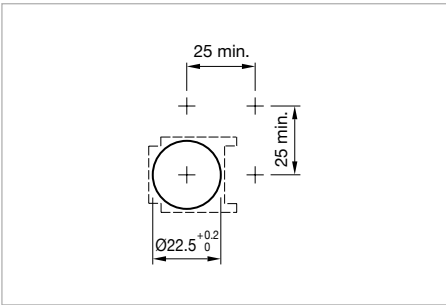
**Interlocking pin**



Dimensions [mm]



Product can differ from the current configuration.




Mounting cut-outs [mm]


- Additional Information**
- For front dimension Ø 25 mm
 - Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5


Each Part Number listed below includes all the black components shown in the 3D-drawing.

To obtain a complete unit, please select the red components from the pages shown.

Switching action	Part No.	Wiring diagram	Weight
 Illuminated pushbutton actuator round			
	B	71-611.0	1 0.005 kg
	C	71-612.0	2 0.005 kg

Switching action: B = Momentary, C = Maintain


Wiring diagram 1



Wiring diagram 2

Front

Lens plastic

Additional Information




- Lens surface mat
- Lens profile flat

Product attribute	Dimension	Lens	Part No.	Weight
 Lens plastic, flush design				
illuminative	18 x 18 mm	smoked transparent	61-9671.1	0.002 kg
		red transparent	61-9671.2	0.002 kg
		orange transparent	61-9671.3	0.002 kg
		yellow transparent	61-9671.4	0.002 kg
		green transparent	61-9671.5	0.002 kg
		blue transparent	61-9671.6	0.002 kg
		colourless transparent	61-9671.7	0.002 kg
non-illuminative	18 x 18 mm	black opaque	61-9771.0	0.002 kg
		grey opaque	61-9771.8	0.002 kg
		white translucent	61-9771.9	0.002 kg
 Lens plastic, flush design				
illuminative	18 x 24 mm	smoked transparent	61-9681.1	0.002 kg
		red transparent	61-9681.2	0.002 kg
		orange transparent	61-9681.3	0.002 kg
		yellow transparent	61-9681.4	0.002 kg
		green transparent	61-9681.5	0.002 kg
		blue transparent	61-9681.6	0.002 kg
		colourless transparent	61-9681.7	0.002 kg
non-illuminative	18 x 24 mm	black opaque	61-9781.0	0.002 kg
		grey opaque	61-9781.8	0.002 kg
		white translucent	61-9781.9	0.002 kg
 Lens plastic, flush design				
illuminative	Ø 19.7 mm	smoked transparent	61-9642.1	0.002 kg
		red transparent	61-9642.2	0.002 kg
		orange transparent	61-9642.3	0.002 kg
		yellow transparent	61-9642.4	0.002 kg
		green transparent	61-9642.5	0.002 kg
		blue transparent	61-9642.6	0.002 kg
		colourless transparent	61-9642.7	0.002 kg

Lens plastic with symbol


Additional Information

- Illuminative
- Lens surface mat
- Lens profile flat
- The silvery coat is being applied on the lens (screen print) with an additional protective lacquer. Further information see «Technical data»

Dimension	Lens	Symbol	Part No.	Weight
 Lens plastic with symbol				
Ø 19.7 mm	red transparent	Ring	61-9643.201	0.002 kg
	orange transparent	Ring	61-9643.301	0.002 kg
	yellow transparent	Ring	61-9643.401	0.002 kg
	green transparent	Ring	61-9643.501	0.002 kg
	blue transparent	Ring	61-9643.601	0.002 kg
	colourless transparent	Ring	61-9643.701	0.002 kg
 Lens plastic with symbol				
Ø 19.7 mm	red transparent	ON/OFF	61-9643.202	0.002 kg
	green transparent	ON/OFF	61-9643.502	0.002 kg
	blue transparent	ON/OFF	61-9643.602	0.002 kg
	colourless transparent	ON/OFF	61-9643.702	0.002 kg
 Lens plastic with symbol				
Ø 19.7 mm	red transparent	Stand by	61-9643.203	0.002 kg
	green transparent	Stand by	61-9643.503	0.002 kg
	blue transparent	Stand by	61-9643.603	0.002 kg
	colourless transparent	Stand by	61-9643.703	0.002 kg



Lens metal with dot**Additional Information**

- Illuminative
- Lens surface mat
- Lens profile flat
- The colour of anodized aluminium parts can vary due to technical production reasons

Dimension	Lens	Part No.	Weight
 Lens metal with dot			
Ø 19.7 mm	Aluminium black anodized	61-9841.0A	0.002 kg
	Aluminium red anodized	61-9841.2A	0.002 kg
	Aluminium gold anodized	61-9841.4A	0.002 kg
	Aluminium olive-green anodized	61-9841.5A	0.002 kg
	Aluminium blue anodized	61-9841.6A	0.002 kg
	Aluminium natural anodized	61-9841.8A	0.002 kg

Lens metal**Additional Information**




- Non-illuminative
- Lens surface mat
- The colour of anodized aluminium parts can vary due to technical production reasons

Product attribute	Dimension	Lens	Part No.	Weight
<div>Lens metal</div>				
flat	Ø 19.7 mm	Aluminium black anodized	61-9841.0	0.002 kg
		Aluminium red anodized	61-9841.2	0.002 kg
		Aluminium gold anodized	61-9841.4	0.002 kg
		Aluminium olive-green anodized	61-9841.5	0.002 kg
		Aluminium blue anodized	61-9841.6	0.002 kg
		Aluminium natural anodized	61-9841.8	0.002 kg
<div>Lens metal</div>				
convex (domed)	Ø 19.7 mm	Aluminium black anodized	61-9842.0	0.003 kg
		Aluminium red anodized	61-9842.2	0.003 kg
		Aluminium olive-green anodized	61-9842.5	0.003 kg
		Aluminium blue anodized	61-9842.6	0.003 kg
		Aluminium natural anodized	61-9842.8	0.003 kg

Front bezel set pushbutton



Additional Information

- The dimensions of the mounting cut-outs are shown in the product details
- Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5
- The colour of anodized aluminium parts can vary due to technical production reasons

Mounting cut-out	Front bezel	Part No.	Weight
 Front bezel set for indicator and illuminated pushbutton, flush design, Front dimension 24 x 24 mm			
21 x 21 mm	Plastic black	61-9930.0	0.008 kg
	Plastic silver	61-9930.4	0.008 kg
 Front bezel set for indicator and illuminated pushbutton, flush design, Front dimension 24 x 30 mm			
21 x 27 mm	Plastic black	61-9931.0	0.008 kg
	Plastic silver	61-9931.4	0.008 kg
 Front bezel set for indicator and illuminated pushbutton, flush design, Front dimension Ø 25 mm			
Ø 22.5 mm	Aluminium natural anodized	61-9933.0	0.006 kg
	Aluminium black anodized	61-9933.1	0.006 kg
	Aluminium red anodized	61-9933.2	0.006 kg
	Aluminium gold anodized	61-9933.4	0.006 kg
	Aluminium olive-green anodized	61-9933.5	0.006 kg
	Aluminium blue anodized	61-9933.6	0.006 kg
	Plastic black	61-9933.10	0.008 kg



Front bezel set selector switch**Additional Information**

- The dimensions of the mounting cut-outs are shown in the product details
- Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5
- With the round front bezel sets Ø 25 mm the anti-twist ring is part of the sales-package
- The colour of anodized aluminium parts can vary due to technical production reasons

Mounting cut-out	Front bezel	Part No.	Weight
	Front bezel set for selector switch, flush design, Front dimension 24 x 24 mm		
	21 x 21 mm	Plastic black	61-9936.0 0.007 kg
	Front bezel set for selector switch, flush design, Front dimension Ø 25 mm		
	Ø 22.5 mm	Aluminium natural anodized	61-9932.0 0.006 kg
		Aluminium black anodized	61-9932.1 0.006 kg
		Aluminium red anodized	61-9932.2 0.006 kg
		Aluminium gold anodized	61-9932.4 0.006 kg
		Aluminium olive-green anodized	61-9932.5 0.006 kg
		Aluminium blue anodized	61-9932.6 0.006 kg
		Plastic black	61-9932.10 0.008 kg

Front protective cap, IP 68**Additional Information**

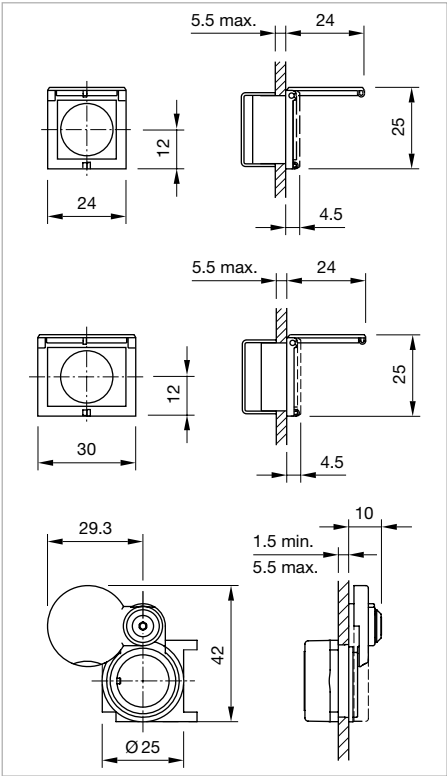
- When using the front protection cover for push buttons the external sealing in the front bezel set and the silicone bellows in the actuator are to be removed

Product attribute	Material	Colour	Optics	Part No.	Weight
	Front protective cap				
	for front bezel set 24 x 30 mm, flush design	Silicone	colourless	transparent	61-9927.2 0.001 kg
	Front protective cap				
	for front bezel set Ø 25 mm, flush design	Silicone	colourless	transparent	84-9103.7 0.001 kg




Protective cover, IP 65

Additional Information

- The dimensions of the mounting cut-outs are shown in the product details
- Pitch of the front plate mounting cut-outs must agree with the printed circuit board holes Ø 3.5
- Please note that bigger minimum distances are necessary



Dimensions [mm]

Product attribute	Mounting cut-out	Material	Optics	Part No.	Weight
 Protective cover					
Hinged, with means for sealing	21 x 21 mm	Plastic	transparent	61-9921.0	0.006 kg
 Protective cover					
Hinged, with means for sealing	21 x 27 mm	Plastic	transparent	61-9922.0	0.006 kg
 Protective cover					
slide by side, with means not for sealing	Ø 22.5 mm	Plastic	transparent	61-9924.0	0.006 kg

Rear side

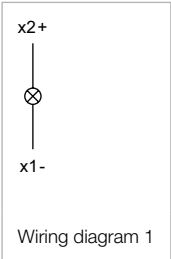
Lamp element

Additional Information

- Including locking pin

Terminal	Part No.	Compo- nent layout	Wiring diagram	Weight
 Lamp element				
PCB	71-670.006	1	1	0.005 kg


The component layouts you will find from page 733



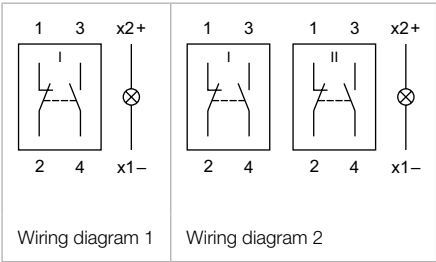
Switching element pushbutton

Additional Information

- Including locking pin

Contacts	Terminal	Part No.	Compo- nent layout	Wiring diagram	Weight
 Switching element for illuminated pushbutton and mushroom-head pushbutton					
1 NC + 1 NO	PCB	71-671.026	1	1	0.005 kg
2 NC + 2 NO	PCB	71-672.026	1	2	0.005 kg

Contacts: NC = Normally closed, NO = Normally open
The component layouts you will find from page 733

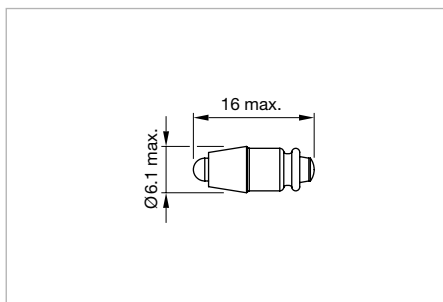


Illumination

Single-LED, T1 3/4 MG

Additional Information


- Luminous intensity data of the LEDs on direct voltage
- Electrical and optical data are measured at 25 °C
- The specified versions are built with a protection diode (half wave rectifier) in series and the LED
- When using AC/DC types with AC operation, slight flickering can occur
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination
- For supply voltages above 48V, a voltage reduction element (external series resistor or transformer) must be used



Dimensions [mm]


LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 Single-LED						
red	6 VDC +10 %	15 mA ±15 %	350 mcd	630 nm	10-2J06.3142	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J09.1062	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J12.1062	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	330 mcd	630 nm	10-2J13.1062	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	200 mcd	630 nm	10-2J19.1042	0.002 kg
yellow	6 VDC +10 %	15 mA ±15 %	300 mcd	587 nm	10-2J06.3144	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J09.1064	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J12.1064	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	280 mcd	587 nm	10-2J13.1064	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	180 mcd	587 nm	10-2J19.1044	0.002 kg
green	6 VDC +10 %	7 mA ±15 %	1050 mcd	525 nm	10-2J06.3145	0.002 kg
	12 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J09.1065	0.002 kg
	24 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J12.1065	0.002 kg
	28 VAC/DC +10 %	4/7 mA ±15 %	1050 mcd	525 nm	10-2J13.1065	0.002 kg
	48 VAC/DC +10 %	2/4 mA ±15 %	600 mcd	525 nm	10-2J19.1045	0.002 kg
blue	6 VDC +10 %	15 mA ±15 %	680 mcd	470 nm	10-2J06.3146	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2J09.1066	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2J12.1066	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	650 mcd	470 nm	10-2J13.1066	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	400 mcd	470 nm	10-2J19.1046	0.002 kg
white	6 VDC +10 %	6 mA ±15 %	900 mcd	x0.31/y0.32 nm	10-2J06.3149	0.002 kg
	12 VAC/DC +10 %	3/6 mA ±15 %	900 mcd	x0.31/y0.32 nm	10-2J09.1069	0.002 kg
	24 VAC/DC +10 %	2.5/5 mA ±15 %	750 mcd	x0.31/y0.32 nm	10-2J12.1069	0.002 kg
	28 VAC/DC +10 %	2.5/5 mA ±15 %	750 mcd	x0.31/y0.32 nm	10-2J13.1069	0.002 kg
	48 VAC/DC +10 %	2/5 mA ±15 %	600 mcd	x0.31/y0.32 nm	10-2J19.1049	0.002 kg

Filament lamp, T1 3/4 MG

Operating voltage	Operation current	Part No.	Weight
 Filament lamp			
6 VAC/DC	120 mA±10 %	10-1306.1349	0.001 kg
6.3 VAC/DC	200 mA±10 %	10-1307.1369	0.001 kg
12 VAC/DC	75 mA±10 %	10-1309.1309	0.001 kg
14 VAC/DC	80 mA±10 %	10-1310.1319	0.001 kg
18 VAC/DC	40 mA±10 %	10-1311.1249	0.001 kg
24 VAC/DC	35 mA±10 %	10-1312.1229	0.001 kg
28 VAC/DC	30 mA±10 %	10-1313.1209	0.001 kg
	40 mA±10 %	10-1313.1249	0.001 kg
36 VAC/DC	20 mA±10 %	10-1316.1179	0.001 kg
	30 mA±10 %	10-1316.1209	0.001 kg
48 VAC/DC	20 mA±10 %	10-1319.1179	0.001 kg
	25 mA±10 %	10-1319.1199	0.001 kg

Series resistor**Additional Information**

- Only for filament lamp 48 VAC, 25 mA
- For lamp voltage reduction
- Keep to the country specific safety instructions
- Due to high surface temperatures, the surface resistors must be soldered directly to the terminals of the equipment (use a terminal plate)

Operating voltage	Resistance	Part No.	Weight
 Series resistor			
110 VAC	2.7 kOhm	02-904.0	0.003 kg
125 VAC	3.3 kOhm	02-904.1	0.003 kg
145 VAC	4.7 kOhm	02-904.3	0.003 kg
240 VAC	10 kOhm	02-904.7	0.003 kg


71 Accessories

Mounting

Anti-twist ring

Mounting cut-out	Part No.	Weight
	Anti-twist ring	
	Ø 22.5 mm	61-9912.0 0.002 kg


Lens remover

Part No.		Weight
<div></div> <div>Lens remover</div>		
61-9730.0		0.011 kg


Lamp remover

Additional Information

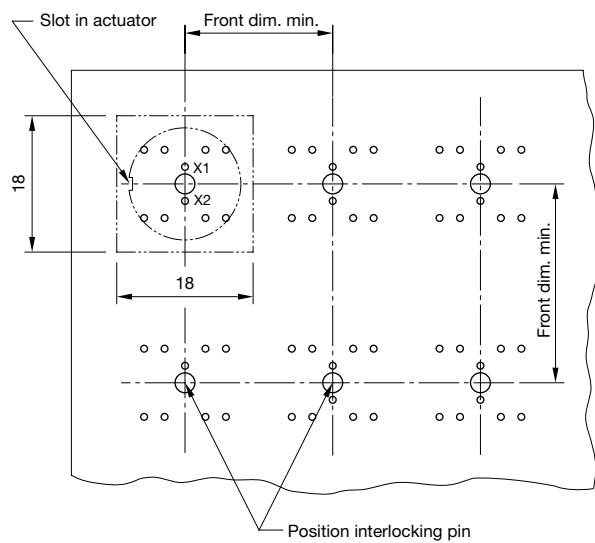
▲ **Caution:** A switching process might be released when replacing the lamp

Part No.		Weight
		
Lamp remover		
61-9740.0		0.003 kg

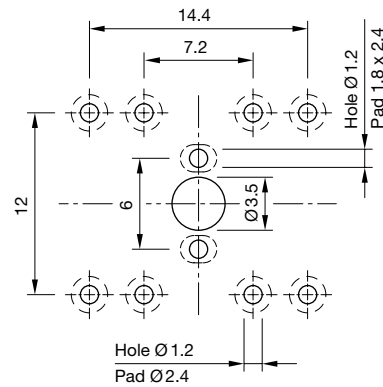
Mounting tool

Part No.		Weight
<div></div> <div>Mounting tool</div>		
01-907		0.02 kg

Drawings

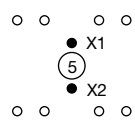


Drilling plan (element side)
Through-connection recommended

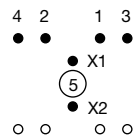


Note:
Pitch of the print circuit board hole Ø3.5 must agree with the mounting holes on the front plate

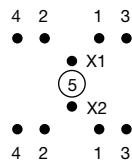
Layout



Illumination element
71-670.006



Switching element 1NC+1NO
71-671.026



Switching element 2NC+2NO
71-672.026

- X1 Lamp cathode (-)
- X2 Lamp anode (+)
- 1-2 Contact normally closed
- 3-4 Contact normally open
- 5 Hole for interlocking pin

Component layout 1

71 Technical data

System switch 71

Switching system

Self-cleaning, double-break snap-action switching system with one NC- (Normally closed) and one NO-contact (Normally open).

Material

Lens

Polycarbonat (PC), as per UL 94 V0, or Aluminium anodized

Front bezel

Polyetherimid (PEI), as per UL 94 V0, or Aluminium anodized

Material of contact

AgNi, 2 µm gold plated

Switching element

Polyethylene terephthalate (PETP), as per UL 94 V0

Actuator housing

Polyetherimide (PEI), as per UL 94 V0

Mechanical characteristics

Terminals

PCB terminal, Brass gold plated

Tightening torque

for fixing nut max. 50 Ncm

Actuating torque

Selector-/Keylock switch 4 Ncm ... 8 Ncm

Actuating force

Pushbutton 2 N ... 3 N

Actuating travel

Pushbutton 3 mm

Selector-/keylock switch	2 positions	3 positions
Momentary action	approx. 42°	approx. 2 x 42°
Maintained action	approx. 90°	approx. 2 x 90°

Rebound time

≤ 1 ms

Mechanical lifetime

Pushbutton maintained action	1 million cycles of operation
Pushbutton momentary action	2 million cycles of operation
Keylock switch	50 000 cycles of operation
Selector switch	100 000 cycles of operation

Resistance to heat of soldering

Manual soldering 350 °C, 3 sec.
Flow soldering 260 °C, 5 sec.

Electrical characteristics

Contact resistance

Starting value (initial) ≤ 50 mΩ

Isolation resistance

≥ 10¹² Ω

Switch rating

Switch rating AC cos φ 0.7 ... 0.8

Voltage 250 VAC

Current 3 A

Switch rating DC

Voltage 24 VDC 250 VDC

Current 3 A 0.5 A

Recommended minimum operational data

Voltage 5 VAC

Current 10 mA

Electric strength

2000 VAC, 50 Hz, 1 min. between all terminals and earth

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Operating temperature

-25 °C ... +55 °C

Protection degree

Frontside IP 65

Shock resistance

(semi-sinusoidal)

max. 500 m/s², pulse width 11 ms, 3-axis,

as per EN IEC 60068-2-27

Vibration resistance

(sinusoidal)

max. 100 m/s² at 10 Hz ... 500 Hz, as per EN IEC 60068-2-6

Climate resistance

Damp heat, state

56 days, +40 °C/93 % relative humidity, as per EN IEC 60068-2-78

Approvals

Declaration of conformity

CE

General notes

1. Engraving

In addition to the most commonly used world languages, in DIN1451-3 close spacing, other typefaces are available as Scandinavian, Slavic, Greek, Russian and Polish. Red, blue and black lenses are filled with white colour. Other colour lenses are filled in black. Standard height of letters is 2 mm. If the height is not specified, we will supply 2 mm engraved letters.

2. Hot stamping

For larger series it is worth considering markings by means of hot stamping or laser engraving. We will be pleased to advise you. For letters and figures, typefaces with 2.5 mm, 3 mm and 4 mm are available.

3. Film inserts

Instead of using engraving the lenses can be fitted with transparent film inserts, as an alternative. In the case of use of a smoke-black lens the fitted film becomes readable only if the lamp is on. The film thickness is 0.2 mm. For lenses Ø 24 mm and Ø 25 mm with Part No. 619642.x the marking takes place directly on the text plate Part No. 61-9707.7, instead of a film insert.

Important: Consider pushbutton mounting orientation before specifying engraving characters!

Lenses for Indicators, Illuminated pushbuttons, flush mounting

All dimensions in mm

Front size (Lens)	Film insert max. size	Height of letters h	Number of lines	Number of capital letters per line (target value)	Number of small letters per line (target value)	Image
24 x 24 (18 x 18)	15.1 x 15.1	2	4	8-9	9	B3
		3	3	7-8	8	B3
		4	2	4-5	5	B3
		5	2	4	4-5	B3
		6	1	4	4	B3
		8	1	2-3	2-3	B3
24 x 30 (18 x 24)	15.1 x 21	2	4	12	13	B1
			5	8-9	9	B2
		3	3	10-11	11-12	B1
			4	7-8	8	B2
		4	2	7	8	B1
			3	4-5	5	B2
		5	2	5-6	6	B1
				4	4-5	B2
		6	1	4-5	5	B1
			2	3	3-4	B2
		8	1	3-4	3-4	B1
				2-3	2-3	B2
Ø 25 (Ø 19.7)	Marking plate	2	3	6	6	B4
		3	2	5	6	B4
		4	2	3	4	B4
		5	1	2	3	B4
		6	1	2	3	B4
		8	1	2	2	B4

