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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



Series 31

Characteristics

The compact 16mm Series 31 is especially suited for:

- Raised design
- PCB (with adaptor)

This series is ideally suited for combined use with Series 51.

Functions

The Series 31 incorporates the following functions:

- Indicator
- Pushbutton
- Illuminated pushbutton
- Buzzer

Market segments

The EAO Series 31 is especially suited for applications in the segments:

- Machinery and Automation
- Panel building

Please refer to the EAO website to obtain detailed information regarding this series www.products.eao.com
Configure a product to your exact needs and request a quotation.



Overview**Raised design**

Indicator	4
Buzzer	6
Illuminated pushbutton	7

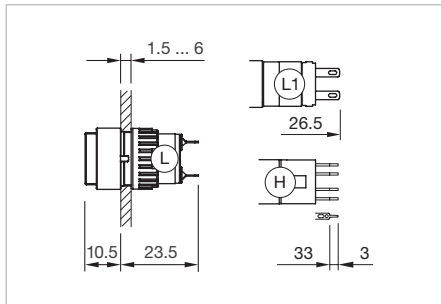
Accessoires 11**Drawings** 23**Technical data** 24**Marking** 27**Guidelines for use** 28**Index** 29

31 Raised design

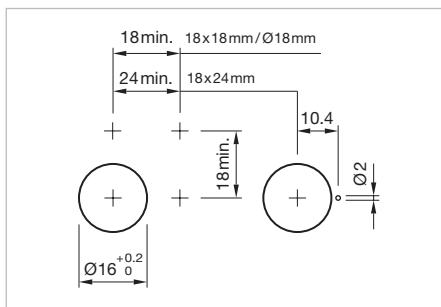
Indicator, IP 40



Product can differ from the current configuration.



Dimensions [mm]
 H = Universal terminal 2.0 x 0.5 mm,
 L = Solder terminal,
 L1 = Solder terminal 2.8 x 0.5 mm



Mounting cut-outs [mm]


Equipment consisting of (schematic overview)

	Lens	page(SI=BR31_AGAE_Druckhaube_Kunststoff)
	Single-LED	page(SI=BR31_AGAE_Single-LED)
	Actuator	
	Fixing nut	

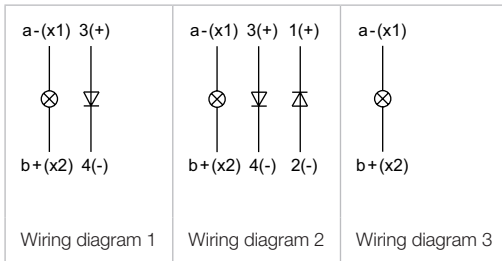
Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

Diode 1N4007	Terminal	Part No.	Component layout	Wiring diagram	Weight
	Indicator actuator, Front dimension 18 x 18 mm				
1	Universal 2.0 x 0.5 mm	31-703.006	4	1	0.006 kg
2	Universal 2.0 x 0.5 mm	31-704.006	4	2	0.006 kg
	Solder 2.8 x 0.5 mm	31-050.002		3	0.004 kg
	Solder	31-050.005		3	0.004 kg
	Universal 2.0 x 0.5 mm	31-051.006	4	3	0.005 kg
	Indicator actuator, Front dimension 18 x 24 mm				
1	Universal 2.0 x 0.5 mm	31-701.006	4	1	0.006 kg
2	Universal 2.0 x 0.5 mm	31-702.006	4	2	0.006 kg
	Solder 2.8 x 0.5 mm	31-040.002		3	0.004 kg
	Solder	31-040.005		3	0.004 kg
	Universal 2.0 x 0.5 mm	31-041.006	4	3	0.005 kg

Diode 1N4007	Terminal	Part No.	Component layout	Wiring diagram	Weight
 <p>Indicator actuator, Front dimension Ø 18 mm</p>					
	Solder 2.8 x 0.5 mm	31-030.002		3	0.004 kg
	Solder	31-030.005		3	0.004 kg
	Universal 2.0 x 0.5 mm	31-031.006	4	3	0.005 kg

The component layouts you will find from page {SI=BR31_KAZE_Zeichnung}

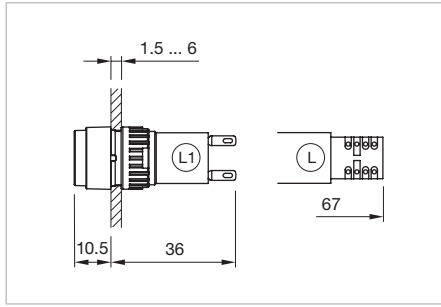


31 Raised design

Buzzer, IP 40

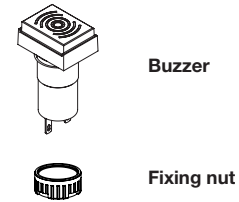


Product can differ from the current configuration.



Dimensions [mm]
 L = Solder terminal,
 L1 = Solder terminal 2.8 x 0.5 mm

Equipment consisting of (schematic overview)

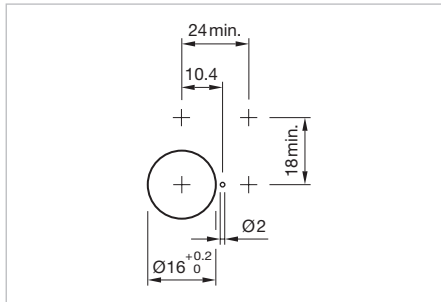


Each Part Number listed below includes all the black components shown in the 3D-drawing.



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

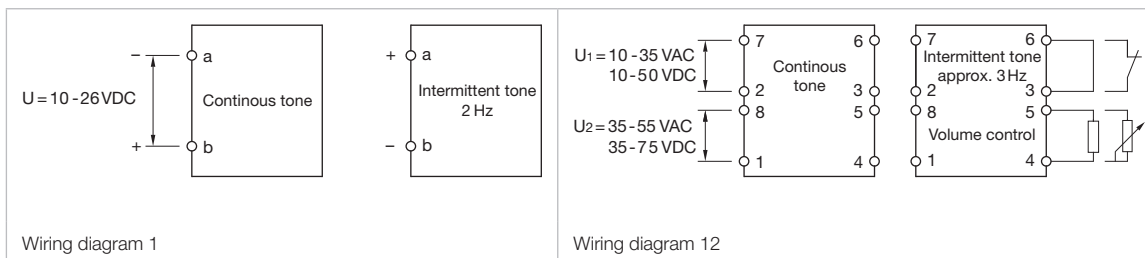
Additional Information

- Further information see «Technical data»



Mounting cut-outs [mm]

Operating voltage	Front cap	Terminal	Part No.	Wiring diagram	Weight
	Buzzer, Front dimension 18 x 24 mm				
10 ... 26 VDC	Plastic black	Solder 2.8 x 0.5 mm	31-801.002	1	0.015 kg
	Buzzer, Front dimension 18 x 24 mm				
10 ... 55 VAC, 10 ... 75 VDC	Plastic black	Solder	31-810.005	2	0.015 kg



Wiring diagram 1

Wiring diagram 12

Illuminated pushbutton, IP 40

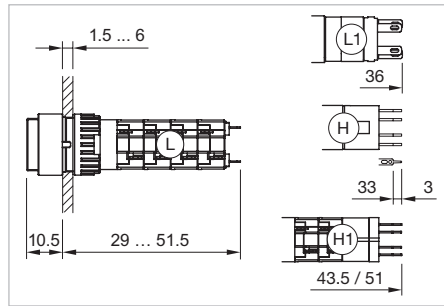
Equipment consisting of (schematic overview)

Lens page 31 (SI=BR31, AGAE_Druckhaube_Kunststoff)

Single-LED page 31 (SI=BR31, AGAE_Single-LED)

Actuator

Fixing nut



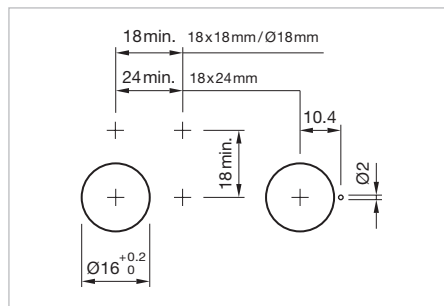
Dimensions [mm]
 H = Universal terminal 2.0 x 0.5 mm,
 H1 = Universal-Solder terminal,
 L = Solder terminal,
 L1 = Solder terminal 2.8 x 0.5 mm



Product can differ from the current configuration.

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.



Mounting cut-outs [mm]

Additional Information

- Material of contact Gold

Switching system	Contacts	Diode 1N4007	Switching action	Terminal	Part No.	Component layout	Wiring diagram	Weight		
 <p>Illuminated pushbutton actuator, Front dimension 18 x 18 mm</p>	2 NO		B	Universal 2.0 x 0.5 mm	31-451.036	4	9	0.007 kg		
			C	Universal 2.0 x 0.5 mm	31-481.036	4	10	0.007 kg		
	2 NC		B	Universal 2.0 x 0.5 mm	31-452.036	4	7	0.007 kg		
			C	Universal 2.0 x 0.5 mm	31-483.036	4	4	0.007 kg		
	1 NO		B	Universal 2.0 x 0.5 mm	31-455.036	4	5	0.007 kg		
			C	Universal 2.0 x 0.5 mm	31-485.036	4	6	0.007 kg		
	1 NC		B	Universal 2.0 x 0.5 mm	31-456.036	4	1	0.007 kg		
	Snap-action switching element	1 NC + 1 NO	1	B	Universal-Solder	31-709.0292	4	11	0.008 kg	
				B	Universal-Solder	31-710.0292	4	13	0.008 kg	
				C	Universal-Solder	31-718.0292	4	14	0.008 kg	
B				Solder 2.8 x 0.5 mm	31-151.022		16	0.006 kg		
B				Solder	31-151.0252		15	0.006 kg		
C				Solder 2.8 x 0.5 mm	31-281.022		18	0.006 kg		
2 NC + 2 NO			B	Solder	31-152.0252		23	0.008 kg		
			C	Solder	31-282.0252		24	0.008 kg		
			3 NC + 3 NO		B	Solder	31-153.0252		25	0.010 kg
					C	Solder	31-283.0252		26	0.010 kg

31 Raised design

Switching system	Contacts	Diode 1N4007	Switching action	Terminal	Part No.	Component layout	Wiring diagram	Weight
Snap-action switching element	4 Ö + 4 S		B	Löt	31-154.0252		27	0.012 kg
			C	Solder	31-284.0252		28	0.012 kg



Illuminated pushbutton actuator, Front dimension 18 x 24 mm

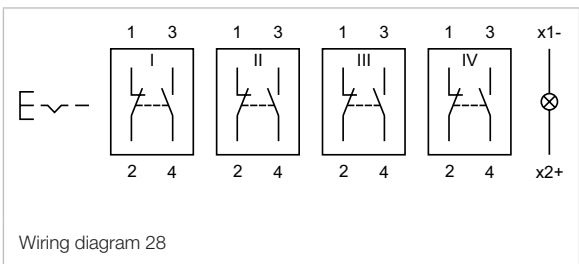
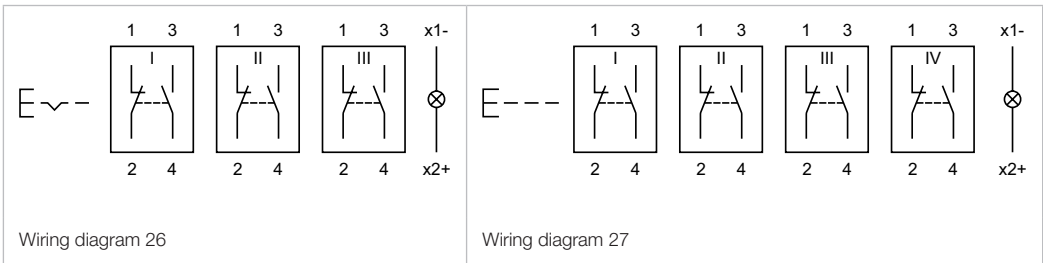
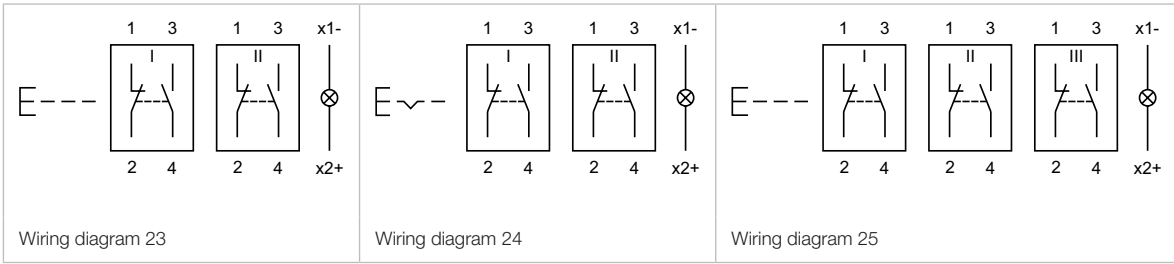
Low-level element	2 NO		B	Universal 2.0 x 0.5 mm	31-421.036	4	9	0.007 kg	
			C	Universal 2.0 x 0.5 mm	31-461.036	4	10	0.007 kg	
	2 NC		B	Universal 2.0 x 0.5 mm	31-422.036	4	7	0.007 kg	
			C	Universal 2.0 x 0.5 mm	31-463.036	4	4	0.007 kg	
	1 NC + 1 NO		B	Universal 2.0 x 0.5 mm	31-423.036	4	3	0.007 kg	
			C	Universal 2.0 x 0.5 mm	31-463.036	4	4	0.007 kg	
	1 NO		B	Universal 2.0 x 0.5 mm	31-425.036	4	5	0.007 kg	
			C	Universal 2.0 x 0.5 mm	31-465.036	4	6	0.007 kg	
	1 NC		B	Universal 2.0 x 0.5 mm	31-426.036	4	1	0.007 kg	
			C	Universal 2.0 x 0.5 mm	31-466.036	4	2	0.007 kg	
	Snap-action switching element	1 NC + 1 NO	1	B	Universal-Solder	31-705.0292	4	11	0.008 kg
				C	Universal-Solder	31-713.0292	4	12	0.008 kg
B				Universal-Solder	31-706.0292	4	13	0.008 kg	
C				Universal-Solder	31-714.0292	4	14	0.008 kg	
B				Solder 2.8 x 0.5 mm	31-121.022		16	0.006 kg	
C				Solder	31-121.0252		15	0.006 kg	
2 NC + 2 NO		1	B	Solder 2.8 x 0.5 mm	31-121.022		16	0.006 kg	
			C	Solder	31-121.0252		15	0.006 kg	
			B	Solder	31-121.0252		15	0.006 kg	
			C	Solder 2.8 x 0.5 mm	31-261.022		18	0.006 kg	
			C	Solder	31-261.0252		17	0.006 kg	
			B	Solder	31-261.0252		17	0.006 kg	
2 NC + 2 NO		2	B	Solder	31-261.0252		17	0.006 kg	
			C	Solder	31-261.0252		17	0.006 kg	
			B	Universal-Solder	31-707.0292	4	19	0.010 kg	
			C	Universal-Solder	31-715.0292	4	20	0.010 kg	
			B	Universal-Solder	31-708.0292	4	21	0.010 kg	
			C	Universal-Solder	31-716.0292	4	22	0.010 kg	
3 NC + 3 NO		B	Solder	31-122.0252		23	0.008 kg		
		C	Solder	31-262.0252		24	0.008 kg		
4 NC + 4 NO		B	Solder	31-123.0252		25	0.010 kg		
		C	Solder	31-263.0252		26	0.010 kg		
4 NC + 4 NO		B	Solder	31-124.0252		27	0.012 kg		
		C	Solder	31-264.0252		28	0.012 kg		



Illuminated pushbutton actuator, Front dimension Ø 18 mm


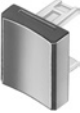

Low-level element	2 NO		B	Universal 2.0 x 0.5 mm	31-431.036	4	9	0.007 kg
			C	Universal 2.0 x 0.5 mm	31-471.036	4	10	0.007 kg
	2 NC		B	Universal 2.0 x 0.5 mm	31-432.036	4	7	0.007 kg
			C	Universal 2.0 x 0.5 mm	31-473.036	4	4	0.007 kg
	1 NC + 1 NO		B	Universal 2.0 x 0.5 mm	31-433.036	4	3	0.007 kg
			C	Universal 2.0 x 0.5 mm	31-473.036	4	4	0.007 kg
	1 NO		B	Universal 2.0 x 0.5 mm	31-435.036	4	5	0.007 kg
			C	Universal 2.0 x 0.5 mm	31-475.036	4	6	0.007 kg
1 NC		B	Universal 2.0 x 0.5 mm	31-436.036	4	1	0.007 kg	
Snap-action switching element	1 NC + 1 NO	2	B	Universal-Solder	31-744.0292	4	13	0.008 kg
			C	Universal-Solder	31-748.0292	4	14	0.008 kg
			B	Solder 2.8 x 0.5 mm	31-131.022		16	0.006 kg
			B	Solder	31-131.0252		15	0.006 kg
			C	Solder 2.8 x 0.5 mm	31-271.022		18	0.006 kg
			C	Solder	31-271.0252		17	0.006 kg

31 Raised design





Front

Lens plastic

Product attribute	Dimension	Lens	Part No.	Weight
 Lens plastic				
flat, illuminative	15.3 x 15.3 mm	smoked transparent	31-953.1	0.001 kg
		red transparent	31-953.2	0.001 kg
		orange transparent	31-953.3	0.001 kg
		yellow transparent	31-953.4	0.001 kg
		green transparent	31-953.5	0.001 kg
		blue transparent	31-953.6	0.001 kg
		colourless transparent	31-953.7	0.001 kg
flat, illuminative, not suitable for film insert	15.3 x 15.3 mm	red translucent	31-951.2	0.001 kg
		orange translucent	31-951.3	0.001 kg
		yellow translucent	31-951.4	0.001 kg
		green translucent	31-951.5	0.001 kg
		blue translucent	31-951.6	0.001 kg
		white translucent	31-951.9	0.001 kg
flat, illuminative, less suitable for film insert	15.3 x 15.3 mm	red transparent	31-955.2	0.001 kg
		yellow transparent	31-955.4	0.001 kg
		green transparent	31-955.5	0.001 kg
		colourless transparent	31-955.7	0.001 kg
flat, non-illuminative	15.3 x 15.3 mm	black opaque	31-951.0	0.001 kg
		grey opaque	31-951.8	0.001 kg
 Lens plastic				
concave, illuminative	15.3 x 15.3 mm	red transparent	31-954.2	0.001 kg
		orange transparent	31-954.3	0.001 kg
		yellow transparent	31-954.4	0.001 kg
		green transparent	31-954.5	0.001 kg
		blue transparent	31-954.6	0.001 kg
		colourless transparent	31-954.7	0.001 kg
concave, non-illuminative	15.3 x 15.3 mm	black opaque	31-952.0	0.001 kg
 Lens plastic				
flat, illuminative	15.3 x 21.5 mm	smoked transparent	31-903.1	0.001 kg
		red transparent	31-903.2	0.001 kg
		orange transparent	31-903.3	0.001 kg
		yellow transparent	31-903.4	0.001 kg
		green transparent	31-903.5	0.001 kg
		blue transparent	31-903.6	0.001 kg
		colourless transparent	31-903.7	0.001 kg
flat, illuminative, not suitable for film insert	15.3 x 21.5 mm	red translucent	31-901.2	0.001 kg
		orange translucent	31-901.3	0.001 kg

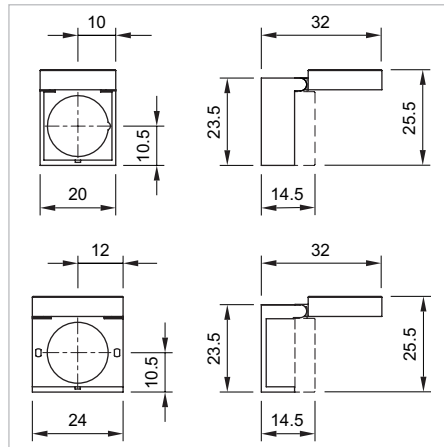
31 Accessories

Product attribute	Dimension	Lens	Part No.	Weight
flat, illuminative, not suitable for film insert	15.3 x 21.5 mm	yellow translucent	31-901.4	0.001 kg
		green translucent	31-901.5	0.001 kg
		blue translucent	31-901.6	0.001 kg
		white translucent	31-901.9	0.001 kg
flat, illuminative, less suitable for film insert	15.3 x 21.5 mm	red transparent	31-905.2	0.001 kg
		yellow transparent	31-905.4	0.001 kg
		green transparent	31-905.5	0.001 kg
		colourless transparent	31-905.7	0.001 kg
flat, non-illuminative	15.3 x 21.5 mm	black opaque	31-901.0	0.001 kg
		grey opaque	31-901.8	0.001 kg
 Lens plastic				
concave, illuminative	15.3 x 21.5 mm	red transparent	31-904.2	0.001 kg
		orange transparent	31-904.3	0.001 kg
		yellow transparent	31-904.4	0.001 kg
		green transparent	31-904.5	0.001 kg
		blue transparent	31-904.6	0.001 kg
		colourless transparent	31-904.7	0.001 kg
concave, illuminative, not suitable for film insert	15.3 x 21.5 mm	red translucent	31-902.2	0.001 kg
		orange translucent	31-902.3	0.001 kg
		yellow translucent	31-902.4	0.001 kg
		green translucent	31-902.5	0.001 kg
		blue translucent	31-902.6	0.001 kg
		white translucent	31-902.9	0.001 kg
concave, non-illuminative	15.3 x 21.5 mm	black opaque	31-902.0	0.001 kg
		grey opaque	31-902.8	0.001 kg
 Lens plastic				
flat, illuminative	Ø 15.8 mm	smoked transparent	31-933.1	0.001 kg
		red transparent	31-933.2	0.001 kg
		orange transparent	31-933.3	0.001 kg
		yellow transparent	31-933.4	0.001 kg
		green transparent	31-933.5	0.001 kg
		blue transparent	31-933.6	0.001 kg
		colourless transparent	31-933.7	0.001 kg
flat, illuminative, not suitable for film insert	Ø 15.8 mm	red translucent	31-931.2	0.001 kg
		orange translucent	31-931.3	0.001 kg
		yellow translucent	31-931.4	0.001 kg
		green translucent	31-931.5	0.001 kg
		blue translucent	31-931.6	0.001 kg
		white translucent	31-931.9	0.001 kg
flat, illuminative, less suitable for film insert	Ø 15.8 mm	red transparent	31-935.2	0.001 kg
		green transparent	31-935.5	0.001 kg
		colourless transparent	31-935.7	0.001 kg
flat, non-illuminative	Ø 15.8 mm	black opaque	31-931.0	0.001 kg



Protective cover, IP 40

Zusätzliche Informationen

- Hinged, with means for sealing
- Front panel thickness reduces by 2 mm
- Please note that bigger minimum distances are necessary



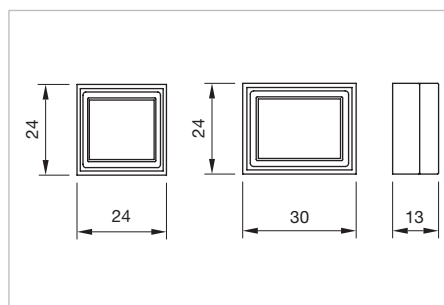
Dimensions [mm]

Mounting cut-out	Material	Optics	Dimension	Part No.	Weight
 Protective cover					
Ø 16 mm	Plastic	transparent	20 x 23.5 mm	31-920	0.002 kg
 Protective cover					
Ø 16 mm	Plastic	transparent	18 x 24 mm	01-925	0.002 kg


Front protective cap, IP 67

Additional Information

- Two-part
- Please note that bigger minimum distances are necessary



Dimensions [mm]

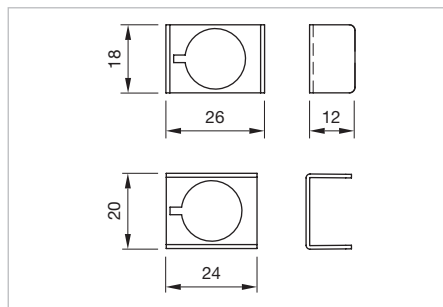
Product attribute	Dimension	Material	Colour	Optics	Part No.	Weight
 Front protective cap						
for button 18 x 18 mm with mounting cut-out Ø16 mm	24 x 24 mm	PVC/PE	colourless	transparent	31-923	0.003 kg
for button 18 x 24 mm with mounting cut-out Ø16 mm	24 x 30 mm	PE/Silicone	colourless	transparent	31-924.2	0.003 kg

31 Accessories



Protective guard

Additional Information

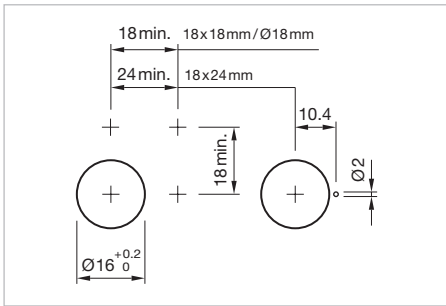
- Please note that bigger minimum distances are necessary






Dimensions [mm]

Product attribute	Dimension	Material	Colour	Part No.	Weight
 <p>Protective guard</p>					
narrow ends bent upwards, for button 18 x 24 mm with mounting cut-out Ø16 mm	18 x 26 mm	Brass	matt chrome	01-926	0.011 kg
 <p>Protective guard</p>					
broad sides bent upwards, for button 18 x 24 mm with mounting cut-out Ø16 mm	20 x 24 mm	Brass	matt chrome	01-927	0.011 kg

Blind plug



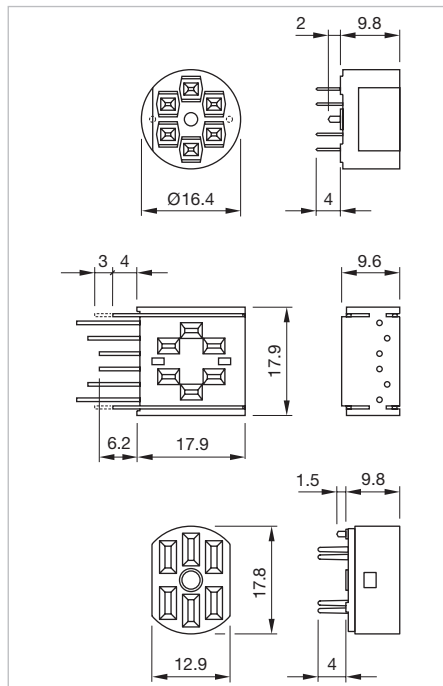
Mounting cut-outs [mm]

Dimension	Material	Colour	Part No.	Weight
 <p>Blind plug</p>				
18 x 18 mm	Plastic	black	01-948.0	0.001 kg
 <p>Blind plug</p>				
18 x 24 mm	Plastic	black	01-947.0	0.001 kg
 <p>Blind plug</p>				
Ø 18 mm	Plastic	black	01-949.0	0.001 kg




PCB plug-in base

Additional Information

- PCB plug-in base pins right-angle: With the extendable mounting the distance between plug-in base and PCB can be varied up to 3 mm





Dimensions [mm]




Product attribute	Pins	Terminal	Part No.	Component layout	Weight
 <p>PCB plug-in base</p>					
for low level switching element	axial	PCB	31-940	3	0.002 kg
 <p>PCB plug-in base</p>					
for low level switching element	right-angled	PCB	31-941	1	0.004 kg
 <p>PCB plug-in base</p>					
for snap-action switching element 2.8 mm	axial	PCB	31-942	2	0.002 kg

The component layouts you will find from page [{\\$|=BR31_KAZE_Zeichnung}](#)


Flat receptacle

Product attribute	Part No.	Weight
 <p>Flat receptacle</p>		
2.0 x 0.5 mm plug-in terminal	31-945	0.001 kg
 <p>Flat receptacle</p>		
2.8 x 0.5 mm plug-in terminal	31-946	0.001 kg

Insulation sleeve

Product attribute	Part No.	Weight
 <p>Insulation sleeve</p>		
cover plug-in terminals for snap-action switching element 2.8 mm	01-928	0.001 kg
 <p>Insulation sleeve</p>		
for flat receptacle 2.0 mm	31-928	0.001 kg
 <p>Insulation sleeve</p>		
for flat receptacle 2.8 mm	31-929	0.001 kg

Terminal cover

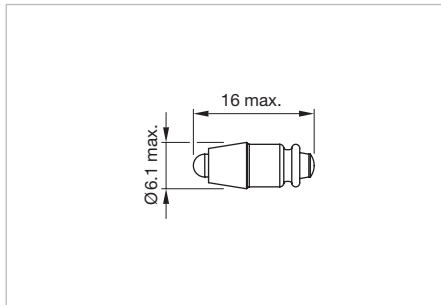
Part No.	Weight
 <p>Terminal cover for snap-action switching element 16</p>	
01-929_579	0.010 kg

Illumination


LED, T1 3/4 MG


Additional Information

- Due to high surface temperatures, the series resistor must not be soldered directly to the terminals of the equipment (use a terminal plate)
- When using AC/DC types with AC operation, slight flickering can occur
- 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
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination




Dimensions [mm]

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
 <p>Single-LED</p>						
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
Single-LED 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
Single-LED 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
Single-LED 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
Single-LED white	6 VDC +10 %	15 mA ±15 %	750 mcd	x0.31/y0.32 nm	10-2J06.3149	0.002 kg
	12 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2J09.1069	0.002 kg
	24 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2J12.1069	0.002 kg
	28 VAC/DC +10 %	7/14 mA ±15 %	700 mcd	x0.31/y0.32 nm	10-2J13.1069	0.002 kg
	48 VAC/DC +10 %	4/8 mA ±15 %	400 mcd	x0.31/y0.32 nm	10-2J19.1049	0.002 kg

LED colour	Operating voltage	Operation current	Lumi. intensity	Dom. wavelength	Part No.	Weight
						
Bi-colour LED						
red/green	24 VDC +10 %	15/14 mA ±15 %	600/630 mcd	625/525 nm	10-A312.314A	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
28 VAC/DC	40 mA ±10 %	10-1313.1249	0.001 kg
36 VAC/DC	20 mA ±10 %	10-1316.1179	0.001 kg
36 VAC/DC	30 mA ±10 %	10-1316.1209	0.001 kg
48 VAC/DC	20 mA ±10 %	10-1319.1179	0.001 kg
48 VAC/DC	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 series resistor must not 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

31 Accessories


Terminal plate empty

Additional Information

- For fitting with series resistors


Product attribute	Dimension	Part No.	Weight
 Terminal plate empty			
5 spaces	62.5 x 60 x 15 mm	02-912.1	0.025 kg
10 spaces	125 x 60 x 15 mm	02-912.2	0.045 kg
15 spaces	187.6 x 60 x 15 mm	02-912.3	0.090 kg
20 spaces	250 x 60 x 15 mm	02-912.4	0.095 kg

Mounting**Lens remover**

Part No.	Weight
 <p>Lens remover</p>	
02-905	0.011 kg


Lamp remover**Additional Information**

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

Part No.	Weight
 <p>Lamp remover</p>	
61-9740.0	0.003 kg

Mounting tool**Additional Information**

- for tightening or loosening of the fixing nut


Part No.	Weight
 <p>Mounting tool</p>	
01-907	0.020 kg

31 Accessories

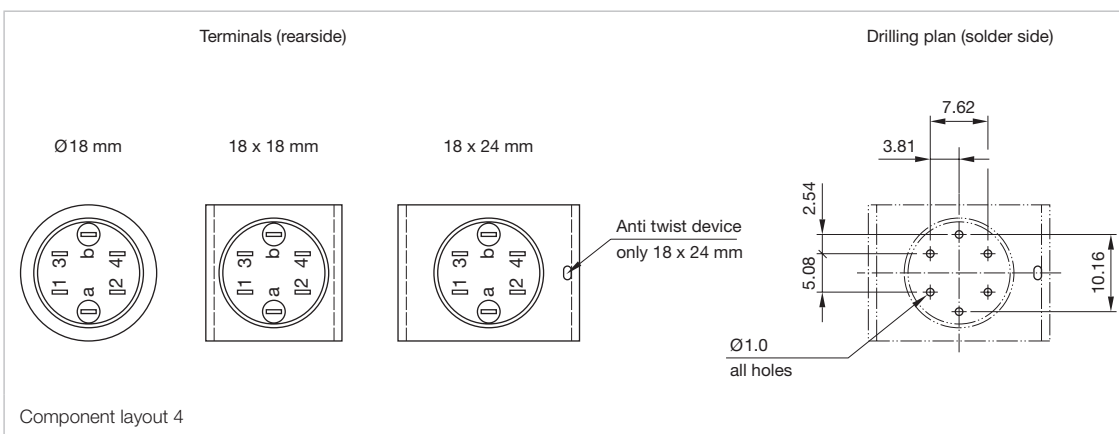
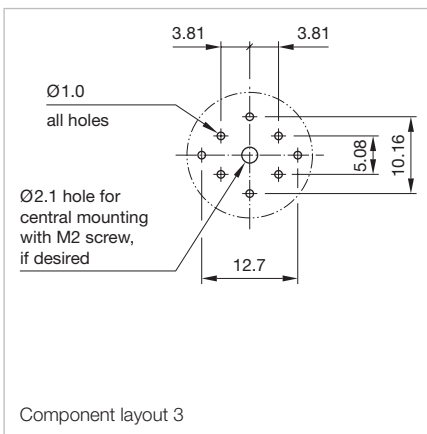
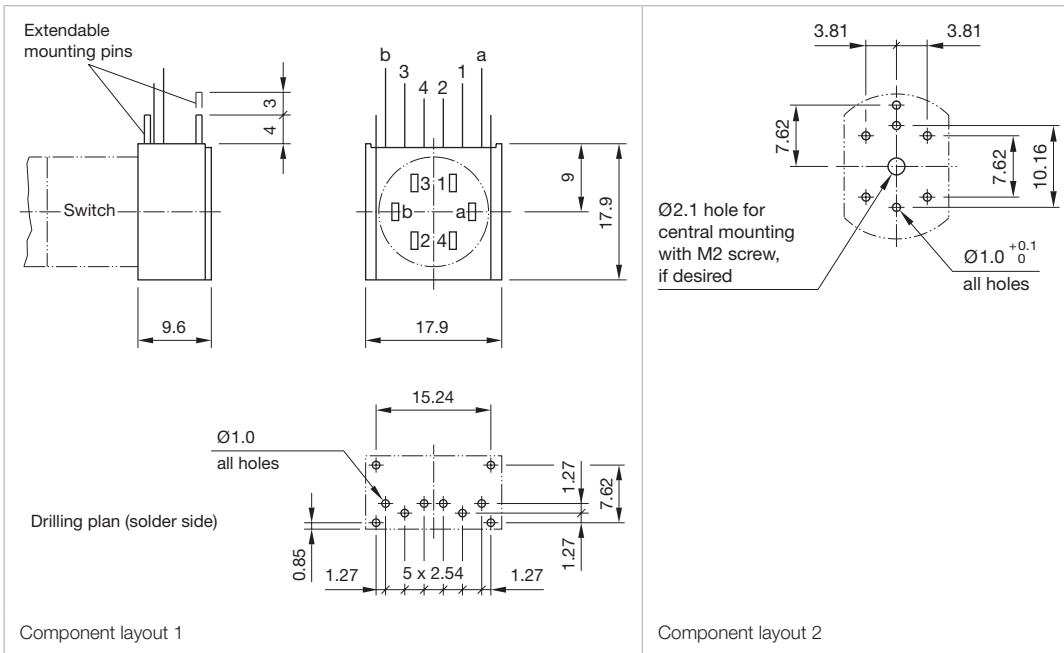
Dressing tool

Additional Information

- For aligning buttons

Part No.	Weight
 Dressing tool	
01-906	0.03 kg

Drawings



31 Technical data

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 stachable, only 1 switching element can be on a pushbutton.

Material

Material of contact

Gold plated silver

Switch housing

Axial plug-in-/soldering terminal 2.8 mm:
Diallyphthalate (DAP), Polyamide (PA66), Polysulfone, heatresistant and self-extinguishing
Soldering terminal: PA 6.6 Ultramide

Actuator housing

Polyetherimide, self-extinguishing

Mechanical characteristics

Terminals

Snap-action switching element with tinned soldering terminals at the sides:
Max. wire diameter 2 wires à 1.2 mm
Max. wire cross-section of stranded cable 1 x 1 mm²
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 1 wire of 1.5 mm²
Max. wire cross-section of stranded cable 2 x 0.75 mm² or 1 x 1.0 mm²

Tightening torque

for fixing nut max. 50 Ncm

Actuating force

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

Actuating travel

3 mm

Rebound time

≤ 5 ms

Mechanical lifetime

Momentary action 2 million cycles of operation
Maintained action 1 million cycles of operation

Electrical characteristics

Standards

IEC 61058, EN 61058

Rated voltage

250 VAC/VDC

Rated current

5 A

Contact resistance

Starting value (initial) ≤ 50 mΩ

Conventional free air thermal current

5 A

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

Switch rating

250 VAC, 5 A (cosφ 1)
250 VAC, 3 A (cosφ 0.3)

Switch rating AC (cosφ 0.7)

Voltage	125 VAC	250 VAC
Current	3 A	2 A

Switch rating DC (inductive) L: R = 30 ms

Voltage	24 VDC	60 VDC	110 VDC	220 VDC
Current	2 A	0.7 A	0.2 A	0.1 A

Electric strength

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

Protection class

II

Environmental conditions

Storage temperature

-40 °C ... +85 °C

Service temperature

-25 °C ... +55 °C

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

Protection degree

Front as per:

IP 40

IP 67 with spray cover

Shock resistance

(Single impacts, semi-sinusoidal)

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

Vibration resistance

(sinusoidal)

10 g at 0–2000 Hz, amplitude 1.5 mm, as per IEC 60512-4-4, IEC 60068-2-6

Climate resistance

Standard condition, as per IEC 60068-2-3 and 2-30

Changing condition, as per IEC 60068-2-14 and 2-33

Approvals

Approbations

CB (IEC 61058)
 CSA
 ENEC (EN 61058)
 Germanischer Lloyd
 UL

Declaration of conformity

CE

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 $\mu\text{A}/\mu\text{V}$ up to 100 mA/42 VAC/DC.

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

Material of contact

Gold plated

Switch housing

Polysulfone, heat-resistant and self-extinguishing

Actuator housing

Polyetherimide, self-extinguishing

Mechanical characteristics

Terminals

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 $\leq 0.8\text{ mm}$

Max. wire cross-section of stranded cable $1 \times 0.75\text{ mm}^2$

Plug-in terminal: $2.0 \times 0.5\text{ mm}$

Tightening torque

for fixing nut max. 50 Ncm

Actuating force

3 N ... 3.5 N

Actuating travel

3 mm

Rebound time

Typ. $< 100\ \mu\text{s}$

Mechanical lifetime

Momentary action 5 million cycles of operation

Maintained action 1 million cycles of operation

Electrical characteristics

Standards

EN 61058

Contact resistance

Starting value (initial) $\leq 50\text{ m}\Omega$

Switch rating

$10\ \mu\text{A}$, $100\ \mu\text{V}$ 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

Protection class

II

Environmental conditions

Storage temperature

$-40\text{ }^\circ\text{C}$... $+85\text{ }^\circ\text{C}$

Service temperature

$-25\text{ }^\circ\text{C}$... $+55\text{ }^\circ\text{C}$

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

Protection degree

Front as per:

IP 40

IP 67 with spray cover

Shock resistance

(Single impacts, semi-sinusoidal)

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

Vibration resistance

(sinusoidal)

10 g at 0–2000 Hz, amplitude 1.5 mm, as per IEC 60512-4-4, IEC 60068-2-6

Climate resistance

Standard condition, as per IEC 60068-2-3 and 2-30

Changing condition, as per IEC 60068-2-14 and 2-33