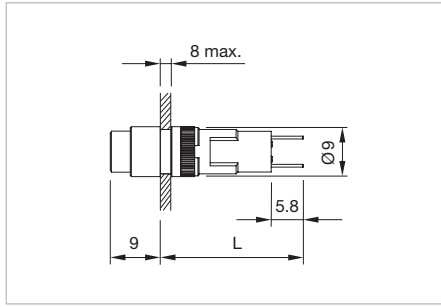


# 19 Raised design

## Indicator, IP 40



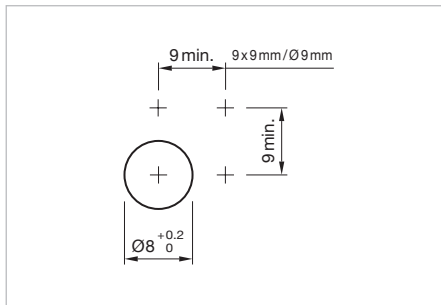
Product can differ from the current configuration.



Dimensions [mm]

### Additional Information

- For LED element fitting information see «Application guidelines»



Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)



**Lens** page 7



**Single-LED** page 10





**Actuator**



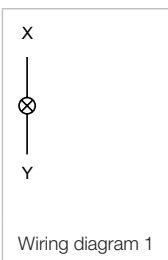
**Fixing nut**

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.



Behind panel depth	Terminal	Part No.	Component layout	Wiring diagram	Weight
 <p><b>Indicator actuator, Front dimension 9 x 9 mm</b></p>					
25 mm	Solder 2.0 x 0.5mm	<b>19-050.005</b>	1	1	0.001 kg
33 mm	Solder 2.0 x 0.5mm	<b>19-051.005</b>	1	1	0.002 kg
 <p><b>Indicator actuator, Front dimension Ø 9 mm</b></p>					
25 mm	Solder 2.0 x 0.5mm	<b>19-030.005</b>	1	1	0.001 kg
33 mm	Solder 2.0 x 0.5mm	<b>19-031.005</b>	1	1	0.002 kg

The component layouts you will find from page 14



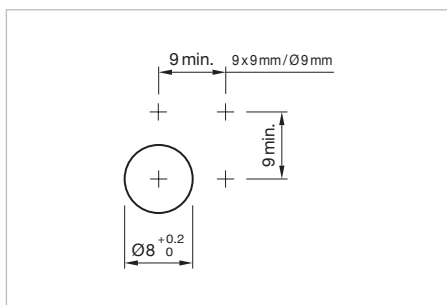
Front

Lens



Product attribute	Dimension	Lens	Part No.	Weight
 <p><b>Lens</b></p>				
illuminative, holder translucent	7.3 x 7.3 mm	Plastic red transparent	<b>19-951.2</b>	0.001 kg
		Plastic yellow transparent	<b>19-951.4</b>	0.001 kg
		Plastic green transparent	<b>19-951.5</b>	0.001 kg
		Plastic blue transparent	<b>19-951.6</b>	0.001 kg
		Plastic white transparent	<b>19-951.9</b>	0.001 kg
illuminative, not recommended for film insert, holder transparent	7.3 x 7.3 mm	Plastic red transparent	<b>19-952.2</b>	0.001 kg
		Plastic yellow transparent	<b>19-952.4</b>	0.001 kg
		Plastic green transparent	<b>19-952.5</b>	0.001 kg
		Plastic blue transparent	<b>19-952.6</b>	0.001 kg
		Plastic colourless transparent	<b>19-952.7</b>	0.001 kg
non-illuminative	7.3 x 7.3 mm	Plastic black opaque	<b>19-951.0</b>	0.001 kg
		Plastic grey opaque	<b>19-951.8</b>	0.001 kg
 <p><b>Lens</b></p>				
illuminative, holder translucent	Ø 7.3 mm	Plastic red transparent	<b>19-931.2</b>	0.001 kg
		Plastic yellow transparent	<b>19-931.4</b>	0.001 kg
		Plastic green transparent	<b>19-931.5</b>	0.001 kg
		Plastic blue transparent	<b>19-931.6</b>	0.001 kg
		Plastic white transparent	<b>19-931.9</b>	0.001 kg
illuminative, not recommended for film insert, holder transparent	Ø 7.3 mm	Plastic red transparent	<b>19-932.2</b>	0.001 kg
		Plastic yellow transparent	<b>19-932.4</b>	0.001 kg
		Plastic green transparent	<b>19-932.5</b>	0.001 kg
		Plastic blue transparent	<b>19-932.6</b>	0.001 kg
		Plastic colourless transparent	<b>19-932.7</b>	0.001 kg
non-illuminative	Ø 7.3 mm	Plastic black opaque	<b>19-931.0</b>	0.001 kg
		Plastic grey opaque	<b>19-931.8</b>	0.001 kg

# 19 Accessories

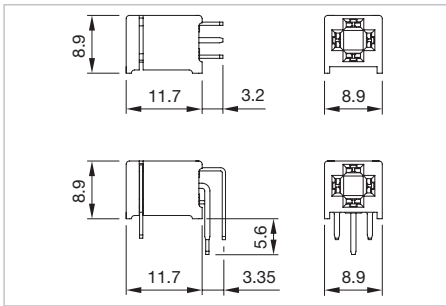
## Blind plug



Mounting cut-outs [mm]



Dimension	Mounting cut-out	Material	Colour	Part No.	Weight
 <b>Blind plug</b>					
9 x 9 mm	Ø 8 mm	Plastic	black	<b>19-948.0</b>	0.001 kg
 <b>Blind plug</b>					
Ø 9 mm	Ø 8 mm	Plastic	black	<b>19-949.0</b>	0.001 kg

Rear side




Dimensions [mm]

PCB plug-in base


pins	Terminal	Part No.	Component layout	Weight
 <p><b>PCB plug-in base</b></p>				
axial	PCB	<b>19-940</b>	4	0.001 kg
 <p><b>PCB plug-in base</b></p>				
right-angled	PCB	<b>19-941</b>	3	0.001 kg

The component layouts you will find from page 14

Flat receptacle

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

Insulation sleeve

Product attribute	Part No.	Weight
 <p><b>Insulation sleeve</b></p>		
for flat receptacle 2.0 mm	<b>31-928</b>	0.001 kg

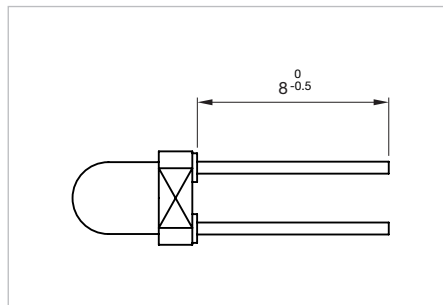
# 19 Accessories

## Illumination


### Single-LED, T1 Bi-Pin

#### Additional Information

- For LED element fitting information see «Application guidelines»
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination




Dimensions [mm]

Pins	LED colour	Lumi. intensity	Dom. wavelength	Forward voltage typ.	Part No.	Weight
 <p><b>Single-LED</b></p>						
Single-LED max. length: 8 mm	red	450 mcd	635 nm	2.0 VDC @ 20 mA	<b>10-2601.3172K</b>	0.001 kg
	yellow	450 mcd	587 nm	2.1 VDC @ 20 mA	<b>10-2601.3174K</b>	0.001 kg
	green	1600 mcd	525 nm	3.2 VDC @ 20 mA	<b>10-2603.3175K</b>	0.001 kg
	blue	500 mcd	465 nm	3.2 VDC @ 20 mA	<b>10-2603.3176K</b>	0.001 kg
	white	4600 mcd	x0.31/y0.32 nm	3.0 VDC @ 20 mA	<b>10-2603.3178K</b>	0.001 kg


### Multi-LED, T1 Bi-Pin

#### Additional Information

- For LED element fitting information see «Application guidelines»
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination

pins	LED colour	Operating voltage	Operation current	Part No.	Weight
 <p><b>Multi-LED</b></p>					
Multi-LED max. length: 5 mm	red	28 VDC ±5%	12 mA	<b>10-4613.3102B</b>	0.001 kg
	orange	28 VDC ±5%	12 mA	<b>10-4613.3103B</b>	0.001 kg
	yellow	28 VDC ±5%	12 mA	<b>10-4613.3104B</b>	0.001 kg
	green	28 VDC ±5%	12 mA	<b>10-4613.3105B</b>	0.001 kg


**Filament lamp, T1 Bi-Pin**

pins	Operating voltage	Operation current	Part No.	Weight
 <p><b>Filament lamp</b></p>				
max. length: 5 mm	6 VAC/DC	70 mA	<b>10-1606.1309</b>	0.001 kg
	12 VAC/DC	25 mA	<b>10-1609.1199</b>	0.001 kg
	24 VAC/DC	20 mA	<b>10-1612.1179</b>	0.001 kg

# 19 Accessories

## Mounting


### Fixing nut

Dimension	Part No.	Weight
 <b>Fixing nut</b>		
Ø 9/M8 x 13 mm	19-991	0.001 kg


### Dressing tool

#### Additional Information

- For aligning buttons

Part No.	Weight
 <b>Dressing tool</b>	
19-906	0.011 kg


### Lens remover

Part No.	Weight
 <b>Lens remover</b>	
19-910	0.002 kg

**Lamp remover**

**Additional Information**


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

Part No.	Weight
 <p><b>Lamp remover</b></p>	
11-906	0.003 kg

**Mounting tool**

**Additional Information**

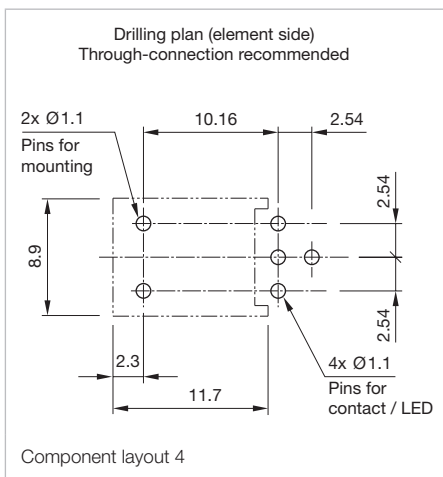
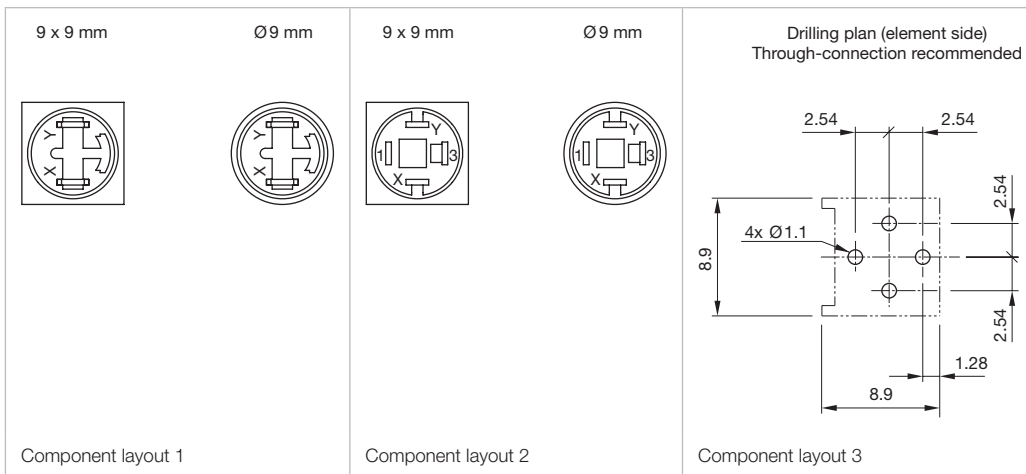
- For fixing nut long Part No. 19-991

Part No.	Weight
 <p><b>Mounting tool</b></p>	
19-905	0.011 kg



# 19 Drawings

## Drawings



## Suppressor circuits

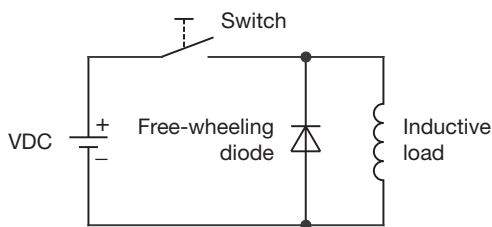
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilovolts in amplitude even when nominal circuit voltages are low (e.g. 12VDC) see Fig. 2.

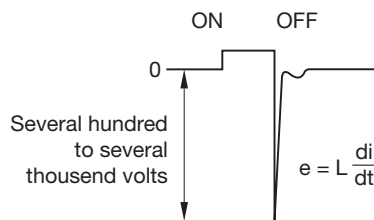
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage ( $V_R$ ) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current flowing through the load.

**To get an efficient protection, the free-wheeling diode must be connected as close as possible to the inductive load!**

Switching with inductive load  
Fig. 1



Counter EMF  
over load without free-wheeling diode  
Fig. 2



## LED polarity

When fitting the LED elements the polarity has to correspond with the respective terminal, (x+) goes to +.

