

Mushroom-head pushbutton, IP 67

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.



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



Product can differ from the current configuration.



Mounting cut-outs [mm]

Additional Information

- For front dimension Ø 50 mm
- To obtain IP 67 use marking plate Part No. 704.609.9

| Switching system | Contacts | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight |
|----------------------------------------------------------------------------------------------------------|-------------|------------------|------------------------|--------------------|------------------|----------------|----------|
|  Low-level element | 1 NC | B | Universal 2.0 x 0.5 mm | 14-436.036 | 1 | 1 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-476.036 | 1 | 2 | 0.015 kg |
| | 1 NC + 1 NO | B | Universal 2.0 x 0.5 mm | 14-433.036 | 1 | 3 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-473.036 | 1 | 4 | 0.015 kg |
| | 1 NO | B | Universal 2.0 x 0.5 mm | 14-435.036 | 1 | 5 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-475.036 | 1 | 6 | 0.015 kg |
| | 2 NC | B | Universal 2.0 x 0.5 mm | 14-432.036 | 1 | 7 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-472.036 | 1 | 8 | 0.015 kg |
| | 2 NO | B | Universal 2.0 x 0.5 mm | 14-431.036 | 1 | 9 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-471.036 | 1 | 10 | 0.015 kg |
| Snap-action switching element | 1 NC + 1 NO | B | Solder | 14-131.0252 | 11 | | 0.013 kg |
| | | B | Solder 2.8 x 0.5 mm | 14-131.022 | 19 | | 0.013 kg |
| | | C | Solder | 14-271.0252 | 12 | | 0.013 kg |
| | | B | Solder 2.8 x 0.5 mm | 14-271.022 | 20 | | 0.013 kg |
| | 2 NC + 2 NO | B | Solder | 14-132.0252 | 13 | | 0.013 kg |
| | | C | Solder | 14-272.0252 | 14 | | 0.013 kg |
| | 3 NC + 3 NO | B | Solder | 14-133.0252 | 15 | | 0.013 kg |
| | | C | Solder | 14-273.0252 | 16 | | 0.013 kg |
| | 4 NC + 4 NO | B | Solder | 14-134.0252 | 17 | | 0.013 kg |
| | | C | Solder | 14-274.0252 | 18 | | 0.013 kg |

Contacts: NC = Normally closed, NO = Normally open
 Switching action: B = Momentary, C = Maintain
 The component layouts you will find from page 55

14 Flush design



Illuminated mushroom head pushbutton, IP 67

Equipment consisting of (schematic overview)

-  **Mushroom-head cap** *page 36*
-  **Front bezel set** *page 38*
-  **Marking plate** *page 37*
-  **Single-LED** *page 48*
-  **Actuator**
-  **Part of front bezel set**
-  **Fixing nut**



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



Product can differ from the current configuration.



Mounting cut-outs [mm]

Additional Information

- For front dimension Ø 50 mm
- For LED element fitting information see «Application guidelines»
- To obtain IP 67 use marking plate Part No. 704.609.9

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.

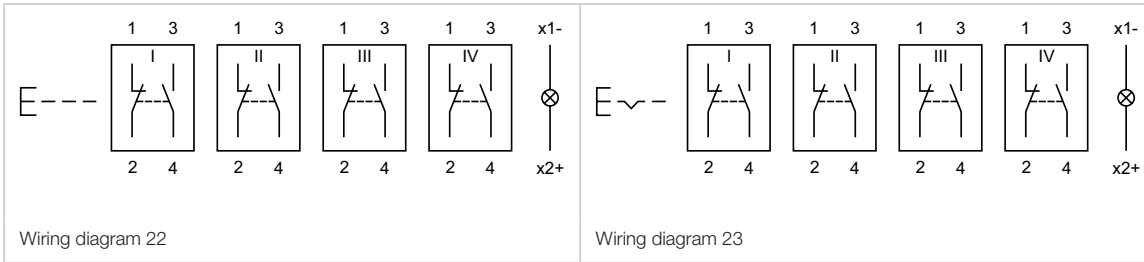
| Switching system | Contacts | Diode 1N4007 | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight | |
|----------------------------------------------------------------------------------------------------------|-------------|--------------|------------------|------------------------|---------------------|--------------------|----------------|----------|----------|
|  Low-level element | 1 NC | | B | Universal 2.0 x 0.5 mm | 14-436.036 | 1 | 1 | 0.015 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-476.036 | 1 | 2 | 0.015 kg | |
| | 1 NC + 1 NO | | B | Universal 2.0 x 0.5 mm | 14-433.036 | 1 | 3 | 0.015 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-473.036 | 1 | 4 | 0.015 kg | |
| | 1 NO | | B | Universal 2.0 x 0.5 mm | 14-435.036 | 1 | 5 | 0.015 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-475.036 | 1 | 6 | 0.015 kg | |
| | 2 NC | | B | Universal 2.0 x 0.5 mm | 14-432.036 | 1 | 7 | 0.015 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-472.036 | 1 | 8 | 0.015 kg | |
| | 2 NO | | B | Universal 2.0 x 0.5 mm | 14-431.036 | 1 | 9 | 0.015 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-471.036 | 1 | 10 | 0.015 kg | |
| Snap-action switching element | 1 NC + 1 NO | 1 | B | Universal 2.0 x 0.5 mm | 14-743.0292 | 1 | 11 | 0.014 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-747.0292 | 1 | 12 | 0.014 kg | |
| | | 2 | B | Universal 2.0 x 0.5 mm | 14-744.0292 | 1 | 13 | 0.014 kg | |
| | | | C | Universal 2.0 x 0.5 mm | 14-748.0292 | 1 | 14 | 0.014 kg | |
| | | | | B | Solder | 14-131.0252 | | 15 | 0.013 kg |
| | | | | B | Solder 2.8 x 0.5 mm | 14-131.022 | | 24 | 0.013 kg |
| | | | | C | Solder | 14-271.0252 | | 16 | 0.013 kg |
| | | | | C | Solder 2.8 x 0.5 mm | 14-271.022 | | 25 | 0.013 kg |
| | 2 NC + 2 NO | 2 | B | Universal 2.0 x 0.5 mm | 14-746.0292 | 1 | 17 | 0.014 kg | |

14 Flush design

| Switching system | Contacts | Diode 1N4007 | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight |
|-------------------------------|-------------|--------------|------------------|----------|--------------------|------------------|----------------|----------|
| Snap-action switching element | 2 NC + 2 NO | | B | Solder | 14-132.0252 | | 18 | 0.013 kg |
| | | | C | Solder | 14-272.0252 | | 19 | 0.013 kg |
| | 3 NC + 3 NO | | B | Solder | 14-133.0252 | | 20 | 0.013 kg |
| | | | C | Solder | 14-273.0252 | | 21 | 0.013 kg |
| | 4 NC + 4 NO | | B | Solder | 14-134.0252 | | 22 | 0.013 kg |
| | | | C | Solder | 14-274.0252 | | 23 | 0.013 kg |

Contacts: NC = Normally closed, NO = Normally open
 Switching action: B = Momentary, C = Maintain
 The component layouts you will find from page 55



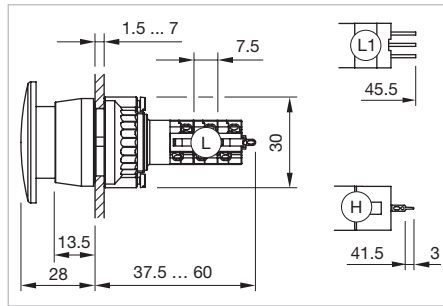


14 Raised design

Mushroom-head pushbutton, IP 67



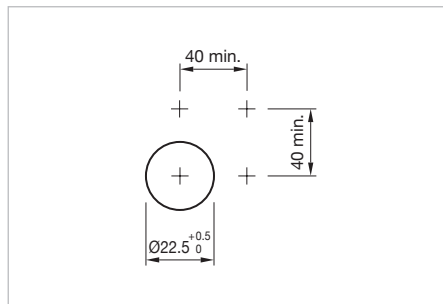
Product can differ from the current configuration.



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

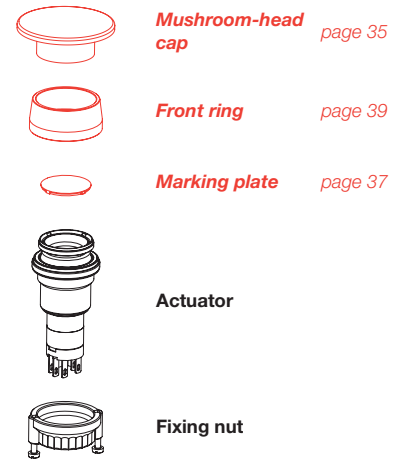
Additional Information

- For front dimension Ø 40 mm




Mounting cut-outs [mm]

Equipment consisting of (schematic overview)

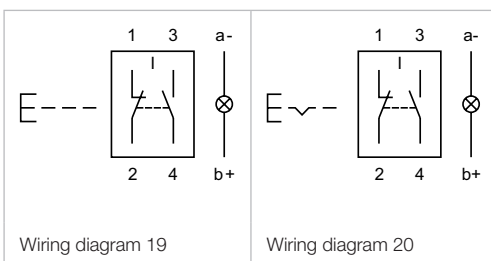
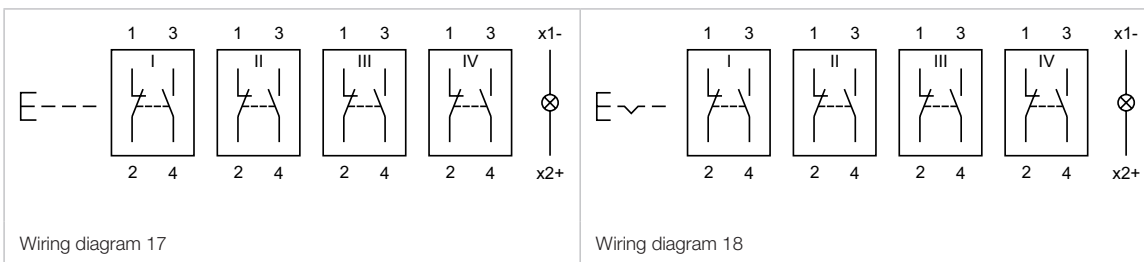
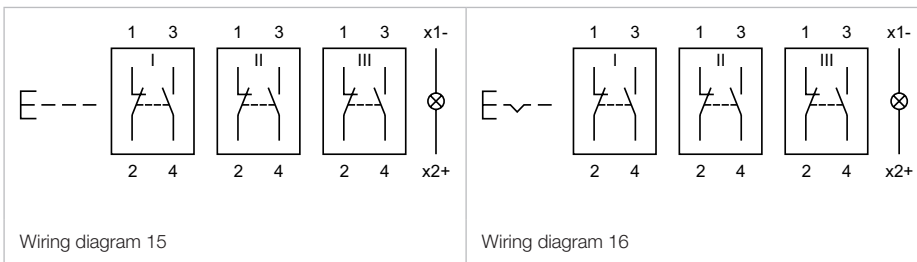
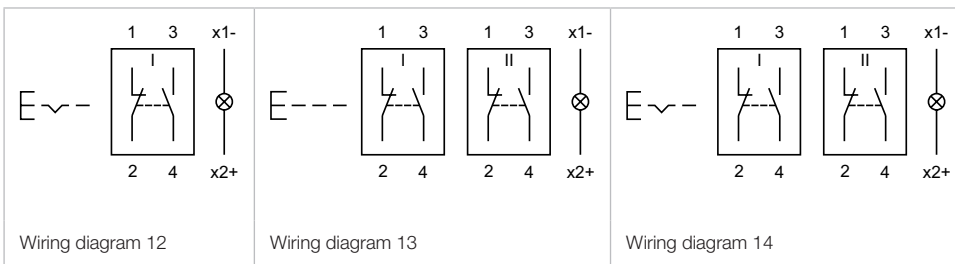
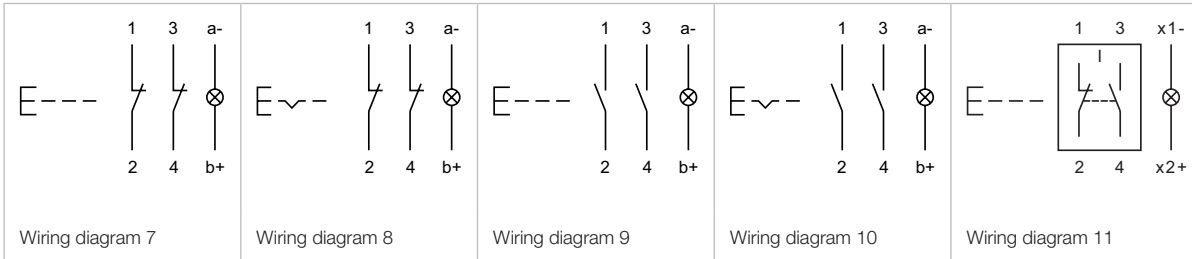
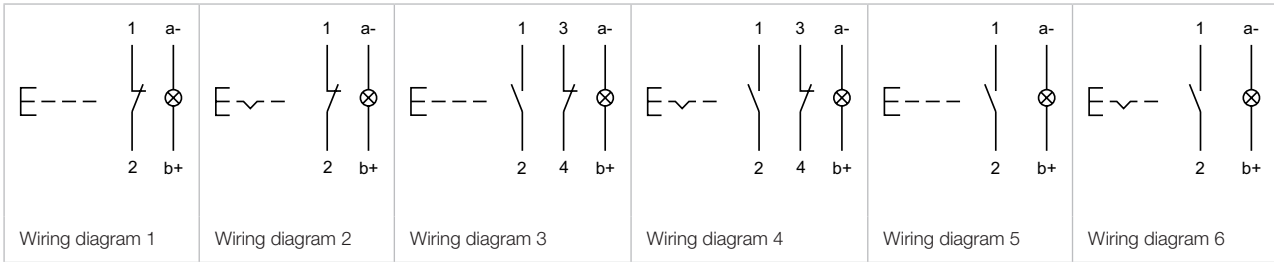


Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

| Switching system | Contacts | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight |
|------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|------------------------|--------------------|------------------|----------------|----------|
|  Mushroom-head pushbutton actuator | | | | | | | |
| Low-level element | 1 NC | B | Universal 2.0 x 0.5 mm | 14-436.036 | 1 | 1 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-476.036 | 1 | 2 | 0.015 kg |
| | 1 NC + 1 NO | B | Universal 2.0 x 0.5 mm | 14-433.036 | 1 | 3 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-473.036 | 1 | 4 | 0.015 kg |
| | 1 NO | B | Universal 2.0 x 0.5 mm | 14-435.036 | 1 | 5 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-475.036 | 1 | 6 | 0.015 kg |
| | 2 NC | B | Universal 2.0 x 0.5 mm | 14-432.036 | 1 | 7 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-472.036 | 1 | 8 | 0.015 kg |
| | 2 NO | B | Universal 2.0 x 0.5 mm | 14-431.036 | 1 | 9 | 0.015 kg |
| | | C | Universal 2.0 x 0.5 mm | 14-471.036 | 1 | 10 | 0.015 kg |
| Snap-action switching element | 1 NC + 1 NO | B | Solder 2.8 x 0.5 mm | 14-131.022 | | 19 | 0.013 kg |
| | | B | Solder | 14-131.0252 | | 11 | 0.013 kg |
| | | C | Solder 2.8 x 0.5 mm | 14-271.022 | | 20 | 0.013 kg |
| | | C | Solder | 14-271.0252 | | 12 | 0.013 kg |
| | 2 NC + 2 NO | B | Solder | 14-132.0252 | | 13 | 0.015 kg |
| | | C | Solder | 14-272.0252 | | 14 | 0.015 kg |
| | 3 NC + 3 NO | B | Solder | 14-133.0252 | | 15 | 0.017 kg |
| | | C | Solder | 14-273.0252 | | 16 | 0.017 kg |
| | 4 NC + 4 NO | B | Solder | 14-134.0252 | | 17 | 0.019 kg |
| | | C | Solder | 14-274.0252 | | 18 | 0.019 kg |

Contacts: NC = Normally closed, NO = Normally open
 Switching action: B = Momentary, C = Maintain
 The component layouts you will find from page 55

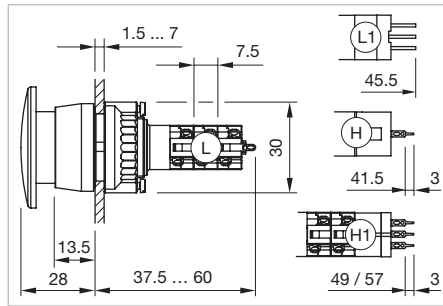


14 Raised design

Illuminated mushroom head pushbutton, IP 67



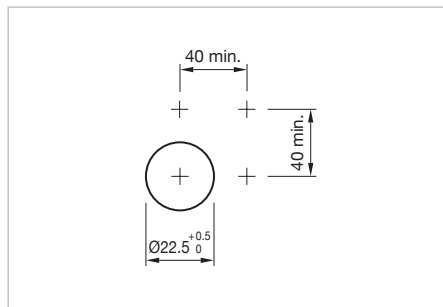
Product can differ from the current configuration.



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

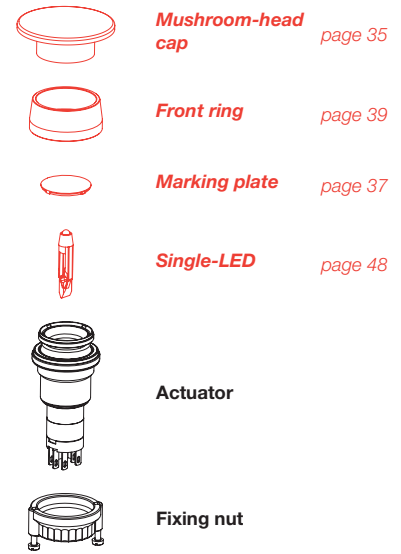
Additional Information

- For front dimension \varnothing 29 mm
- For LED element fitting information see «Application guidelines»




Mounting cut-outs [mm]

Equipment consisting of (schematic overview)



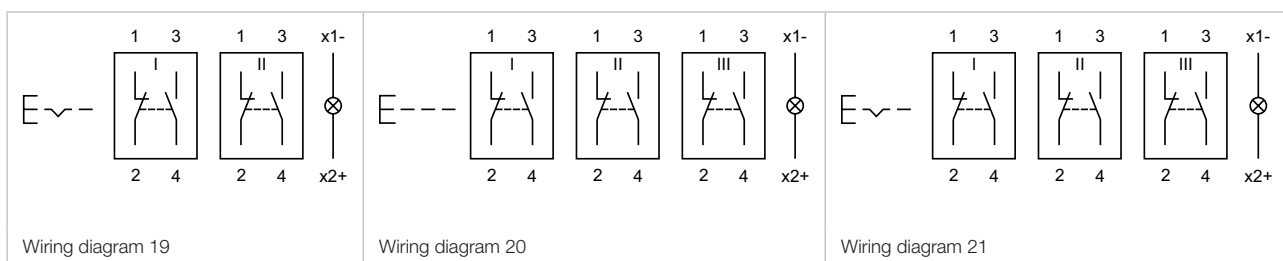
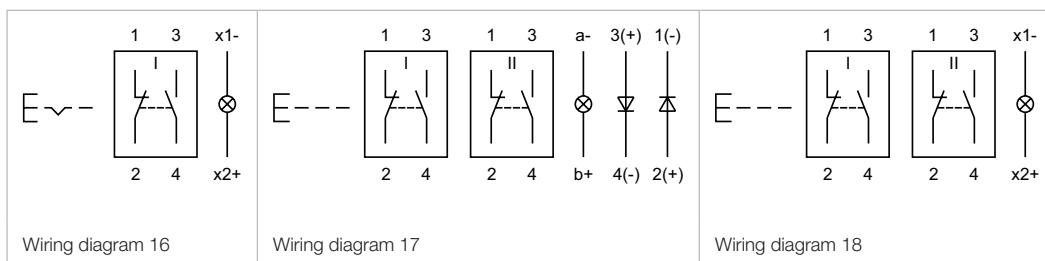
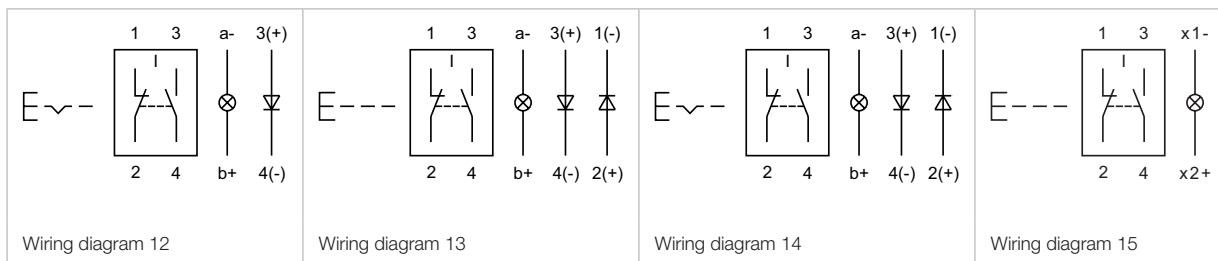
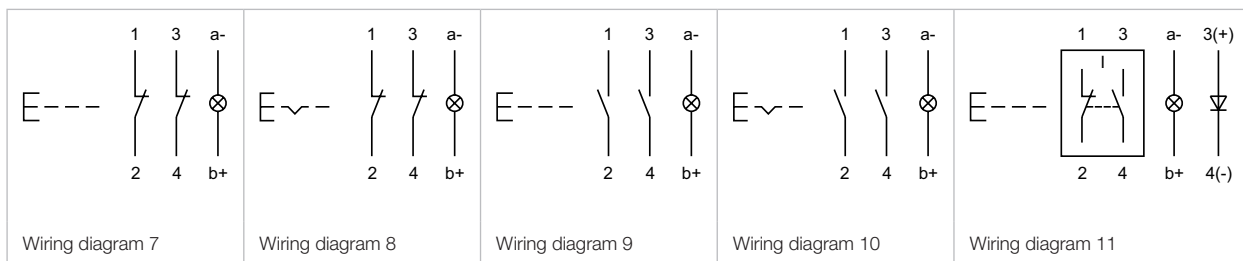
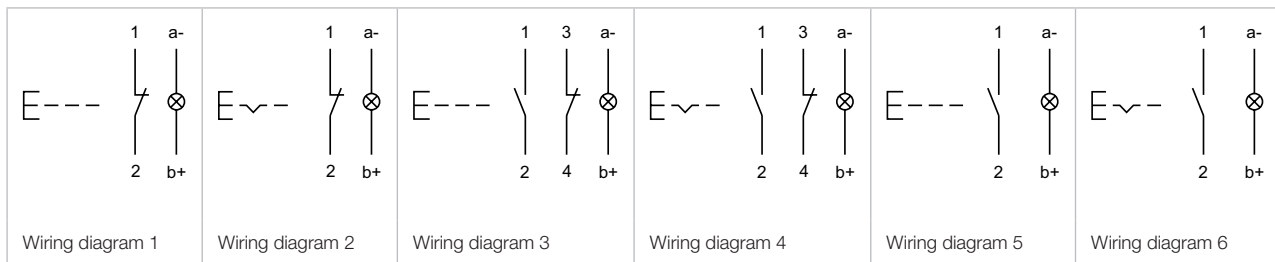
Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

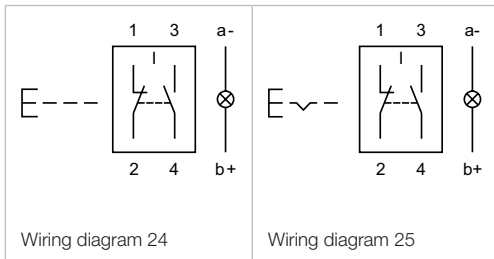
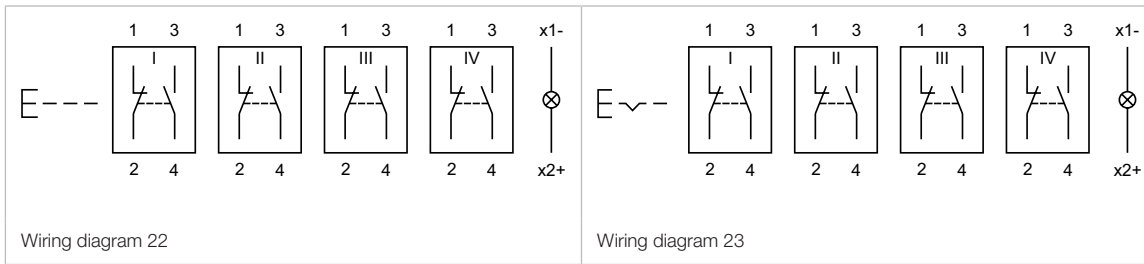
| Switching system | Contacts | Diode 1N4007 | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------|------------------|------------------------|--------------------|--------------------|--------------------|----------|----------|----------|
|  Mushroom-head pushbutton actuator illuminated | Low-level element | 1 NC | B | Universal 2.0 x 0.5 mm | 14-436.036 | 1 | 1 | 0.015 kg | | |
| | | | C | Universal 2.0 x 0.5 mm | 14-476.036 | 1 | 2 | 0.015 kg | | |
| | | 1 NC + 1 NO | B | Universal 2.0 x 0.5 mm | 14-433.036 | 1 | 3 | 0.015 kg | | |
| | | | C | Universal 2.0 x 0.5 mm | 14-473.036 | 1 | 4 | 0.015 kg | | |
| | | 1 NO | B | Universal 2.0 x 0.5 mm | 14-435.036 | 1 | 5 | 0.015 kg | | |
| | | | C | Universal 2.0 x 0.5 mm | 14-475.036 | 1 | 6 | 0.015 kg | | |
| | | 2 NC | B | Universal 2.0 x 0.5 mm | 14-432.036 | 1 | 7 | 0.015 kg | | |
| | | | C | Universal 2.0 x 0.5 mm | 14-472.036 | 1 | 8 | 0.015 kg | | |
| | | 2 NO | B | Universal 2.0 x 0.5 mm | 14-431.036 | 1 | 9 | 0.015 kg | | |
| | | | C | Universal 2.0 x 0.5 mm | 14-471.036 | 1 | 10 | 0.015 kg | | |
| | Snap-action switching element | 1 NC + 1 NO | 1 | B | Universal-Solder | 14-743.0292 | 1 | 11 | 0.014 kg | |
| | | | | C | Universal-Solder | 14-747.0292 | 1 | 12 | 0.014 kg | |
| 2 | | | B | Universal-Solder | 14-744.0292 | 1 | 13 | 0.014 kg | | |
| | | | C | Universal-Solder | 14-748.0292 | 1 | 14 | 0.014 kg | | |
| | | | B | Solder 2.8 x 0.5 mm | 14-131.022 | | 24 | 0.013 kg | | |
| | | | B | Solder | 14-131.0252 | | 15 | 0.013 kg | | |
| | | | C | Solder 2.8 x 0.5 mm | 14-271.022 | | 25 | 0.013 kg | | |
| | | | C | Solder | 14-271.0252 | | 16 | 0.013 kg | | |
| | | | 2 NC + 2 NO | 2 | B | Universal-Solder | 14-746.0292 | 1 | 17 | 0.016 kg |
| | | | | | B | Solder | 14-132.0252 | | 18 | 0.015 kg |
| | | C | Solder | 14-272.0252 | | 19 | 0.015 kg | | | |

| Switching system | Contacts | Diode 1N4007 | Switching action | Terminal | Part No. | Component layout | Wiring diagram | Weight |
|-------------------------------|-------------|--------------|------------------|----------|--------------------|------------------|----------------|----------|
| Snap-action switching element | 3 NC + 3 NO | | B | Solder | 14-133.0252 | | 20 | 0.017 kg |
| | | | C | Solder | 14-273.0252 | | 21 | 0.017 kg |
| | 4 NC + 4 NO | | B | Solder | 14-134.0252 | | 22 | 0.019 kg |
| | | | C | Solder | 14-274.0252 | | 23 | 0.019 kg |

Contacts: NC = Normally closed, NO = Normally open
 Switching action: B = Momentary, C = Maintain
 The component layouts you will find from page 55



14 Raised design



Lens cap, Plastic

Additional Information

- To obtain IP 67 use marking plate Part No. 704.608.X

| Product attribute | Lens cap | Part No. | Weight | |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|------------------|----------|
|  <p>Lens cap round, Front dimension Ø 29 mm</p> | | | | |
| | illuminative | Plastic red | 704.603.2 | 0.003 kg |
| | | Plastic yellow | 704.603.4 | 0.003 kg |
| | | Plastic green | 704.603.5 | 0.003 kg |
| | | Plastic blue | 704.603.6 | 0.003 kg |
| | | Plastic colourless | 704.603.7 | 0.003 kg |

Mushroom-head cap, Plastic

Additional Information

- To obtain IP 67 use marking plate Part No. 704.609.9

| Mushroom-head cap | Part No. | Weight | |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|----------|
|  <p>Mushroom-head cap, Front dimension Ø 40 mm</p> | | | |
| | black opaque | 704.604.0 | 0.001 kg |
| | red opaque | 704.604.2 | 0.001 kg |
| | yellow opaque | 704.604.4 | 0.001 kg |
| | green opaque | 704.604.5 | 0.001 kg |

14 Accessories

Mushroom-head cap illuminated, Plastic

Additional Information

- To obtain IP 67 use marking plate
Part No. 704.609.9

| Mushroom-head cap | Part No. | Weight |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|----------|
|  | Mushroom-head cap illuminated, Front dimension Ø 40 mm | |
| red transparent | 704.614.2 | 0.007 kg |
| yellow transparent | 704.614.4 | 0.007 kg |
| green transparent | 704.614.5 | 0.007 kg |
| blue transparent | 704.614.6 | 0.007 kg |
| colourless transparent | 704.614.7 | 0.007 kg |

Marking plate

| Marking plate illumination | Marking plate | Part No. | Weight |
|-------------------------------------------------------------------------------------|-------------------------------------------------|---------------------|----------|
|  | Marking plate for lens plastic and metal | | |
| non-illuminative | black opaque | 704.609.0 | 0.001 kg |
|  | Marking plate for lens plastic and metal | | |
| LED | colourless transparent ripped | 704.609.7 | 0.001 kg |
|  | Marking plate for lens plastic and metal | | |
| LED and filament lamp | white translucent | 704.609.9 | 0.001 kg |
|  | Legend plate for lens plastic | | |
| Halo illumination | white translucent | 704.609.9A01 | 0.001 kg |

Marking plate mushroom-head cap

| Marking plate | Part No. | Weight |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|
|  <p>Marking plate for mushroom-head cap</p> | | |
| white translucent | 704.609.9 | 0.001 kg |

Marking cap lens increased

| Marking cap illumination | Marking cap | Part No. | Weight |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|----------|
|  <p>Marking cap for lens plastic increased</p> | | | |
| LED | colourless transparent ripped | 704.610.7 | 0.001 kg |
|  <p>Marking cap for lens plastic increased</p> | | | |
| LED and filament lamp | white translucent | 704.610.9 | 0.001 kg |

Marking cap for lens cap, Plastic

| Marking cap illumination | Marking cap | Part No. | Weight |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|----------|
|  <p>Marking cap for lens cap</p> | | | |
| LED | colourless transparent ripped | 704.608.7 | 0.002 kg |
|  <p>Marking cap for lens cap</p> | | | |
| LED and filament lamp | white translucent | 704.608.9 | 0.002 kg |

14 Accessories

Front bezel set

Additional Information

- The colour of anodized aluminium parts can vary due to technical production reasons

| Mounting cut-out | Front ring | Part No. | Weight |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|----------|
|  <p>Front bezel set, flush design, Front dimension Ø 35 mm</p> | | | |
| | Aluminium black anodized | 14-955.0 | 0.015 kg |
| | Aluminium natural anodized | 14-955.1 | 0.015 kg |
| | Stainless-steel natural | 14-955.9 | 0.033 kg |

Front bezel mushroom

Additional Information

- The colour of anodized aluminium parts can vary due to technical production reasons



Mounting cut-outs [mm]

| Mounting cut-out | Front ring | Part No. | Weight |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|----------|
|  <p>Front bezel set for mushroom-head pushbutton, flush design, Front dimension Ø 50 mm</p> | | | |
| | Aluminium natural anodized | 14-958.8 | 0.042 kg |
| | Aluminium black anodized | 14-958.0 | 0.042 kg |

Front bezel set with protective membrane, IP 67

Additional Information

- For illuminated pushbutton for front protection IP 67
- Front ring to be mounted with a torque of 40 Ncm onto actuator
- Before assembling remove the flat gasket of the switch
- The colour of anodized aluminium parts can vary due to technical production reasons

| Product attribute | Front ring | Part No. | Weight |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------|----------|
|  <p>Front bezel set with protective membrane, flush design, Front dimension Ø 35 mm</p> | | | |
| with transparent silicone membrane | Aluminium natural anodized | 14-955.3 | 0.015 kg |
| | Aluminium black anodized | 14-955.4 | 0.015 kg |
| with transparent silicone membrane, resistant to sea water | Stainless-steel natural | 14-955.9E | 0.033 kg |

Front ring

Additional Information

- The colour of anodized aluminium parts can vary due to technical production reasons

| Front ring | Part No. | Weight |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------|
|  <p>Front ring, Front dimension Ø 29 mm</p> | | |
| Plastic black | 704.600.0 | 0.003 kg |
| Aluminium natural anodized | 704.600.1 | 0.005 kg |
| Aluminium black anodized | 704.600.1A | 0.005 kg |
| Plastic light-grey | 704.600.6 | 0.003 kg |
| Stainless-steel natural | 704.600.9 | 0.006 kg |

14 Accessories

Illumination

Single-LED, T5.5

Additional Information

- For LED element fitting information see «Application guidelines»
- 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 scattering caused by LED manufacturing processes may cause slight variations in the illumination
- For supply voltages above 48V, a voltage reduction element (external series resistor or transformer) must be used
- Due to high surface temperatures, the series resistors must be soldered directly to the terminals of the equipment (use a terminal plate)



Dimensions [mm]

| LED colour | Operating voltage | Operation current | Lumi. intensity | Dom. wavelength | Part No. | Weight |
|-------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-----------------|-----------------|---------------------|----------|
|  <p>Single-LED</p> | | | | | | |
| red | 6 VDC +10 % | 15 mA ±15 % | 350 mcd | 630 nm | 10-2106.3142 | 0.001 kg |
| | 12 VAC/DC +10 % | 7/14 mA ±15 % | 330 mcd | 630 nm | 10-2109.1062 | 0.001 kg |
| | 24 VAC/DC +10 % | 7/14 mA ±15 % | 330 mcd | 630 nm | 10-2112.1062 | 0.001 kg |
| | 28 VAC/DC +10 % | 7/14 mA ±15 % | 330 mcd | 630 nm | 10-2113.1062 | 0.001 kg |
| | 48 VAC/DC +10 % | 4/8 mA ±15 % | 200 mcd | 630 nm | 10-2119.1042 | 0.001 kg |
| yellow | 6 VDC +10 % | 15 mA ±15 % | 300 mcd | 587 nm | 10-2106.3144 | 0.001 kg |
| | 12 VAC/DC +10 % | 7/14 mA ±15 % | 280 mcd | 587 nm | 10-2109.1064 | 0.001 kg |
| | 24 VAC/DC +10 % | 7/14 mA ±15 % | 280 mcd | 587 nm | 10-2112.1064 | 0.001 kg |
| | 28 VAC/DC +10 % | 7/14 mA ±15 % | 280 mcd | 587 nm | 10-2113.1064 | 0.001 kg |
| | 48 VAC/DC +10 % | 4/8 mA ±15 % | 180 mcd | 587 nm | 10-2119.1044 | 0.001 kg |
| green | 6 VDC +10 % | 7 mA ±15 % | 1050 mcd | 525 nm | 10-2106.3145 | 0.001 kg |
| | 12 VAC/DC +10 % | 4/7 mA ±15 % | 1050 mcd | 525 nm | 10-2109.1065 | 0.001 kg |
| | 24 VAC/DC +10 % | 4/7 mA ±15 % | 1050 mcd | 525 nm | 10-2112.1065 | 0.001 kg |
| | 28 VAC/DC +10 % | 4/7 mA ±15 % | 1050 mcd | 525 nm | 10-2113.1065 | 0.001 kg |
| | 48 VAC/DC +10 % | 2/4 mA ±15 % | 600 mcd | 525 nm | 10-2119.1045 | 0.001 kg |
| blue | 6 VDC +10 % | 15 mA ±15 % | 680 mcd | 470 nm | 10-2106.3146 | 0.001 kg |
| | 12 VAC/DC +10 % | 7/14 mA ±15 % | 650 mcd | 470 nm | 10-2109.1066 | 0.001 kg |
| | 24 VAC/DC +10 % | 7/14 mA ±15 % | 650 mcd | 470 nm | 10-2112.1066 | 0.001 kg |
| | 28 VAC/DC +10 % | 7/14 mA ±15 % | 650 mcd | 470 nm | 10-2113.1066 | 0.001 kg |
| | 48 VAC/DC +10 % | 4/8 mA ±15 % | 400 mcd | 470 nm | 10-2119.1046 | 0.001 kg |

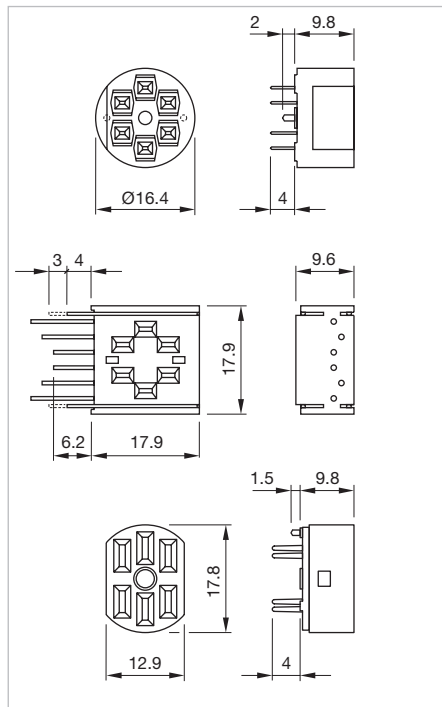
14 Accessories

Rear side



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





Abmessungen [mm]




| Product attribute | Pins | Terminal | Part No. | Component layout | Weight |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------|---------------|------------------|----------|
|  <p>PCB plug-in base for low level switching element</p> | axial | PCB | 31-940 | 2 | 0.002 kg |
|  <p>PCB plug-in base for low level switching element</p> | right-angled | PCB | 31-941 | 3 | 0.004 kg |
|  <p>PCB plug-in base for snap-action switching element 2.8 mm</p> | axial | PCB | 31-942 | 4 | 0.002 kg |

The component layouts you will find from page 55

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

Additional Information

- For snap-action switching element


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

14 Accessories

Reducing ring

Additional Information


- You need to install two reduction rings
- For mounting of Ø 22.5 mm device into Ø 30.5 mm mounting cut-out
- The colour of anodized aluminium parts can vary due to technical production reasons

| Material | Colour | Part No. | Weight |
|---------------------------------------------------------------------------------------------------------------|------------------|------------------|----------|
|  <p>Reducing ring</p> | | | |
| Aluminium | black anodized | 704.960.0 | 0.004 kg |
| | natural anodized | 704.960.8 | 0.004 kg |

Lens plug

Additional Information


- For mounting and dismantling of lens round, flush design

| Part No. | Weight |
|------------------------------------------------------------------------------------------------------------------------------------------|----------|
|  <p>Lens plug for round lens, flush design</p> | |
| 700.006.0 | 0.003 kg |

Lamp remover

Additional Information

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

| Part No. | Weight |
|----------------------------------------------------------------------------------------------------------------|----------|
|  <p>Lamp remover</p> | |
| 02-906 | 0.002 kg |

14 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 stackable, only 1 switching element can be on a pushbutton.

Material

Material of contact

Gold plated silver

Switch housing

Plug-in-/soldering terminal
Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing
Soldering terminal: PA 6.6 Ultramide

Actuator housing

Polyamide

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 1x 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 2 wires of 1 mm

Max. wire cross-section of stranded cable 2 x 0.75 mm² or 1 x 1.0 mm²

Tightening torque

for fixing nut max. 25 Ncm

Actuating torque

Measured at the key or lever of the keylock- or selector switch 2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

Actuating force

Maintain 5 N ... 8 N

Momentary 3 N ... 6 N

depending on the number of switching elements

Actuating travel

Illuminated pushbutton: 3 mm

Switch actuator 2 positions:

Momentary action 1 x ca. 42° deflection momentary action

Maintained action 1 x ca. 90° deflection maintained action

Rebound time

≤ 5 ms

Mechanical lifetime

Momentary action 2 million Cycles of operation

Maintained action 1 million Cycles of operation

Electrical characteristics

Standards

The devices comply with: EN IEC 61058-1

Rated voltage

250 VAC as per EN IEC 61058-1-15

Contact resistance

New state ≤ 50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)

Keylock switch 15 kV

Rated current

5 A

Conventional free air thermal current I_{th}

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 12 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

3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Isolation resistance

> 7 MΩ between the open contacts at 500 VDC, as per EN IEC 61058-1-15 (reinforced insulation)

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

as per EN IEC 60529
 Indicator front side IP 67
 Illuminated pushbutton front side IP 67
 Mushroom-head pushbutton front side IP 67
 Selector switch front side IP 67
 Keylock switch IP 65 front side

Shock resistance

(semi-sinusoidal)
 max. 150 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 as per EN IEC 60068-2-30
 Damp heat cyclic as per EN IEC 60068-2-78

Approvals

Approbations

CB (IEC 61058)
 CSA
 CQC
 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

Polyamide

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 of 1 mm

Max. wire cross-section of stranded cable 2 x 0.75 mm²

Plug-in terminal: 2.0 x 0.5 mm

Tightening torque

for fixing nut max. 25 Ncm

Actuating torque

Measured at the key or lever of the keylock- or selector switch 2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements

Actuating force

3 ... 4 N, depending on the number of switching elements

Actuating travel

Illuminated pushbutton: 3 mm

Switch actuator 2 positions:

Momentary action 1 x ca. 42° deflection momentary action

Maintained action 1 x ca. 90° deflection maintained action

Rebound time

typical < 100 μs

Mechanical lifetime

Momentary action 5 million cycles of operation

Maintained action 1 million cycles of operation

Electrical characteristics

Contact resistance

New state $\leq 50 \text{ m}\Omega$ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)

Keylock switch 15 kV

Switch rating

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

Electric strength

3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Protection class

II

Suppressor circuits

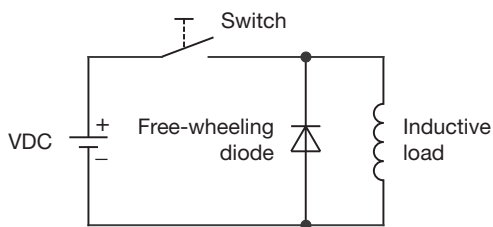
When switching inductive loads such as relays, DC motors, and DC solenoids, it is always important to absorb surges (e.g. with a diode) to protect the contacts. When these inductive loads are switched off, a counter emf can severely damage switch contacts and greatly shorten lifetime.

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.

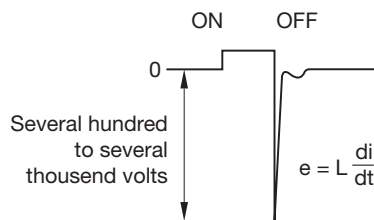
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (V_R) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current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

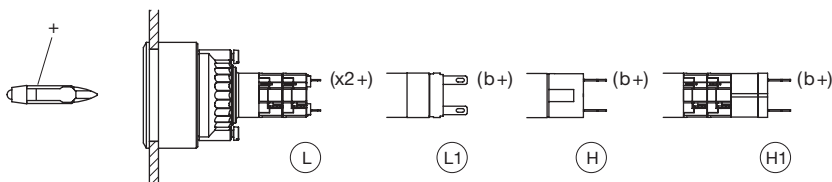


Counter EMF
over load without free-wheeling diode
Fig. 2



LED polarity

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



L = Solder terminal, L1 = Solder terminal 2.0 x 0.5 mm
H = Universal terminal, H1 = Universal-Solder terminal