

## Series 84

*Attractive. Versatile and functional.*

<https://eao.com/84>



# 84 Information about the Series

## Key advantages

- Attractive design and reliable operation
- IP67 front protection
- Powerful, consistent illumination with innovative technologies
- Animated illumination options for a wide variety of potential applications
- Available with soldered, plug, PCB and flat ribbon cable terminals

## Typical application areas

- Machinery
- Measurement and control engineering
- Lifting and handling equipment
- Process automation
- Special vehicles
- Ticketing machines
- Medical equipment

## Functions

- Pushbutton
- Illuminated pushbutton
- Indicator

## Design

- Flush
- Raised

## IP front protection

- IP40
- IP65
- IP67

## Raitings

- 42 VAC (100 mA)
- 240 VAC (1.5 A)

## Mounting cut-outs

- Ø 22.3 mm
- Ø 30.5 mm

## Terminal

- Soldering/plug-in terminal
- PCB
- Cable

## Lens Material

- Aluminium
- Plastic

## Markings

- Engraving
- Laser marking
- Hot stamping
- Pad printing
- Screen print
- Milling

## Approvals

- CB (IEC 60947)
- UL
- TSI PRM

## Conformities

- CE
- 2006/42/EC (MD)
- 2011/65/EC (RoHS)
- 1300/2014 (PRM)
- 2014/30/EU (EMC)



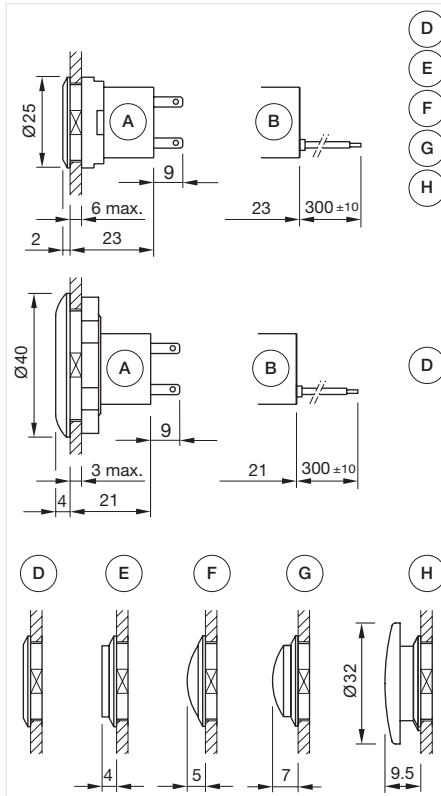
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# 84 Flush design

## Pushbutton standard, IP40, IP67

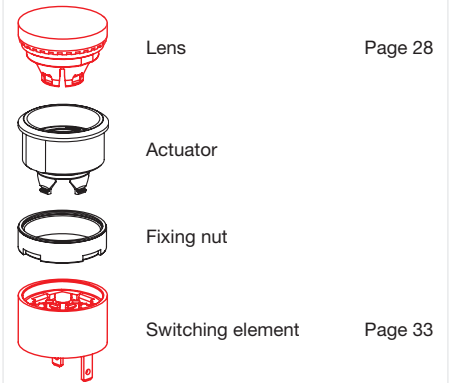


Product can differ from the current configuration.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable  
 D = Lens level with bezel  
 E = Lens raised above bezel  
 F = Lens konvexe level with bezel  
 G = Lens konvexe raised above bezel  
 H = Mushroom-head cap

### Equipment consisting of (schematic overview)

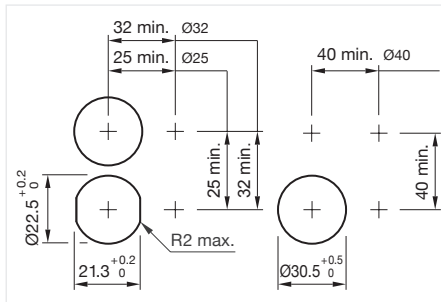


Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

### General information

- Non-illuminated lens and bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Mounting cut-outs [mm]



### Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Black              | Plastic              | IP67                | Ø 25 mm    | 84-1101.0 | 72             |
|                  | Black              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.0 | 72             |
|                  | Red                | Aluminium            | IP67                | Ø 25 mm    | 84-1201.2 | 72             |
|                  | Gold               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.4 | 72             |
|                  | Olive              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.5 | 72             |
|                  | Blue               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.6 | 72             |
|                  | Nature             | Aluminium            | IP67                | Ø 25 mm    | 84-1201.7 | 72             |
|                  | Black              | Plastic              | IP40                | Ø 25 mm    | 84-2101.0 | 294            |



**Actuator**

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Nature             | Aluminium            | IP67                | Ø 40 mm    | 84-1221.7 | 294            |

## Wiring diagrams

|                   |                    |
|-------------------|--------------------|
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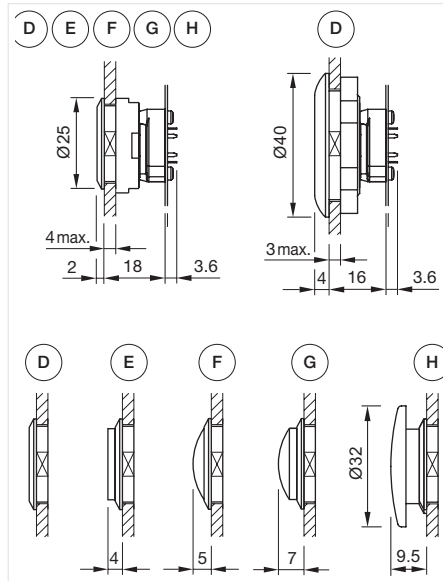
- 01
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- 92
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# 84 Flush design

## Pushbutton PCB standard, IP40, IP67

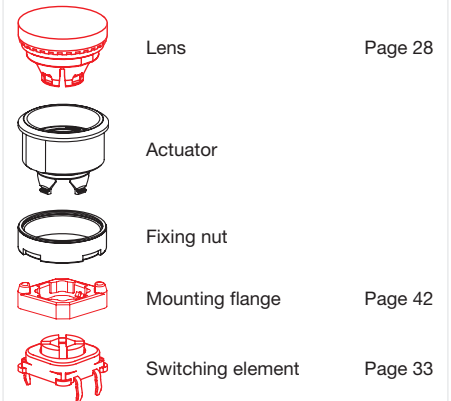


Product can differ from the current configuration.



Dimensions [mm]  
 D = Lens level with bezel  
 E = Lens raised above bezel  
 F = Lens konvexe level with bezel  
 G = Lens konvexe raised above bezel  
 H = Mushroom-head cap

### Equipment consisting of (schematic overview)

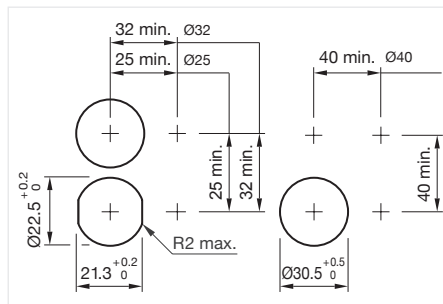


Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

### General information

- Non-illuminated lens and bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Mounting cut-outs [mm]



Actuator

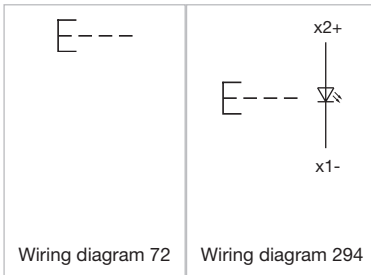
| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Black              | Plastic              | IP67                | Ø 25 mm    | 84-1101.0 | 72             |
|                  | Black              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.0 | 72             |
|                  | Red                | Aluminium            | IP67                | Ø 25 mm    | 84-1201.2 | 72             |
|                  | Gold               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.4 | 72             |
|                  | Olive              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.5 | 72             |
|                  | Blue               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.6 | 72             |
|                  | Nature             | Aluminium            | IP67                | Ø 25 mm    | 84-1201.7 | 72             |
|                  | Black              | Plastic              | IP40                | Ø 25 mm    | 84-2101.0 | 294            |



Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Nature             | Aluminium            | IP67                | Ø 40 mm    | 84-1221.7 | 294            |

## Wiring diagrams



- 01
- 02
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- 96



### Compact, attractive and reliable. *Series 84 E-Stop switches.*

Ideal for challenging applications – thanks to the attractive design and the very low back panel depth.

- Robust mono-block
- Foolproof and fail-safe design
- Very low back panel depth
- Attractive, modern design and protection IP65/67
- Reliable and long service life
- Clearly visible illumination

[www.eao.com/84-e-stop](http://www.eao.com/84-e-stop)

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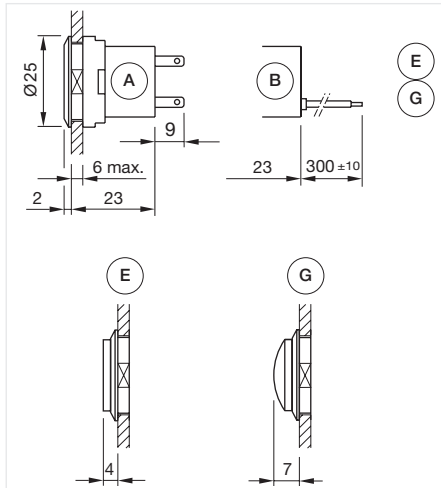
Your Expert Partner for Human Machine Interfaces

# 84 Flush design

## Pushbutton ring illumination standard, IP67

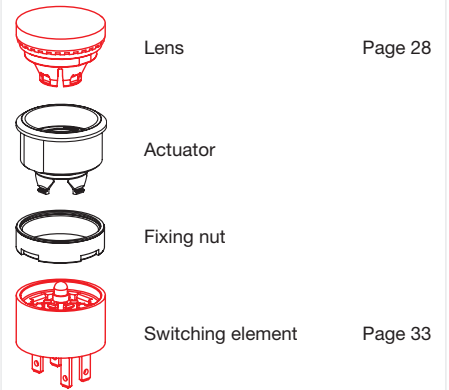


Product can differ from the current configuration.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable  
 E = Lens raised above bezel  
 G = Lens convexe raised above bezel

### Equipment consisting of (schematic overview)

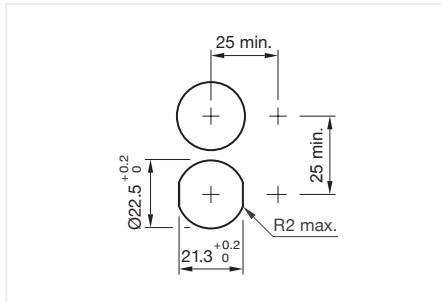


Each Part Number listed below includes all the black components shown in the 3D-drawing.

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

### General information

- Front bezel illuminated
- Accessories for halo illumination: Essential lenses Part No. 84-7202.x00A and 84-7205.x00A



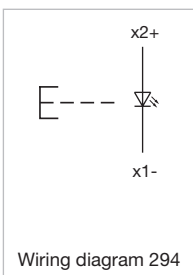
Mounting cut-outs [mm]



Actuator, Front dimension  $\varnothing$  25 mm

| Switching action | Front bezel colour | Front bezel material | IP front protection | Front bezel optics | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|--------------------|-----------|----------------|
| Momentary        | White              | Plastic              | IP67                | translucent        | 84-1091.7 | 294            |







## Wiring diagrams





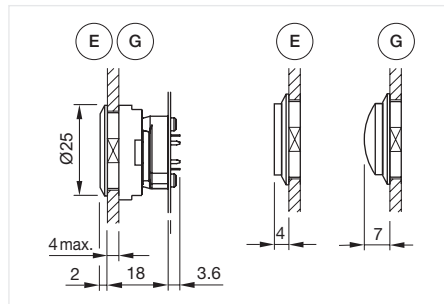
## Pushbutton ring illumination PCB standard, IP67

### Equipment consisting of (schematic overview)

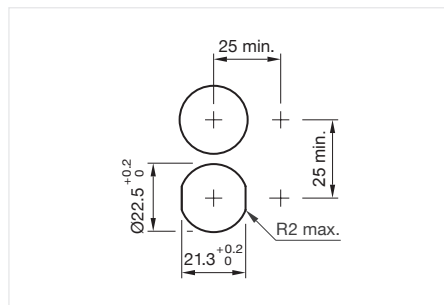
|   |                   |         |
|---|-------------------|---------|
|  | Lens              | Page 28 |
|  | Actuator          |         |
|  | Fixing nut        |         |
|  | Mounting flange   | Page 42 |
|  | Single-LED        | Page 32 |
|  | Switching element | Page 33 |

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]  
E = Lens raised above bezel  
G = Lens convex raised above bezel



Mounting cut-outs [mm]



Product can differ from the current configuration.

### General information

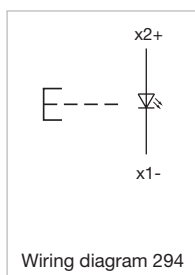
- Front bezel illuminated
- Accessories for halo illumination: Essential lenses Part No. 84-7202.x00A and 84-7205.x00A



Actuator, Front dimension  $\varnothing$  25 mm

| Switching action | Front bezel colour | Front bezel material | IP front protection | Front bezel optics | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|--------------------|-----------|----------------|
| Momentary        | White              | Plastic              | IP67                | translucent        | 84-1091.7 | 294            |

## Wiring diagrams

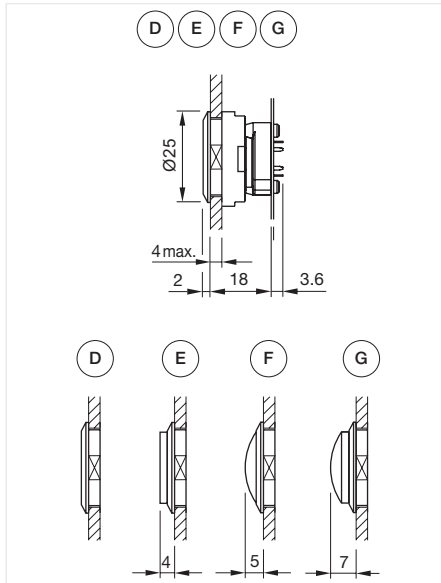


# 84 Flush design

## Pushbutton ring illumination PCB or Halo compact, IP67



Product can differ from the current configuration.



Dimensions [mm]  
 D = Lens level with bezel  
 E = Lens raised above bezel  
 F = Lens konvexe level with bezel  
 G = Lens konvexe raised above bezel

### Equipment consisting of (schematic overview)

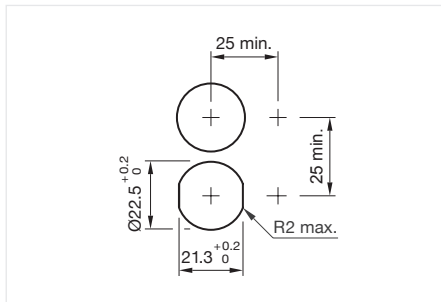
|  |                   |         |
|--|-------------------|---------|
|  | Lens              | Page 28 |
|  | Actuator          |         |
|  | Fixing nut        |         |
|  | Mounting flange   | Page 42 |
|  | Single-LED        | Page 32 |
|  | Switching element | Page 33 |

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.

### General information

- The mini TOP LEDs are not part of delivery. Recommendation: Osram Hyper Mini TOP LED



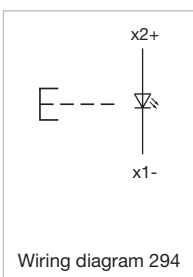
Mounting cut-outs [mm]



Actuator, Front dimension Ø 25 mm

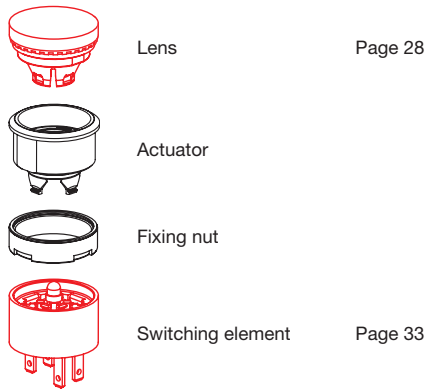
| Switching action | Front bezel colour | Front bezel material | IP front protection | Front bezel optics | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|--------------------|-----------|----------------|
| Momentary        | Colourless         | Plastic              | IP67                | transparent        | 84-1081.7 | 294            |

## Wiring diagrams



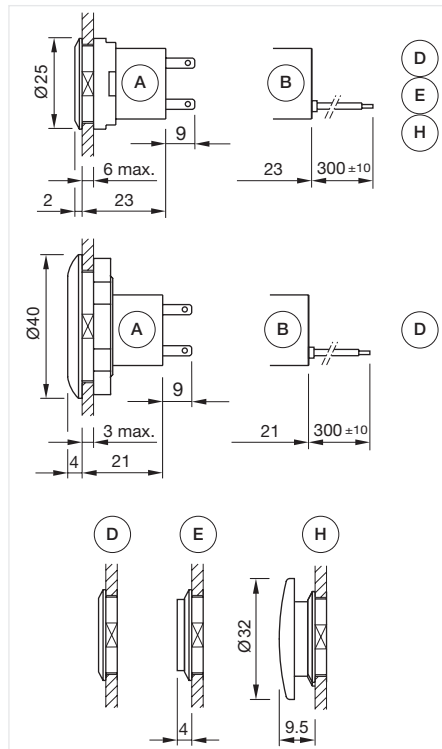
## Illuminated pushbutton standard, IP40, IP67

Equipment consisting of (schematic overview)

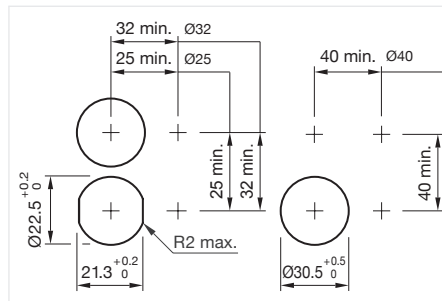


Each Part Number listed below includes all the black components shown in the 3D-drawing.

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



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable  
 D = Lens level with bezel  
 E = Lens raised above bezel  
 H = Mushroom-head cap



Mounting cut-outs [mm]



Product can differ from the current configuration.

### General information

- Illuminated lens, non-illuminated bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Black              | Plastic              | IP67                | Ø 25 mm    | 84-1101.0 | 72             |
|                  | Black              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.0 | 72             |
|                  | Red                | Aluminium            | IP67                | Ø 25 mm    | 84-1201.2 | 72             |
|                  | Gold               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.4 | 72             |
|                  | Olive              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.5 | 72             |
|                  | Blue               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.6 | 72             |
|                  | Nature             | Aluminium            | IP67                | Ø 25 mm    | 84-1201.7 | 72             |
|                  | Black              | Plastic              | IP40                | Ø 25 mm    | 84-2101.0 | 294            |

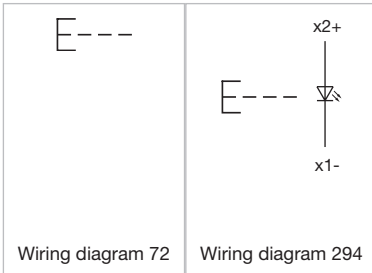
# 84 Flush design



Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Nature             | Aluminium            | IP67                | Ø 40 mm    | 84-1221.7 | 294            |

## Wiring diagrams









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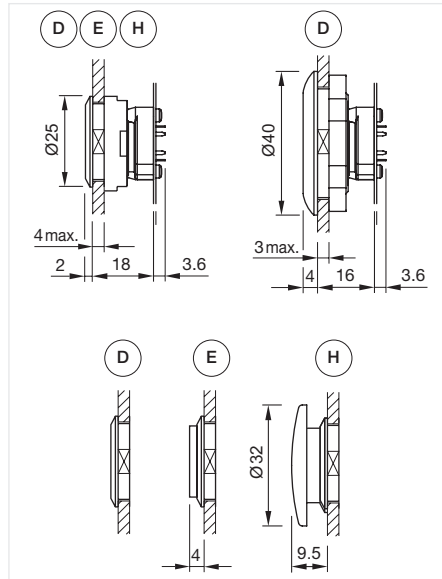
## Illuminated pushbutton PCB standard, IP40, IP67

### Equipment consisting of (schematic overview)

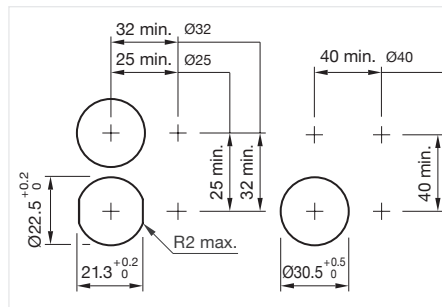
|   |                   |         |
|---|-------------------|---------|
|  | Lens              | Page 28 |
|  | Actuator          |         |
|  | Fixing nut        |         |
|  | Mounting flange   | Page 42 |
|  | Single-LED        | Page 32 |
|  | Switching element | Page 33 |

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]  
 A = Lens level with bezel  
 E = Lens raised above bezel  
 H = Mushroom-head cap



Mounting cut-outs [mm]



Product can differ from the current configuration.

### General information

- Illuminated lens, non-illuminated bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Black              | Plastic              | IP67                | Ø 25 mm    | 84-1101.0 | 72             |
|                  | Black              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.0 | 72             |
|                  | Red                | Aluminium            | IP67                | Ø 25 mm    | 84-1201.2 | 72             |
|                  | Gold               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.4 | 72             |
|                  | Olive              | Aluminium            | IP67                | Ø 25 mm    | 84-1201.5 | 72             |
|                  | Blue               | Aluminium            | IP67                | Ø 25 mm    | 84-1201.6 | 72             |
|                  | Nature             | Aluminium            | IP67                | Ø 25 mm    | 84-1201.7 | 72             |
|                  | Black              | Plastic              | IP40                | Ø 25 mm    | 84-2101.0 | 294            |

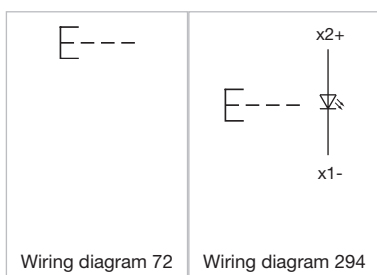


Actuator

| Switching action | Front bezel colour | Front bezel material | IP front protection | Dimensions | Part No.  | Wiring diagram |
|------------------|--------------------|----------------------|---------------------|------------|-----------|----------------|
| Momentary        | Nature             | Aluminium            | IP67                | Ø 40 mm    | 84-1221.7 | 294            |

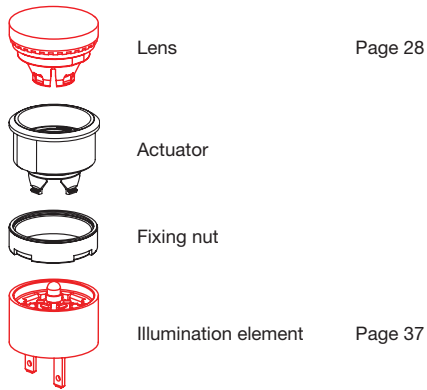
# 84 Flush design

## Wiring diagrams



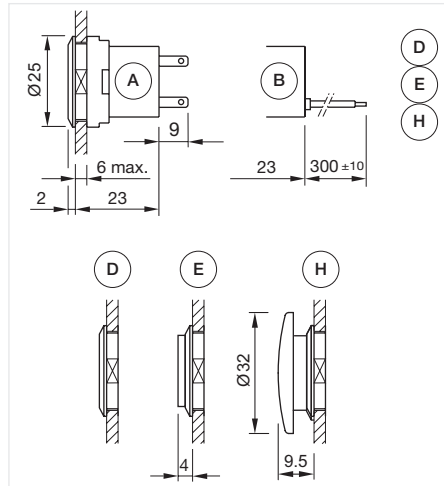
## Indicator standard, IP40, IP67

### Equipment consisting of (schematic overview)



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

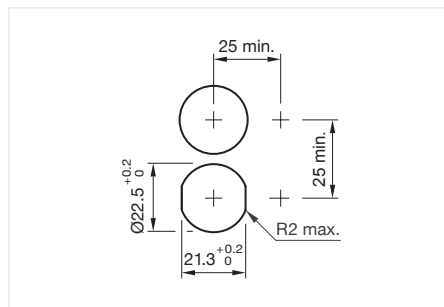
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable  
 D = Lens level with bezel  
 E = Lens raised above bezel  
 H = Mushroom-head cap



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

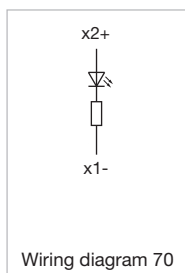
- Illuminated lens, non-illuminated bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Actuator, Front dimension Ø 25 mm

| IP front protection | Front bezel colour | Front bezel material | Part No.  | Wiring diagram |
|---------------------|--------------------|----------------------|-----------|----------------|
| IP67                | Black              | Plastic              | 84-0100.0 | 70             |
|                     | Nature             | Aluminium            | 84-0200.7 | 70             |
| IP40                | Black              | Plastic              | 84-3100.0 | 70             |

## Wiring diagrams

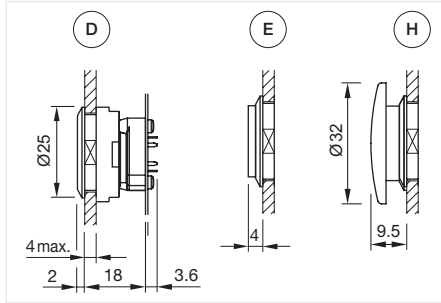


# 84 Flush design

## Indicator PCB standard, IP40, IP67



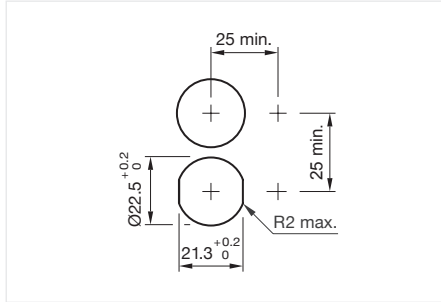
Product can differ from the current configuration.



Dimensions [mm]  
 A = Lens level with bezel  
 E = Lens raised above bezel  
 H = Mushroom-head cap







### General information

- Illuminated lens, non-illuminated bezel
- The colour of anodised aluminium parts can vary due to technical production reasons



Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

|   |                      |         |
|---|----------------------|---------|
|  | Lens                 | Page 28 |
|  | Actuator             |         |
|  | Fixing nut           |         |
|  | Mounting flange      | Page 42 |
|  | Single-LED           | Page 32 |
|  | Illumination element | Page 37 |

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

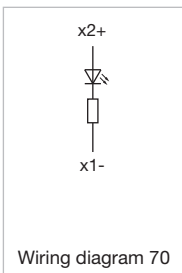
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension Ø 25 mm

| IP front protection | Front bezel colour | Front bezel material | Part No.  | Wiring diagram |
|---------------------|--------------------|----------------------|-----------|----------------|
| IP67                | Black              | Plastic              | 84-0100.0 | 70             |
|                     | Nature             | Aluminium            | 84-0200.7 | 70             |
| IP40                | Black              | Plastic              | 84-3100.0 | 70             |

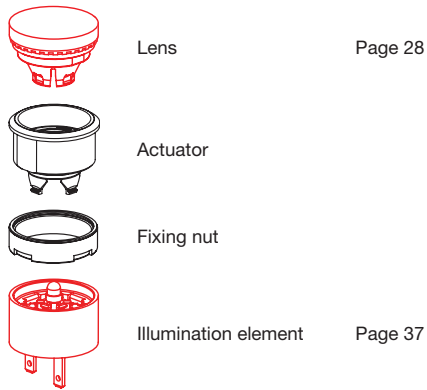
## Wiring diagrams





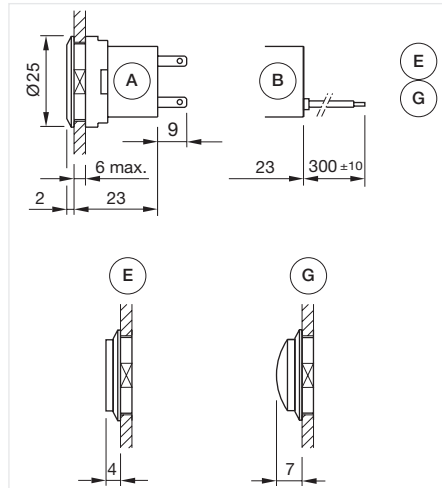
## Indicator ring illumination standard, IP67

### Equipment consisting of (schematic overview)



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

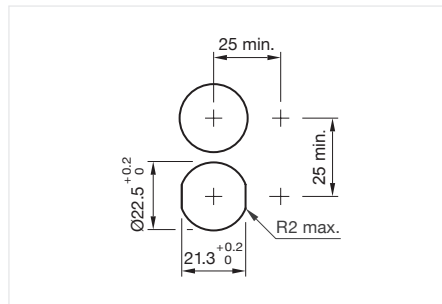
To obtain a complete unit, please select the red components from the pages shown.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable  
 E = Lens raised above bezel  
 G = Lens convex raised above bezel



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

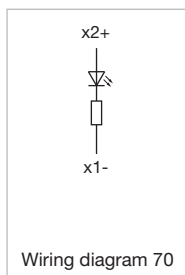
- Front bezel illuminated
- Accessories for halo illumination: Essential lenses Part No. 84-7202.x00A and 84-7205.x00A



Actuator, Front dimension Ø 25 mm

| IP front protection | Front bezel colour | Front bezel material | Front bezel optics | Part No.  | Wiring diagram |
|---------------------|--------------------|----------------------|--------------------|-----------|----------------|
| IP67                | Colourless         | Plastic              | translucent        | 84-0090.7 | 70             |

## Wiring diagrams

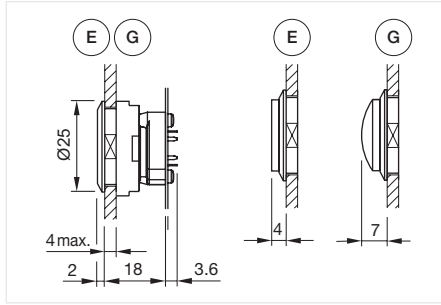


# 84 Flush design

## Indicator ring illumination PCB standard, IP67



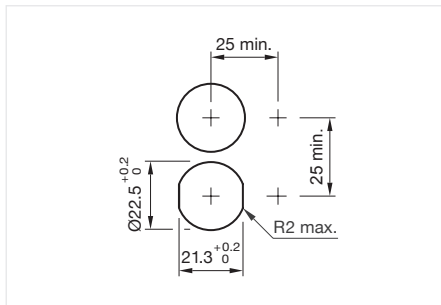
Product can differ from the current configuration.



Dimensions [mm]  
 E = Lens raised above bezel  
 G = Lens convexe raised above bezel







### General information

- Front bezel illuminated
- Accessories for halo illumination: Essential lenses Part No. 84-7202.x00A and 84-7205.x00A



Mounting cut-outs [mm]

### Equipment consisting of (schematic overview)

|   |                      |         |
|---|----------------------|---------|
|  | Lens                 | Page 28 |
|  | Actuator             |         |
|  | Fixing nut           |         |
|  | Mounting flange      | Page 42 |
|  | Single-LED           | Page 32 |
|  | Illumination element | Page 37 |

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

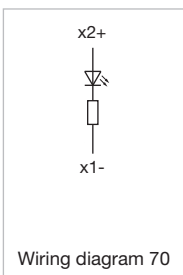
To obtain a complete unit, please select the red components from the pages shown.



Actuator, Front dimension  $\varnothing$  25 mm







| IP front protection | Front bezel colour | Front bezel material | Front bezel optics | Part No.  | Wiring diagram |
|---------------------|--------------------|----------------------|--------------------|-----------|----------------|
| IP67                | Colourless         | Plastic              | translucent        | 84-0090.7 | 70             |

## Wiring diagrams



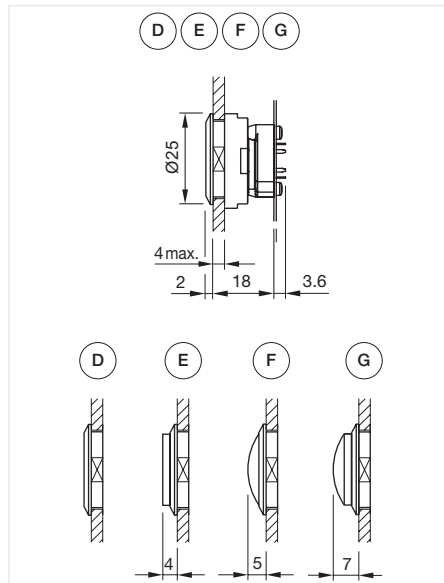
## Indicator ring illumination PCB or Halo compact, IP67

### Equipment consisting of (schematic overview)

|   |                      |         |
|---|----------------------|---------|
|  | Lens                 | Page 28 |
|  | Actuator             |         |
|  | Fixing nut           |         |
|  | Mounting flange      | Page 42 |
|  | Single-LED           | Page 32 |
|  | Illumination element | Page 37 |

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.

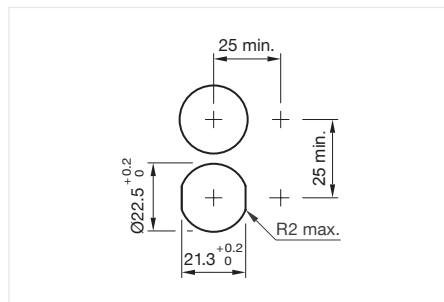


Dimensions [mm]

- D = Lens level with bezel
- E = Lens raised above bezel
- F = Lens konvexe level with bezel
- G = Lens konvexe raised above bezel



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

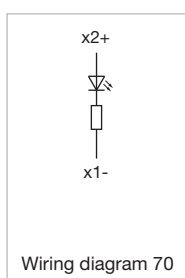
- The mini TOP LEDs are not part of delivery. Recommendation: Osram Hyper Mini TOP LED



Actuator, Front dimension Ø 25 mm

| IP front protection | Front bezel colour | Front bezel material | Front bezel optics | Part No.  | Wiring diagram |
|---------------------|--------------------|----------------------|--------------------|-----------|----------------|
| IP67                | Colourless         | Plastic              | transparent        | 84-0080.7 | 70             |

### Wiring diagrams

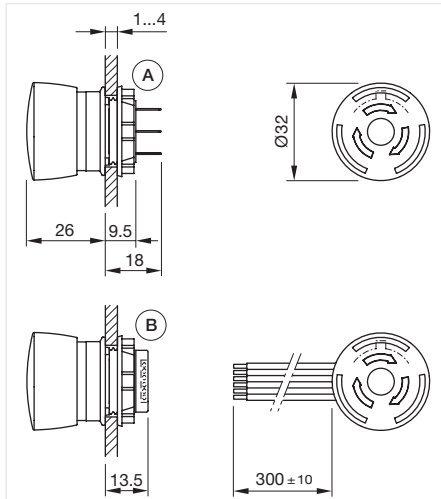


# 84 Raised design

## Stop switch, IP65, IP66, IP67

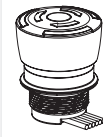


Product can differ from the current configuration.

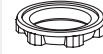


Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable

### Equipment consisting of (schematic overview)



Actuator

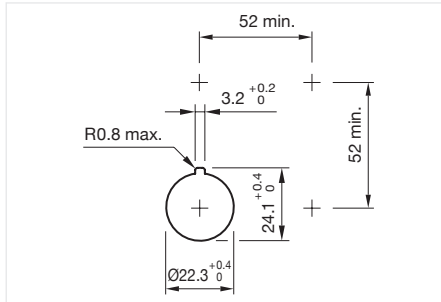


Fixing nut

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

### General information

- Position indication ring black
- Lens plastic grey



Mounting cut-outs [mm]

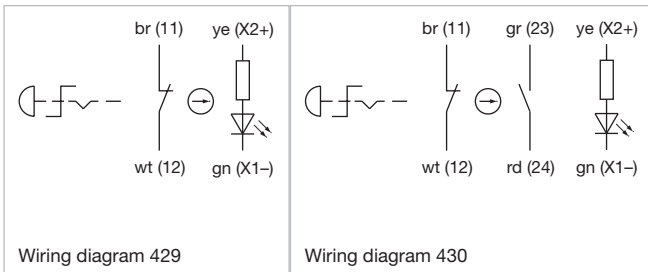
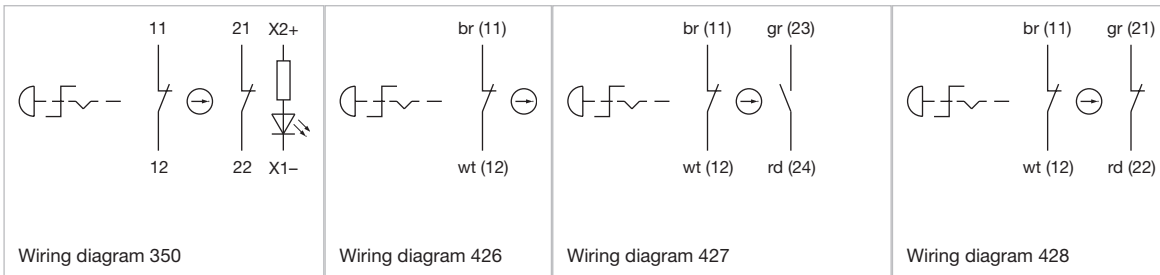
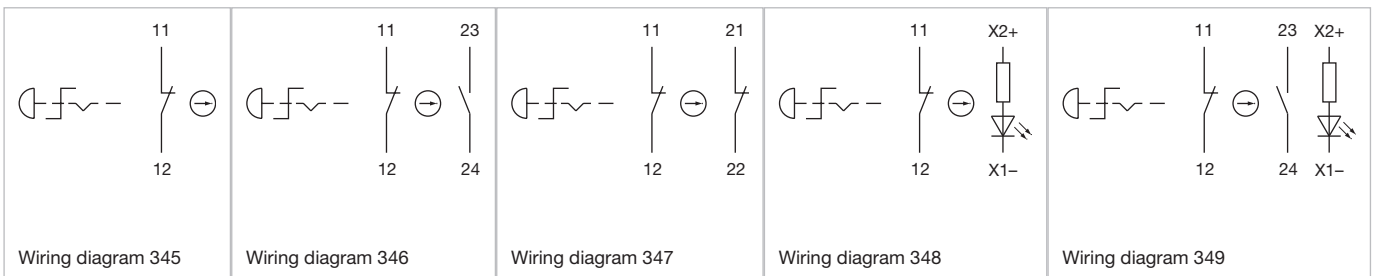


### Stop switch, Front dimension Ø 32 mm

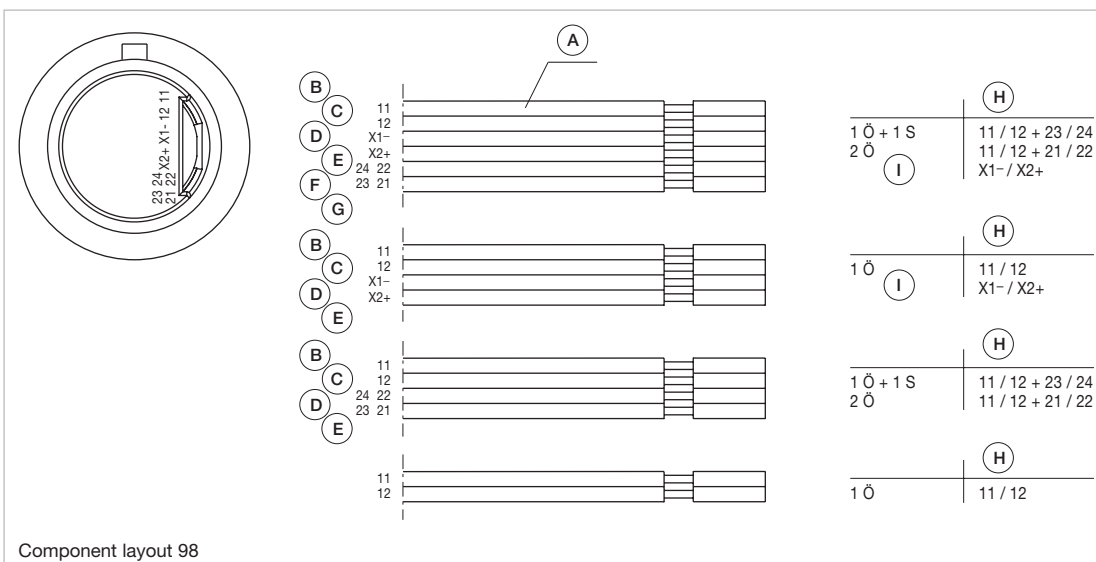
| Switching action | Contacts    | Terminal          | Illumination colour | Part No.     | Wiring diagram | Component Layout |
|------------------|-------------|-------------------|---------------------|--------------|----------------|------------------|
| Maintained       | 1 NC        | Flat ribbon cable |                     | 84-6220.0040 | 426            | 98               |
|                  | 1 NC / 1 NO | Flat ribbon cable |                     | 84-6830.0040 | 427            | 98               |
|                  | 2 NC        | Flat ribbon cable |                     | 84-6840.0040 | 428            | 98               |
|                  | 1 NC        | Flat ribbon cable | Red                 | 84-6821.2B40 | 429            | 98               |
|                  | 1 NC / 1 NO | Flat ribbon cable | Red                 | 84-6831.2B40 | 431            | 98               |
|                  | 2 NC        | Flat ribbon cable | Red                 | 84-6841.2B40 | 430            | 98               |
|                  | 1 NC        | Plug-in terminal  |                     | 84-6220.0020 | 345            | 99               |
|                  | 1 NC / 1 NO | Plug-in terminal  |                     | 84-6830.0020 | 346            | 99               |
|                  | 2 NC        | Plug-in terminal  |                     | 84-6840.0020 | 347            | 99               |
|                  | 1 NC        | Plug-in terminal  | Red                 | 84-6821.2B20 | 348            | 99               |
|                  | 1 NC / 1 NO | Plug-in terminal  | Red                 | 84-6831.2B20 | 349            | 99               |
|                  | 2 NC        | Plug-in terminal  | Red                 | 84-6841.2B20 | 350            | 99               |

Contacts: NC = Normally closed, NO = Normally open

## Wiring diagrams



## Component layouts

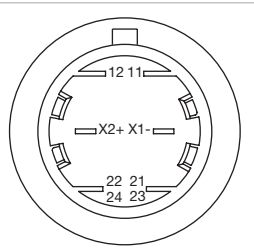


### Dimensions [mm]

- A = Cable
- B = white
- C = brown
- D = green
- E = yellow
- F = grey
- G = pink
- H = Terminals
- I = Illumination

# 84 Raised design

## Component layouts



Component layout 99



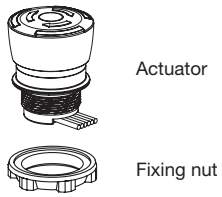
### Compact, attractive and reliable. *Series 84 E-Stop switches.*

Ideal for challenging applications – thanks to the attractive design and the very low back panel depth.

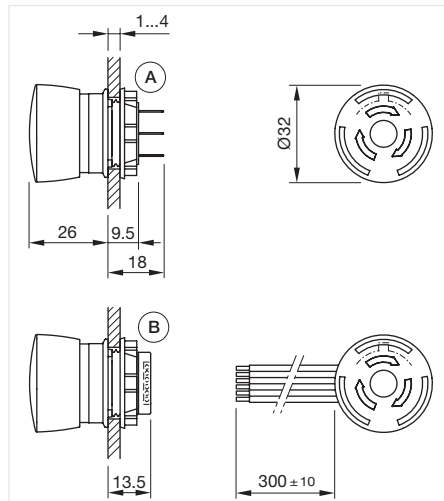
- Robust mono-block
- Foolproof and fail-safe design
- Very low back panel depth
- Attractive, modern design and protection IP65/67
- Reliable and long service life
- Clearly visible illumination

## Emergency stop switch, IP65, IP66, IP67

### Equipment consisting of (schematic overview)



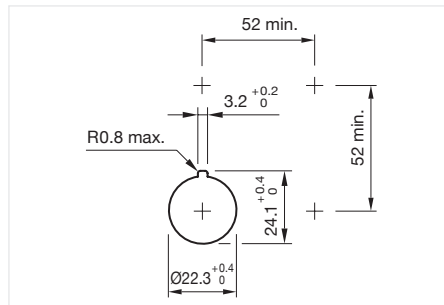
Each Part Number listed below includes all the black components shown in the 3D-drawing.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable



Product can differ from the current configuration.



Mounting cut-outs [mm]

### General information

- Lens plastic red



### Emergency stop switch, Front dimension Ø 32 mm

| Switching action | Contacts    | Terminal          | Illumination colour | Product attributes            | Part No.     | Wiring diagram | Component Layout |
|------------------|-------------|-------------------|---------------------|-------------------------------|--------------|----------------|------------------|
| Maintained       | 1 NC        | Plug-in terminal  |                     | Switching position ring black | 84-5220.0020 | 345            | 99               |
|                  | 1 NC        | Flat ribbon cable |                     | Switching position ring black | 84-5220.0040 | 426            | 98               |
|                  | 1 NC        | Plug-in terminal  | Red                 | Switching position ring black | 84-5221.2B20 | 348            | 99               |
|                  | 1 NC        | Flat ribbon cable | Red                 | Switching position ring black | 84-5221.2B40 | 429            | 98               |
|                  | 1 NC / 1 NO | Plug-in terminal  |                     | Switching position ring black | 84-5230.0020 | 346            | 99               |
|                  | 1 NC / 1 NO | Flat ribbon cable |                     | Switching position ring black | 84-5230.0040 | 427            | 98               |
|                  | 1 NC / 1 NO | Plug-in terminal  | Red                 | Switching position ring black | 84-5231.2B20 | 349            | 99               |
|                  | 1 NC / 1 NO | Flat ribbon cable | Red                 | Switching position ring black | 84-5231.2B40 | 430            | 98               |
|                  | 2 NC        | Plug-in terminal  |                     | Switching position ring black | 84-5240.0020 | 347            | 99               |
|                  | 2 NC        | Flat ribbon cable |                     | Switching position ring black | 84-5240.0040 | 428            | 98               |
|                  | 2 NC        | Plug-in terminal  | Red                 | Switching position ring black | 84-5241.2B20 | 350            | 99               |
|                  | 2 NC        | Flat ribbon cable | Red                 | Switching position ring black | 84-5241.2B40 | 431            | 98               |
|                  | 1 NC        | Plug-in terminal  |                     | Switching position ring green | 84-5320.0020 | 345            | 99               |

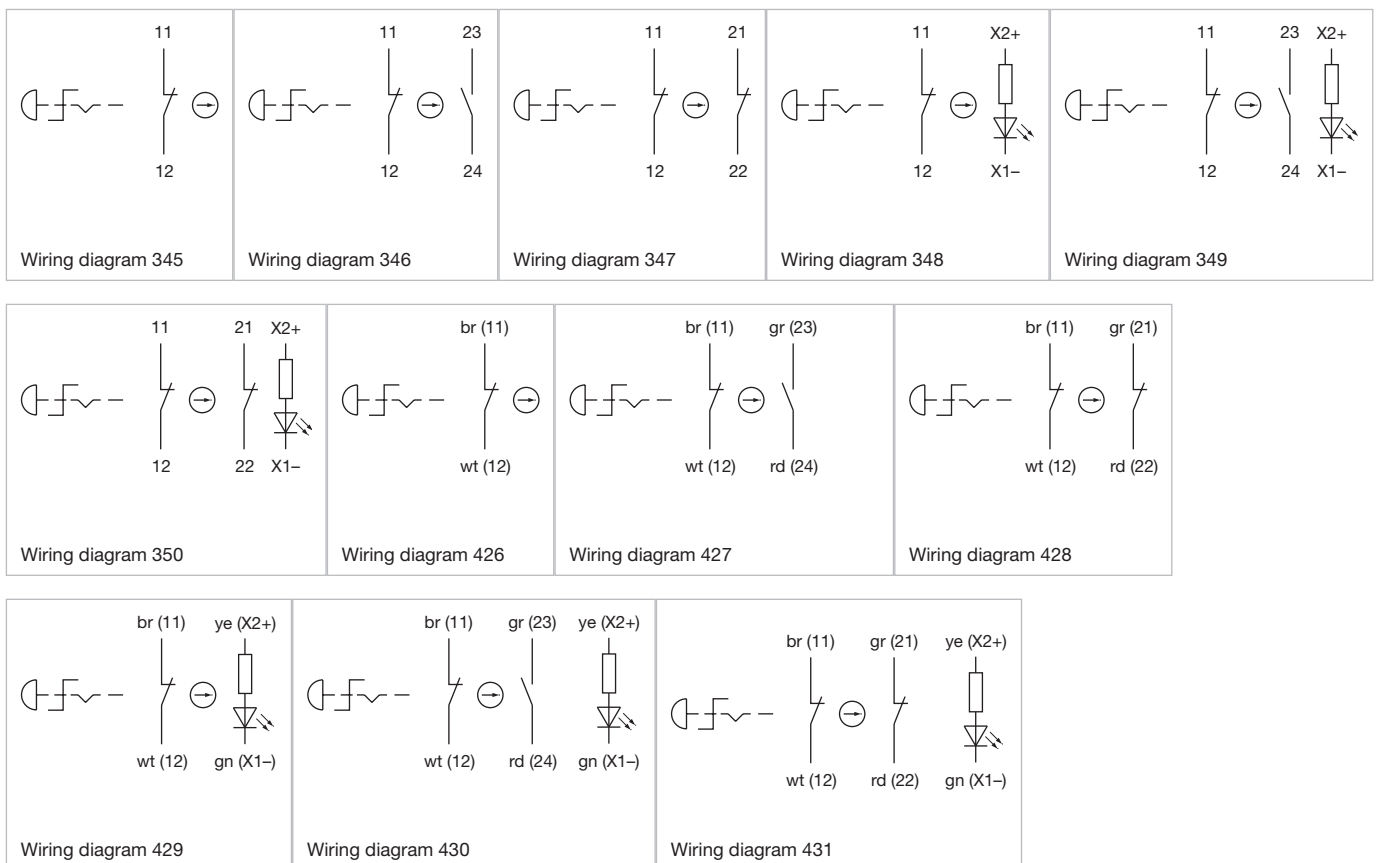
Contacts: NC = Normally closed, NO = Normally open

# 84 Raised design

| Switching action | Contacts    | Terminal          | Illumination colour | Product attributes  | Part No.     | Wiring diagram | Component Layout |
|------------------|-------------|-------------------|---------------------|---|--------------|----------------|------------------|
| Maintained       | 1 NC        | Flat ribbon cable |                     | Switching position ring green                             | 84-5320.0040 | 426            | 98               |
|                  | 1 NC        | Plug-in terminal  | Red                 | Switching position ring green                             | 84-5321.2B20 | 347            | 99               |
|                  | 1 NC        | Flat ribbon cable | Red                 | Switching position ring green                             | 84-5321.2B40 | 429            | 98               |
|                  | 1 NC / 1 NO | Plug-in terminal  |                     | Switching position ring green                             | 84-5330.0020 | 346            | 99               |
|                  | 1 NC / 1 NO | Flat ribbon cable |                     | Switching position ring green                             | 84-5330.0040 | 427            | 98               |
|                  | 1 NC / 1 NO | Plug-in terminal  | Red                 | Switching position ring green                             | 84-5331.2B20 | 349            | 99               |
|                  | 1 NC / 1 NO | Flat ribbon cable | Red                 | Switching position ring green                             | 84-5331.2B40 | 430            | 98               |
|                  | 2 NC        | Plug-in terminal  |                     | Twist to unlock clockwise, position indication ring green | 84-5340.0020 | 347            | 99               |
|                  | 2 NC        | Flat ribbon cable |                     | Twist to unlock clockwise, position indication ring green | 84-5340.0040 | 428            | 98               |
|                  | 2 NC        | Plug-in terminal  | Red                 | Twist to unlock clockwise, position indication ring green | 84-5341.2B20 | 350            | 99               |
|                  | 2 NC        | Flat ribbon cable | Red                 | Twist to unlock clockwise, position indication ring green | 84-5341.2B40 | 431            | 98               |

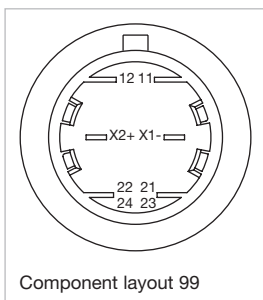
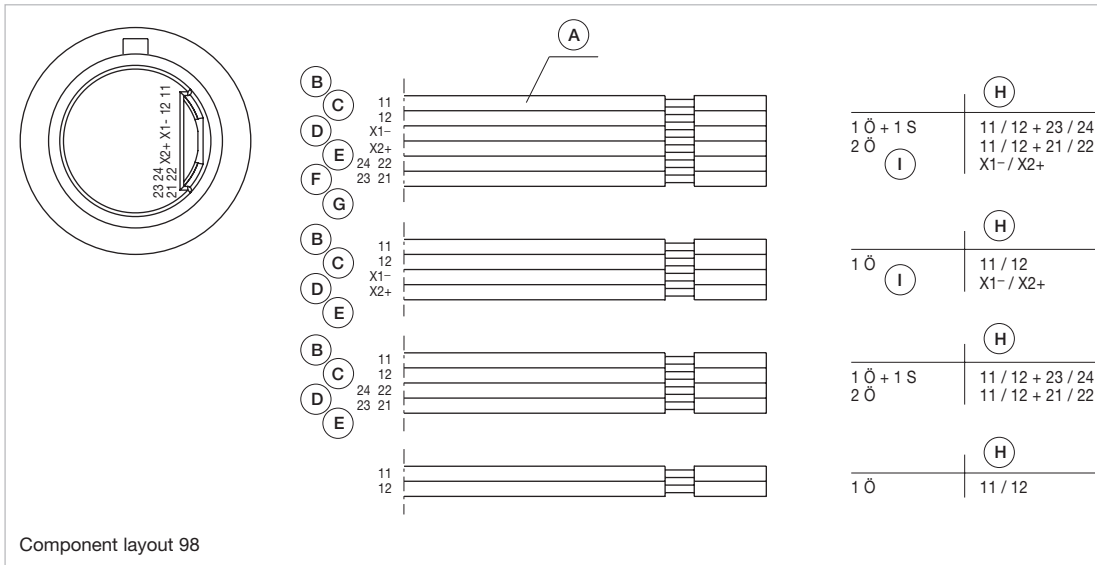
Contacts: NC = Normally closed, NO = Normally open

## Wiring diagrams





## Component layouts

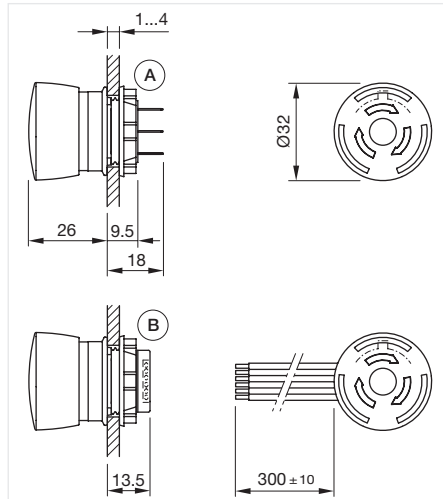


# 84 Raised design

## Emergency stop switch, Bi-Colour, IP65, IP66, IP67

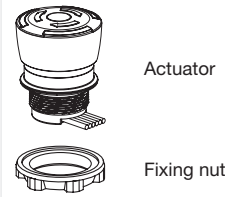


Product can differ from the current configuration.



Dimensions [mm]  
 A = Plug-in terminal 2.8 mm x 0.5 mm  
 B = Flat ribbon cable

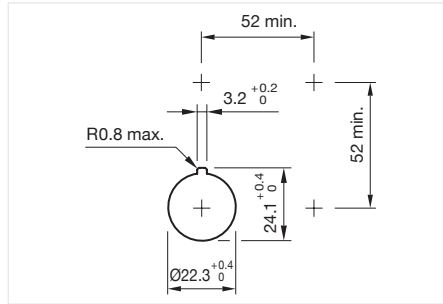
### Equipment consisting of (schematic overview)



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

### General information

- Lens plastic red
- Without built-in series resistor
- Operating voltage LED 2,0 VDC (Red), 3,05 VDC (Green)



Mounting cut-outs [mm]

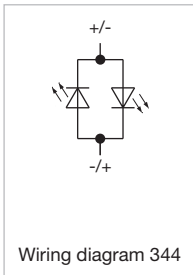


## Emergency Stop Switch, Front dimension Ø 32 mm

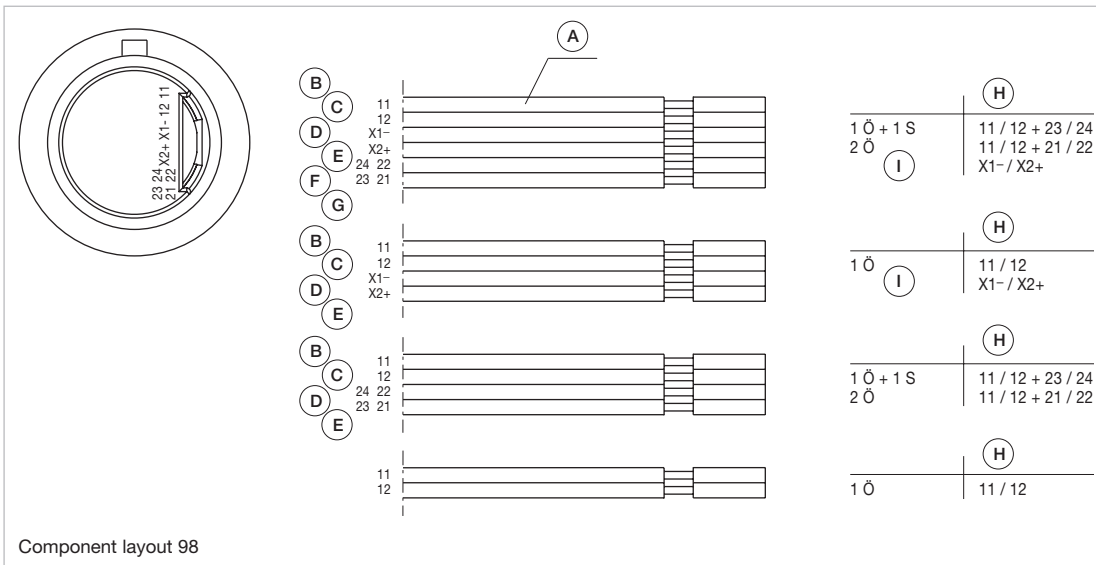
| Switching action | Contacts | Terminal          | Illumination colour | Product attributes  | Part No.     | Wiring diagram | Component Layout |
|------------------|----------|-------------------|---------------------|---|--------------|----------------|------------------|
| Maintained       | 2 NC     | Plug-in terminal  | Red / Green         | Twist to unlock clockwise, position indication ring black | 84-5241.8D20 | 344            | 99               |
|                  | 2 NC     | Flat ribbon cable | Red / Green         | Twist to unlock clockwise, position indication ring black | 84-5241.8D40 | 344            | 98               |
|                  | 2 NC     | Plug-in terminal  | Red / Green         | Twist to unlock clockwise, position indication ring black | 84-5341.8D20 | 344            | 99               |
|                  | 2 NC     | Flat ribbon cable | Red / Green         | Twist to unlock clockwise, position indication ring black | 84-5341.8D40 | 344            | 98               |

Contacts: NC = Normally closed

## Wiring diagrams

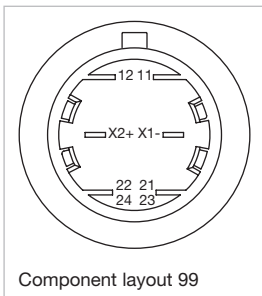


## Component layouts



Dimensions [mm]

- A = Cable
- B = white
- C = brown
- D = green
- E = yellow
- F = grey
- G = pink
- H = Terminals
- I = Illumination



# 84 Components



## Lens for stop request pushbutton

| Lens material | Lens colour | Lens optics | Lens shape | Lens illumination | Lens type                | Symbol     | Dimensions | Part No.     |
|---------------|-------------|-------------|------------|-------------------|--------------------------|------------|------------|--------------|
| Aluminium     | Nature      | opaque      | flush      | non illuminative  | raised above front bezel | Door open  | Ø 19.7 mm  | 84-7205.804A |
|               | Nature      | opaque      | flush      | non illuminative  | raised above front bezel | Wheelchair | Ø 19.7 mm  | 84-7205.805A |
|               | Nature      | opaque      | flush      | non illuminative  | raised above front bezel | Baby pram  | Ø 19.7 mm  | 84-7205.806A |
|               | Nature      | opaque      | flush      | non illuminative  | raised above front bezel | Bell       | Ø 19.7 mm  | 84-7205.808A |

### Additional information

- With raised labelling symbol, TSI compliant
- The colour of anodised aluminium parts can vary due to technical production reasons



## Lens metal for halo illumination

| Lens material | Lens colour | Lens optics | Lens shape | Lens illumination | Lens type                | Dimensions | Part No.     |
|---------------|-------------|-------------|------------|-------------------|--------------------------|------------|--------------|
| Aluminium     | Black       | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.000A |
|               | Red         | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.200A |
|               | Gold        | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.400A |
|               | Olive green | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.500A |
|               | Blue        | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.600A |
|               | Nature      | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7205.800A |
|               | Black       | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.000A |
|               | Red         | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.200A |
|               | Gold        | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.400A |
|               | Olive green | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.500B |
|               | Blue        | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.600A |
|               | Nature      | opaque      | convex     | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7202.800A |

### Additional information

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



## Lens plastic

| Lens material | Lens colour | Lens optics | Lens shape | Lens illumination | Lens type                | Dimensions | Part No.    |
|---------------|-------------|-------------|------------|-------------------|--------------------------|------------|-------------|
| Plastic       | Red         | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.200 |
|               | Orange      | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.300 |
|               | Yellow      | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.400 |
|               | Green       | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.500 |
|               | Blue        | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.600 |
|               | Colourless  | transparent | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7111.700 |
|               | Black       | opaque      | flush      | non illuminative  | level with front bezel   | Ø 19.7 mm  | 84-7121.000 |
|               | Grey        | opaque      | flush      | non illuminative  | level with front bezel   | Ø 19.7 mm  | 84-7121.800 |
|               | Red         | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.200 |
|               | Orange      | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.300 |
|               | Yellow      | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.400 |
|               | Green       | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.500 |
|               | Blue        | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.600 |
|               | Colourless  | transparent | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7115.700 |
|               | Black       | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7125.000 |
|               | Grey        | opaque      | flush      | non illuminative  | raised above front bezel | Ø 19.7 mm  | 84-7125.800 |

- 01
- 02
- 03
- 04
- 09
- 14
- 17
- 18
- 19
- 22
- 31
- 41
- 45
- 51
- 56
- 57
- 61
- 70
- 71
- 82
- 84**
- 92
- 96

# 84 Components



## Lens plastic with symbol

| Lens material | Lens colour | Lens optics | Lens shape | Lens illumination | Lens type              | Symbol  | Dimensions | Part No.    |
|---------------|-------------|-------------|------------|-------------------|------------------------|---------|------------|-------------|
| Plastic       | Red         | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.201 |
|               | Orange      | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.301 |
|               | Yellow      | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.401 |
|               | Green       | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.501 |
|               | Blue        | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.601 |
|               | Colourless  | transparent | flush      | illuminative      | level with front bezel | Ring    | Ø 19.7 mm  | 84-7111.701 |
|               | Red         | transparent | flush      | illuminative      | level with front bezel | ON/OFF  | Ø 19.7 mm  | 84-7111.202 |
|               | Green       | transparent | flush      | illuminative      | level with front bezel | ON/OFF  | Ø 19.7 mm  | 84-7111.502 |
|               | Blue        | transparent | flush      | illuminative      | level with front bezel | ON/OFF  | Ø 19.7 mm  | 84-7111.602 |
|               | Colourless  | transparent | flush      | illuminative      | level with front bezel | ON/OFF  | Ø 19.7 mm  | 84-7111.702 |
|               | Red         | transparent | flush      | illuminative      | level with front bezel | Standby | Ø 19.7 mm  | 84-7111.203 |
|               | Green       | transparent | flush      | illuminative      | level with front bezel | Standby | Ø 19.7 mm  | 84-7111.503 |
|               | Blue        | transparent | flush      | illuminative      | level with front bezel | Standby | Ø 19.7 mm  | 84-7111.603 |
|               | Colourless  | transparent | flush      | illuminative      | level with front bezel | Standby | Ø 19.7 mm  | 84-7111.703 |

### Additional information

- The silvery coat is being applied on the lens (screen print) with an additional protective lacquer. Further information see Technical data



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## Lens metal

| Lens material | Lens colour | Lens optics | Lens shape       | Lens illumination      | Lens type                | Dimensions  | Part No.    |
|---------------|-------------|-------------|------------------|------------------------|--------------------------|-------------|-------------|
| Aluminium     | Black       | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.000 |
|               | Red         | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.200 |
|               | Gold        | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.400 |
|               | Olive green | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.500 |
|               | Blue        | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.600 |
|               | Nature      | opaque      | flush            | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7201.800 |
|               | Black       | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.000 |
|               | Red         | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.200 |
|               | Gold        | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.400 |
|               | Olive green | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.500 |
|               | Blue        | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.600 |
|               | Nature      | opaque      | flush            | non illuminative       | raised above front bezel | Ø 19.7 mm   | 84-7205.800 |
|               | Black       | opaque      | convex           | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7202.000 |
|               | Red         | opaque      | convex           | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7202.200 |
|               | Gold        | opaque      | convex           | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7202.400 |
|               | Olive green | opaque      | convex           | non illuminative       | level with front bezel   | Ø 19.7 mm   | 84-7202.500 |
| Blue          | opaque      | convex      | non illuminative | level with front bezel | Ø 19.7 mm                | 84-7202.600 |             |
| Nature        | opaque      | convex      | non illuminative | level with front bezel | Ø 19.7 mm                | 84-7202.800 |             |

### Additional information

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



## Lens metal with spot

| Lens material | Lens colour | Lens optics | Lens shape | Lens illumination | Lens type                | Dimensions | Part No.    |
|---------------|-------------|-------------|------------|-------------------|--------------------------|------------|-------------|
| Aluminium     | Black       | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.000 |
|               | Red         | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.200 |
|               | Gold        | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.400 |
|               | Olive green | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.500 |
|               | Blue        | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.600 |
|               | Nature      | opaque      | flush      | illuminative      | level with front bezel   | Ø 19.7 mm  | 84-7211.800 |
|               | Black       | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.000 |
|               | Red         | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.200 |
|               | Gold        | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.400 |
|               | Olive green | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.500 |
|               | Blue        | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.600 |
|               | Nature      | opaque      | flush      | illuminative      | raised above front bezel | Ø 19.7 mm  | 84-7215.800 |

### Additional information

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

# 84 Components



Mushroom-head cap

| Lens material | Lens colour | Lens optics | Lens shape    | Lens illumination | Part No.     |
|---------------|-------------|-------------|---------------|-------------------|--------------|
| Plastic       | Blue        | transparent | mushroom-head | illuminative      | 84-7114.600A |
|               | Black       | opaque      | mushroom-head | non illuminative  | 84-7124.000A |
|               | Red         | opaque      | mushroom-head | non illuminative  | 84-7124.200A |



Marking plate

| Marking plate material | Marking plate colour | Marking plate optics | Marking plate illumination | Part No.  |
|------------------------|----------------------|----------------------|----------------------------|-----------|
| Plastic                | Colourless           | transparent          | illuminative               | 61-9707.7 |

**Additional information**

- Can be hot stamped



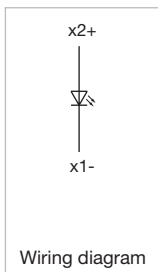
Single-LED, T1 3/4 MG

| Illumination colour | Lumi. Intensity | Dom. Wavelength      | Forward voltage | Part No.      | Wiring diagram |
|---------------------|-----------------|----------------------|-----------------|---------------|----------------|
| Red                 | 160 mcd         | 625 nm               | 2.0 VDC @ 20 mA | 10-2601.3172S | 4              |
| Amber               | 165 mcd         | 605 nm               | 2.0 VDC @ 20 mA | 10-2601.3173S | 4              |
| Yellow              | 600 mcd         | 580 nm               | 2.9 VDC @ 20 mA | 10-2603.3174S | 4              |
| Green               | 650 mcd         | 525 nm               | 3.2 VDC @ 20 mA | 10-2603.3175S | 4              |
| Blue                | 250 mcd         | 467 nm               | 3.0 VDC @ 20 mA | 10-2603.3176S | 4              |
| White               | 500 mcd         | x: 0,31 / y: 0,32 nm | 3.2 VDC @ 20 mA | 10-2603.3178S | 4              |

**Additional information**

- The customer has to decide what series resistor shall be used to the LED
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams







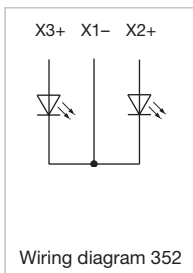
## Bi-colour LED, T1 Bi-Pin

| Illumination colour | Lumi. Intensity | Dom. Wavelength | Forward voltage       | Part No.      | Wiring diagram |
|---------------------|-----------------|-----------------|-----------------------|---------------|----------------|
| Red / Green         | 1000/1800 mcd   | 628 / 525 nm    | 1.9 / 3.5 VDC @ 20 mA | 10-2603.320AL | 352            |
| Green / Yellow      | 1100/900 mcd    | 588 / 525 nm    | 2.0 / 3.2 VDC @ 20 mA | 10-2603.320CL | 352            |

### Additional information

- The customer has to decide what series resistor shall be used to the LED
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams



## Switching element with illumination and plug-in terminal

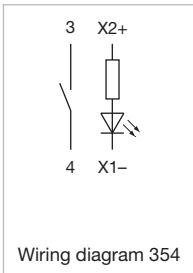
| IP Protection | Illumination colour | Operating voltage | Operation current | Terminal         | Part No.     | Wiring diagram |
|---------------|---------------------|-------------------|-------------------|------------------|--------------|----------------|
| IP40          | Red                 | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.2320 | 354            |
|               | Orange              | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.3320 | 354            |
|               | Yellow              | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.4320 | 354            |
|               | Green               | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.5320 | 354            |
|               | Blue                | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.6320 | 354            |
|               | White               | 12 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.9320 | 354            |
|               | Red                 | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.2620 | 354            |
|               | Orange              | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.3620 | 354            |
|               | Yellow              | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.4620 | 354            |
|               | Green               | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.5620 | 354            |
|               | Blue                | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.6620 | 354            |
|               | White               | 24 V DC ±10 %     | 10 mA             | Plug-in terminal | 84-8511.9620 | 354            |

Contacts: NO = Normally open

### Additional information

- LED and built-in resistor included
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams



### Switching element with illumination and flat ribbon cable

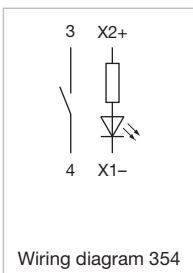
| IP Protection | Illumination colour | Operating voltage  | Operation current | Terminal          | Part No.     | Wiring diagram |
|---------------|---------------------|--------------------|-------------------|-------------------|--------------|----------------|
| IP40          | Red                 | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.2340 | 354            |
|               | Orange              | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.3340 | 354            |
|               | Yellow              | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.4340 | 354            |
|               | Green               | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.5340 | 354            |
|               | Blue                | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.6340 | 354            |
|               | White               | 12 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.9340 | 354            |
|               | Red                 | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.2640 | 354            |
|               | Orange              | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.3640 | 354            |
|               | Yellow              | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.4640 | 354            |
|               | Green               | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.5640 | 354            |
|               | Blue                | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.6640 | 354            |
|               | White               | 24 V DC $\pm 10\%$ | 10 mA             | Flat ribbon cable | 84-8511.9640 | 354            |

Contacts: NO = Normally open

#### Additional information

- LED and built-in resistor included
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams





## Switching element Bi-colour

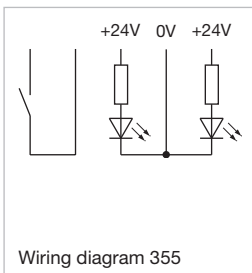
| Operating voltage  | Switching system     | Contacts | Contact material   | Illumination colour | Terminal          | Part No.     | Wiring diagram |
|--------------------|----------------------|----------|--------------------|---------------------|-------------------|--------------|----------------|
| 24 V DC $\pm 10\%$ | Short-travel element | 1 NO     | Gold-plated silver | Red / Green         | Flat ribbon cable | 84-8515.8640 | 355            |
|                    | Short-travel element | 1 NO     | Gold-plated silver | Yellow / Green      | Flat ribbon cable | 84-8515.7640 | 355            |

Contacts: NO = Normally open

### Additional information

- LED and built-in resistor included
- Cable connection IP 67, rear side fully sealed. The illumination element of the cable version cannot be disconnected from the actuator any longer
- Best illumination level will be reached with aluminium lens with spot, Part No. 84-7215.x00 and 84-7211.x00
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams



## Switching element without illumination

| Switching system     | Contacts | Contact material   | Terminal          | Part No.     | Wiring diagram |
|----------------------|----------|--------------------|-------------------|--------------|----------------|
| Short-travel element | 1 NO     | Gold-plated silver | Plug-in terminal  | 84-8510.0020 | 356            |
|                      | 1 NO     | Gold-plated silver | Flat ribbon cable | 84-8510.0040 | 356            |

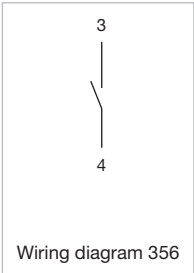
Contacts: NO = Normally open

### Additional information

- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose

# 84 Components

## Wiring diagrams



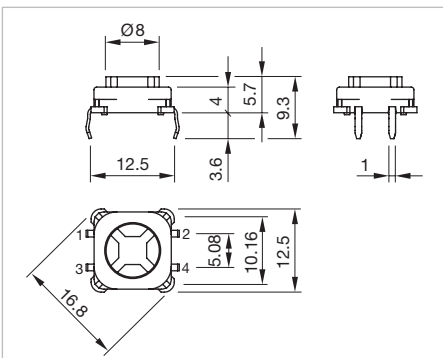
### Switching element PCB illuminative

| Switching system     | Contacts | Contact material   | Terminal     | Part No.   | Wiring diagram | Component Layout |
|----------------------|----------|--------------------|--------------|------------|----------------|------------------|
| Short-travel element | 1 NO     | Gold-plated silver | PCB terminal | 92-851.342 | 332            | 82               |

Contacts: NO = Normally open

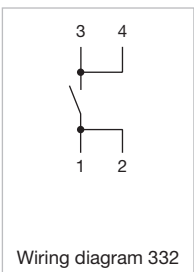
#### Additional information

- The customer has to decide what series resistor shall be used to the LED
- LED and mounting flange to be ordered separately

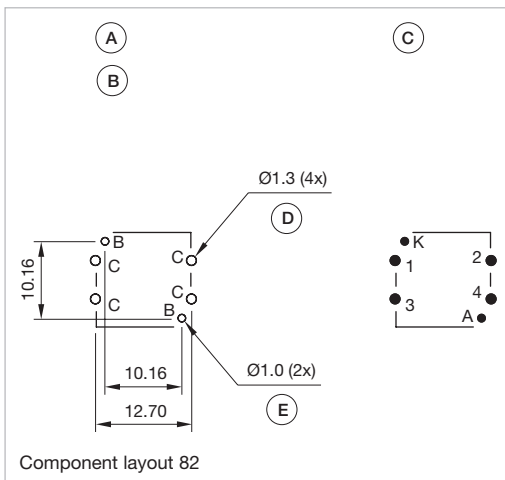


Dimensions [mm]

## Wiring diagrams



## Component layouts



Dimensions [mm]

A = Switching element with illumination

B = Single LED

C = Drilling plan (component side)

D = Hole for switching element, pad max. Ø 2.5 mm

E = Hole for LED



### Illumination element with plug-in terminal

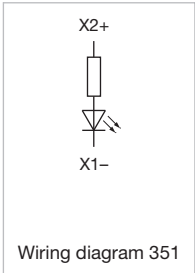
| IP Protection | Illumination colour | Operating voltage | Terminal         | Part No.     | Wiring diagram |
|---------------|---------------------|-------------------|------------------|--------------|----------------|
| IP40          | Red                 | 12 V DC ±10 %     | Plug-in terminal | 84-8001.2320 | 351            |
|               | Yellow              | 12 V DC ±10 %     | Plug-in terminal | 84-8001.4320 | 351            |
|               | Green               | 12 V DC ±10 %     | Plug-in terminal | 84-8001.5320 | 351            |
|               | Blue                | 12 V DC ±10 %     | Plug-in terminal | 84-8001.6320 | 351            |
|               | White               | 12 V DC ±10 %     | Plug-in terminal | 84-8001.9320 | 351            |
|               | Red                 | 24 V DC ±10 %     | Plug-in terminal | 84-8001.2620 | 351            |
|               | Amber               | 24 V DC ±10 %     | Plug-in terminal | 84-8001.3620 | 351            |
|               | Yellow              | 24 V DC ±10 %     | Plug-in terminal | 84-8001.4620 | 351            |
|               | Green               | 24 V DC ±10 %     | Plug-in terminal | 84-8001.5620 | 351            |
|               | Blue                | 24 V DC ±10 %     | Plug-in terminal | 84-8001.6620 | 351            |
|               | White               | 24 V DC ±10 %     | Plug-in terminal | 84-8001.9620 | 351            |

#### Additional information

- LED and built-in resistor included
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.5 mm

# 84 Components

## Wiring diagrams



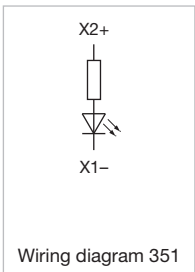
### Illumination element with flat ribbon cable

| IP Protection | Illumination colour | Operating voltage  | Terminal          | Part No.     | Wiring diagram |
|---------------|---------------------|--------------------|-------------------|--------------|----------------|
| IP40          | Red                 | 12 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.2340 | 351            |
|               | Yellow              | 12 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.4340 | 351            |
|               | Green               | 12 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.5340 | 351            |
|               | White               | 12 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.9340 | 351            |
|               | Red                 | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.2640 | 351            |
|               | Amber               | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.3640 | 351            |
|               | Yellow              | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.4640 | 351            |
|               | Green               | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.5640 | 351            |
|               | Blue                | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.6640 | 351            |
|               | White               | 24 V DC $\pm 10\%$ | Flat ribbon cable | 84-8001.9640 | 351            |

#### Additional information

- LED and built-in resistor included
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

## Wiring diagrams





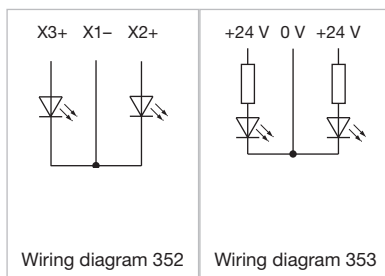
## Illumination element bi-colour

| IP Protection | Illumination colour | Operating voltage     | Terminal          | Part No.     | Wiring diagram |
|---------------|---------------------|-----------------------|-------------------|--------------|----------------|
| IP40          | Yellow / Green      | 24 V AC/DC $\pm 10$ % | Plug-in terminal  | 84-8005.7620 | 352            |
|               | Red / Green         | 24 V AC/DC $\pm 10$ % | Plug-in terminal  | 84-8005.8620 | 353            |
| IP67          | Yellow / Green      | 24 V AC/DC $\pm 10$ % | Flat ribbon cable | 84-8005.7640 | 352            |
|               | Red / Green         | 24 V AC/DC $\pm 10$ % | Flat ribbon cable | 84-8005.8640 | 353            |

### Additional information

- LED and built-in resistor included
- Standard version: Cable length 300 mm with insulated ferrule, plug-in terminal 2.8 mm x 0.8 mm
- Other options on request: Customisation of cable and connectors, rear side fully sealed (IP 67)
- Best illumination level will be reached with aluminium lens with spot, Part No. 84-7215.x00 and 84-7211.x00
- Protection degree (rear side): IP 40, upgrade to IP 67 with plug Part No. 84-900 possible. With applications where strong vibrations occur, the plugs may become loose
- Cable connection IP 67, rear side fully sealed. The illumination element of the cable version cannot be disconnected from the actuator any longer
- Luminosity and wave length variations caused by LED manufacturing processes may cause slight differences regarding the illumination. The customer has to decide what resistor shall be used to the LED

### Wiring diagrams



# 84 Components



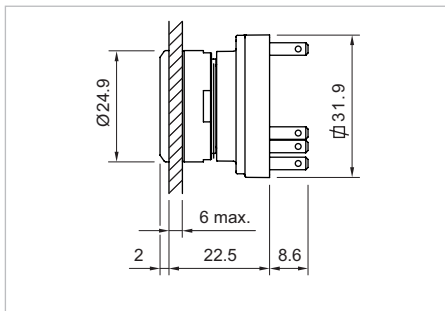
## Switching element Halo Compact

| Operating voltage  | Operation current | Switching system     | Contacts | Contact material   | Illumination colour | Terminal                     | Part No.     | Wiring diagram | Component Layout |
|--------------------|-------------------|----------------------|----------|--------------------|---------------------|------------------------------|--------------|----------------|------------------|
| 24 V DC $\pm 10\%$ | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | Red                 | Soldering / Plug-in terminal | 84-8716.2620 | 439            | 103              |
|                    | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | Yellow              | Soldering / Plug-in terminal | 84-8716.4620 | 439            | 103              |
|                    | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | Green               | Soldering / Plug-in terminal | 84-8716.5620 | 439            | 103              |
|                    | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | Blue                | Soldering / Plug-in terminal | 84-8716.6620 | 439            | 103              |
|                    | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | White               | Soldering / Plug-in terminal | 84-8716.9620 | 439            | 103              |
|                    | 80 mA             | Short-travel element | 1 NO     | Gold-plated silver | Red / Green         | Soldering / Plug-in terminal | 84-8716.8620 | 439            | 103              |

Contacts: NO = Normally open

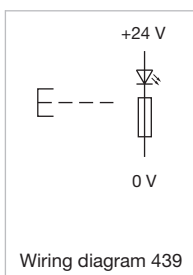
### Additional information

- Preconfigured light sequences see Technical data
- Integrated electronic switch for latching function (High-Side-Switch)



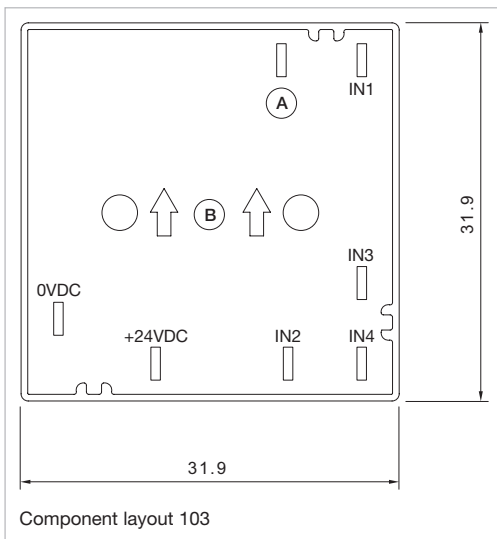
Dimensions [mm]

### Wiring diagrams





## Component layouts



A = Switch out  
B = Top

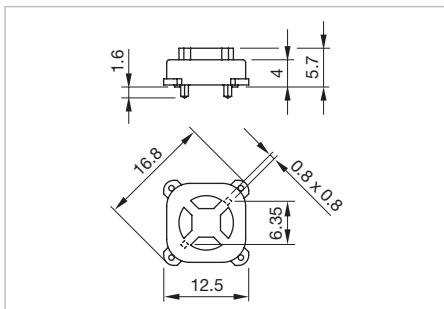


## Illumination element PCB

| Terminal     | Part No.   | Wiring diagram | Component Layout |
|--------------|------------|----------------|------------------|
| PCB terminal | 92-800.042 | 330            | 79               |

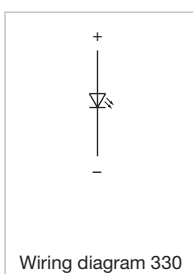
### Additional information

- The customer has to decide what series resistor shall be used to the LED
- LED and mounting flange to be ordered separately

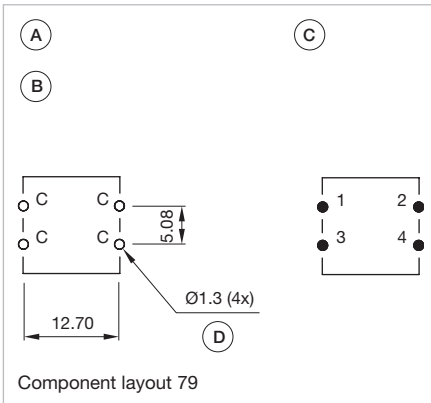


Dimensions [mm]

## Wiring diagrams



## Component layouts



Dimensions [mm]  
 A = Switching element without illumination  
 B = Drilling plan (component side)  
 C = Occupancy plan (component side)  
 D = Hole for switching element

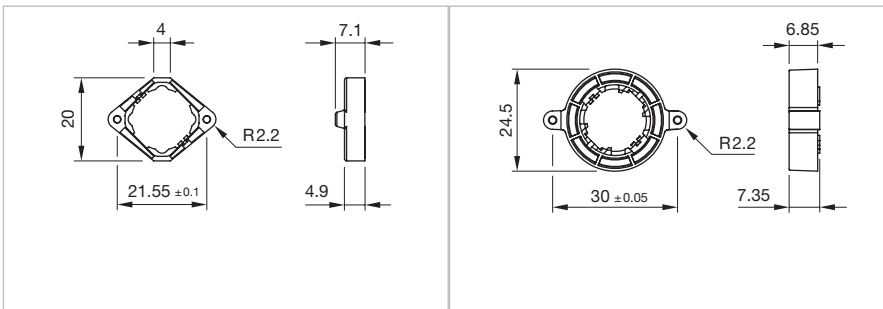


### Mounting flange

| Product attributes                                | Material | Fastening     | Part No. |
|---|----------|---------------|----------|
| Tightening torque fixing screw 0.3 Nm             | Plastic  | With screws   | 92-960.0 |
| Halo illumination (illuminated multi-color bezel) | Plastic  | Mit Schrauben | 84-960.0 |

#### Additional information

- For discrete switching applications including switching element and mounting flange, soldering terminal (assembled PCB incl. series resistor and LED on request)
- Halo illumination (illuminated multi-color bezel)



Dimensions [mm]  
 for Part No. 92-960.0

Dimensions [mm]  
 for Part No. 84-960.0

## Front side

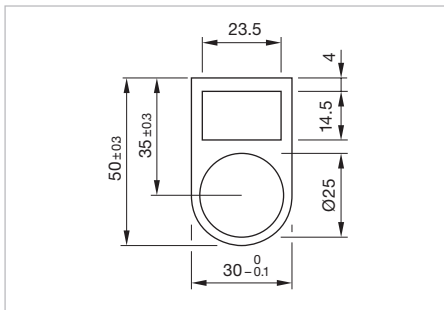


Legend frame

| Dimensions    | Material  | Colour | Surface  | Mounting type | Part No.  |
|---------------|-----------|--------|----------|---------------|-----------|
| 30 mm x 50 mm | Aluminium | Black  | anodised | adhesive      | 61-9980.0 |

### Additional information

- For devices with front dimension  $\varnothing 25$  mm, flush design
- The colour of anodised aluminium parts can vary due to technical production reasons



Dimensions [mm]



Legend plate

| Product attributes                               | Dimensions        | Material  | Colour | Surface  | Mounting type | Part No.  |
|--|-------------------|-----------|--------|----------|---------------|-----------|
| For legend frame Part No.704.968.2 and 704.968.3 | 14.5 mm x 23.5 mm | Aluminium | Nature | anodised | adhesive      | 704.968.0 |
|  | 14.5 mm x 23.5 mm | Aluminium | Black  | anodised | adhesive      | 704.968.1 |

### Additional information

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

# 84 Accessories



## Emergency stop legend

| Dimensions | Material | Colour | Mounting cut-out | Marking             | Part No.  |
|------------|----------|--------|------------------|---------------------|-----------|
| Ø 60 mm    | Plastic  | Yellow | Ø 22.3 mm        | NOT AUS             | 704.963.5 |
|            | Plastic  | Yellow | Ø 22.3 mm        | EMERGENCY STOP      | 704.963.6 |
|            | Plastic  | Yellow | Ø 22.3 mm        | ARRET D'URGENCE     | 704.963.7 |
|            | Plastic  | Yellow | Ø 22.3 mm        | NOT HALT            | 704.963.8 |
|            | Plastic  | Yellow | Ø 22.3 mm        | EN ISO 13850 symbol | 704.963.9 |
| Ø 90 mm    | Plastic  | Yellow | Ø 22.3 mm        | NOT AUS             | 704.963.0 |
|            | Plastic  | Yellow | Ø 22.3 mm        | EMERGENCY STOP      | 704.963.1 |
|            | Plastic  | Yellow | Ø 22.3 mm        | ARRET D'URGENCE     | 704.963.2 |
|            | Plastic  | Yellow | Ø 22.3 mm        | NOT HALT            | 704.963.3 |
|            | Plastic  | Yellow | Ø 22.3 mm        | EN ISO 13850 symbol | 704.963.4 |

### Additional information

- Front panel thickness 3 mm max.

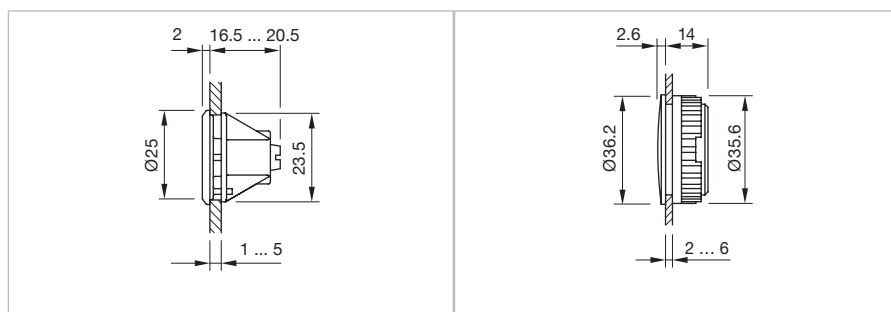


## Blind plug

| Dimensions | Material | Colour | Mounting cut-out | Part No.  |
|------------|----------|--------|------------------|-----------|
| Ø 25 mm    | Plastic  | Black  | Ø 25 mm          | 61-9453.0 |
| Ø 36 mm    | Plastic  | Black  | Ø 30.5 mm        | 704.964.8 |

### Additional information

- Please note that bigger minimum distances are necessary



Dimensions [mm]  
for Part No. 61-9453.0

Dimensions [mm]  
for Part No. 704.964.8



## Protective cap

| Product attributes      | Material | Colour     | Optics      | Part No.  |
|-------------------------|----------|------------|-------------|-----------|
| For front bezel Ø 25 mm | Silicone | Colourless | transparent | 84-9103.7 |

### Additional information

- For flat lens profile only
- When using the front protection cover the external sealing in the actuator has to be removed

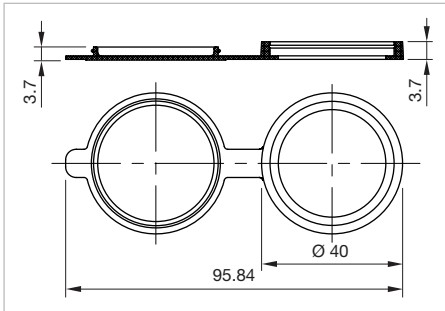


## Protection cover

| Dimensions | Material | Colour | Part No. |
|------------|----------|--------|----------|
| Ø 36 mm    | Plastic  | Black  | 84-916   |

### Additional information

- When mounting the protective cover 84-916 make sure that the USB adapter is mounted in center position.



Dimensions [mm]

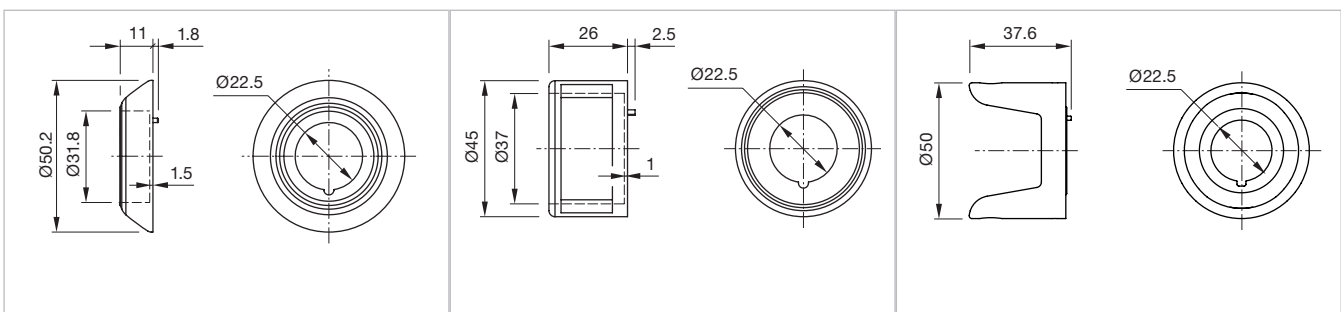


## E stop protective shroud

| Dimensions | Material | Colour | Marking        | Part No. |
|------------|----------|--------|----------------|----------|
| Ø 50 mm    | Plastic  | Yellow |                | 84-902   |
|            | Plastic  | Yellow | NOT - AUS      | 84-902A  |
|            | Plastic  | Yellow | EMERGENCY STOP | 84-902B  |
|            | Plastic  | Yellow | NOT - HALT     | 84-902D  |
| Ø 45 mm    | Metal    | Yellow |                | 84-909   |
| Ø 50 mm    | Plastic  | Yellow |                | 84-906   |

### Additional information

- Front panel thickness 1 ... 3 mm
- With anti-twist device
- When using a protective shroud the e-stop or stop-switch has to be turned by 180° to be mounted. See dimensional drawing
- The protection shroud Part No. 84-909 is not suitable for a proper use of emergency-stop. It can obstruct a spontaneous operation of the emergency-stop switch
- This shroud Part No. 84-906 is not compliant to EN ISO 13850. There are no restrictions when combined with stop switches.



Dimensions [mm]  
for Part No. 84-902, 84-902A  
84-902B, 84-904C

Dimensions [mm]  
for Part No. 84-909

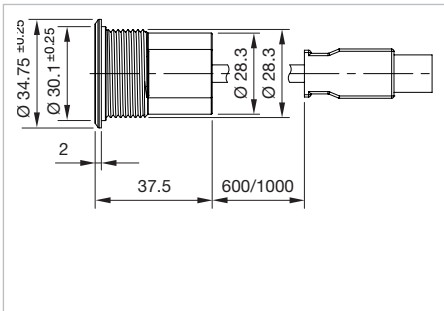
Dimensions [mm]  
for Part No. 84-906

# 84 Accessories



USB socket

| Material | Colour | Part No.       |
|----------|--------|----------------|
| Plastic  | Black  | 84-3103.0000.1 |
|          | Black  | 84-3103.0000.2 |



Dimensions [mm]

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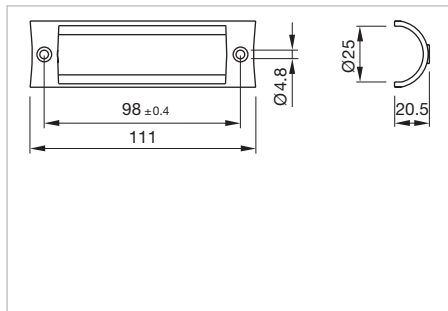
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## Rear side



### Adaptor reducing to 25 mm

| Product attributes                    | Material | Colour | Part No.  |
|---------------------------------------|----------|--------|-----------|
| For housing, pole mounting 35 mm dia. | Plastic  | Yellow | 84-9300.4 |
|                                       | Plastic  | Grey   | 84-9300.8 |

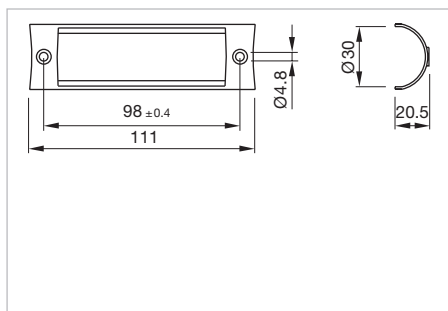


Dimensions [mm]



### Adaptor reducing to 30 mm

| Product attributes                    | Material | Colour | Part No.  |
|---------------------------------------|----------|--------|-----------|
| For housing, pole mounting 35 mm dia. | Plastic  | Yellow | 84-9700.4 |
|                                       | Plastic  | Grey   | 84-9700.8 |



Dimensions [mm]



### Flat receptacle

| Product attributes            | Material | Part No. |
|-------------------------------|----------|----------|
| 2.8 x 0.8 mm plug-in terminal | Metal    | 84-9420  |



### Insulation sleeve

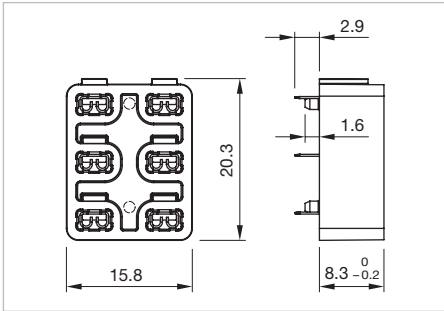
| Product attributes         | Material | Part No. |
|----------------------------|----------|----------|
| For flat receptacle 2.8 mm | Plastic  | 31-929   |

# 84 Accessories



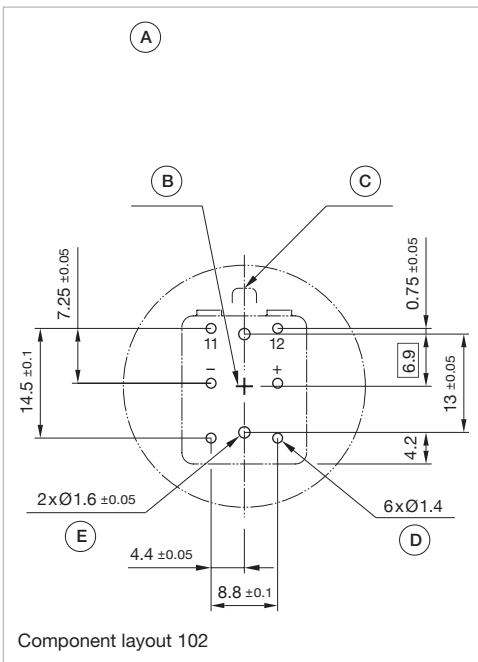
PCB plug-in base

| Dimensions                 | Material        | Terminal     | Pins  | Part No. | Component Layout |
|----------------------------|-----------------|--------------|-------|----------|------------------|
| 20.3 mm x 8.3 mm x 15.8 mm | Metal / plastic | PCB terminal | Axial | 84-920   | 102              |



Dimensions [mm]

## Component layouts



Component layout 102

Dimensions [mm]

A = Drilling plan (component side)

B = Centre from switch

C = Anti-twist protection

D = Pins for contacts/LED

E = Positioning hole



Plug

| Material | Part No. |
|----------|----------|
| Plastic  | 84-900   |

### Additional information

- For back protection IP67 of switching elements and illumination elements. Two plugs are necessary per element

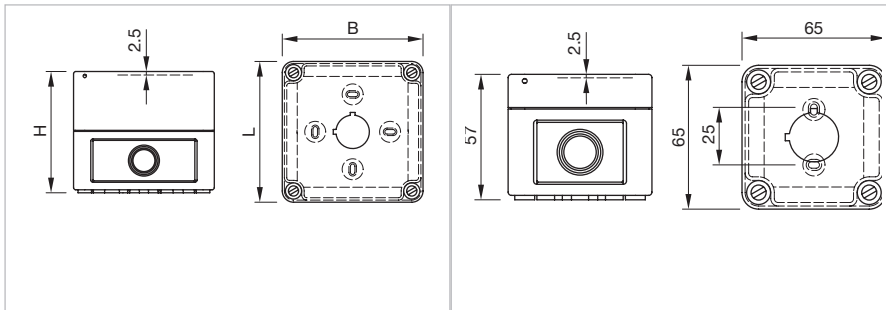


## Mounting



### Enclosure

| Product attributes   | Dimensions               | Material | Colour | IP Protection | Part No.  |
|--|--------------------------|----------|--------|---------------|-----------|
| With mounting cut-out 1 x Ø 22.3 mm, with anti-twist device                | 94 mm x 81 mm x 94 mm    | Plastic  | Grey   | IP66          | 704.945.1 |
| With mounting cut-out 2 x Ø 22.3 mm, with anti-twist device                | 130 mm x 81 mm x 94 mm   | Plastic  | Grey   | IP66          | 704.945.2 |
| With mounting cut-out 3 x Ø 22.3 mm, with anti-twist device                | 180 mm x 81 mm x 94 mm   | Plastic  | Grey   | IP66          | 704.945.3 |
| With mounting cut-out 4 x Ø 22.3 mm, with anti-twist device                | 180 mm x 110 mm x 182 mm | Plastic  | Grey   | IP66          | 704.945.4 |
| With mounting cut-out 6 x Ø 22.3 mm, with anti-twist device                | 180 mm x 110 mm x 182 mm | Plastic  | Grey   | IP66          | 704.945.5 |
| Bottom grey similar RAL 7035; cover lead-sealable, yellow similar RAL 1004 | 65 mm x 57 mm x 65 mm    | Plastic  |        | IP66          | 84-910    |



Dimensions [mm]  
for Part No. 704.945.1, 704.945.2, 704.945.3,  
704.945.4, 704.945.5

Dimensions [mm]  
for Part No. 84-910



### Fixing nut

| Product attributes        | Dimensions | Material | Colour | Part No. |
|---------------------------|------------|----------|--------|----------|
| Standard version          | Ø 30 mm    | Plastic  | Black  | 84-901   |
| For emergency stop switch | Ø 28 mm    | Plastic  | Black  | 84-905   |
| For emergency stop switch | Ø 30 mm    | Plastic  | Black  | 84-908   |
| For emergency stop switch | Ø 25 mm    | Metal    | Silver | 84-911   |



### Dismantling tool

| Product attributes                           | Material        | Part No. |
|--|-----------------|----------|
| For dismantling switching elements or lenses | Metal / plastic | 84-918   |

# 84 Accessories

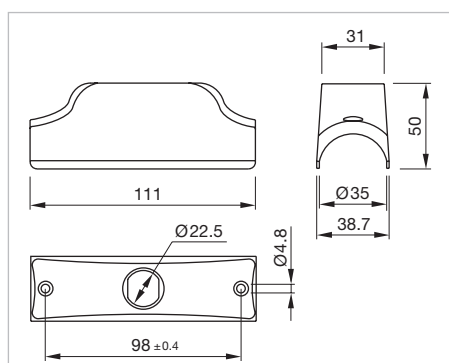


## Housing pole mounting 35 mm

| Product attributes  | Material | Colour       | Part No.   |
|---|----------|--------------|------------|
| Please note: The cut-out of the pole must read min. 22 mm and needs to be aligned with the switch | Plastic  | Yellow       | 84-9500.4  |
|   | Plastic  | Traffic blue | 84-9500.6A |
|   | Plastic  | Grey         | 84-9500.8  |

### Additional information

- Screws are not contained in the scope of supply



Dimensions [mm]

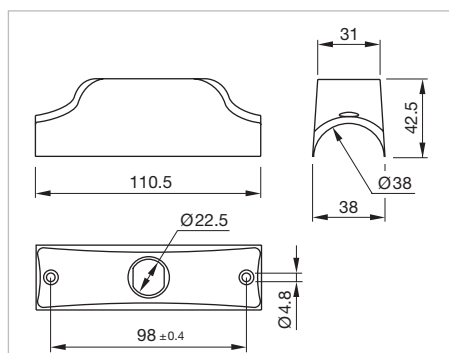


## Housing pole mounting 38 mm

| Product attributes  | Material | Colour | Part No.  |
|---|----------|--------|-----------|
| Please note: The cut-out of the pole must read min. 22 mm and needs to be aligned with the switch | Plastic  | Yellow | 84-9600.4 |
|   | Plastic  | Grey   | 84-9600.8 |

### Additional information

- Screws are not contained in the scope of supply



Dimensions [mm]

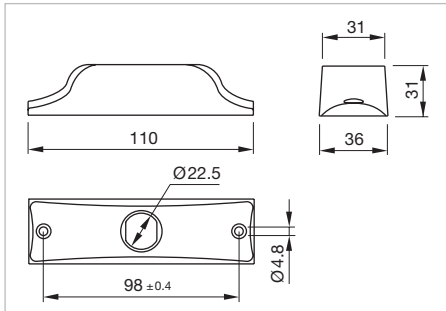


## Housing wall mounting

| Material | Colour | Part No.  |
|----------|--------|-----------|
| Plastic  | Yellow | 84-9800.4 |
| Plastic  | Grey   | 84-9800.8 |

### Additional information

- Screws are not contained in the scope of supply



Dimensions [mm]



## Cable gland

| Product attributes   | Material | Colour | IP Protection | Thread       | Part No.  |
|----------------------|----------|--------|---------------|--------------|-----------|
| With traction relief | Plastic  | Grey   | IP68          | M16 x 1.5 mm | 61-9481.6 |
|                      | Plastic  | Grey   | IP68          | M20 x 1.5 mm | 704.945.6 |



## Mounting tool

| Product attributes   | Dimensions | Material | Part No. |
|--|------------|----------|----------|
| For tightening or loosening the fixing nut, for emergency-stop and stop-switch |            | Plastic  | 84-996   |
| For tightening or loosening of the fixing nut Ø 22 mm                          | Ø 22 mm    | Metal    | 84-997   |

## Emergency-stop

### Switching system

The double-break switching system can be supplied for the following switching functions:

1 Normally closed, 2 Normally closed, 1 Normally closed + 1 Normally open.

The Normally closed contacts have forced opening according to EN 60947-5-5

### Material

#### Connection cable

Plastic, operating temperature up to +65 °C

#### Mushroom-head cap

Plastic, as per UL 94 V0

#### Actuator housing

Plastic, as per UL 94 V0

#### Material of contact

Silver alloy gold plated

### Mechanical characteristics

#### Front panel thickness

Standard 1 ... 4 mm

with emergency stop protective shroud Part No. 84-902 1 ... 3 mm

#### Mounting cut-outs

Ø22.3 mm as per EN IEC 60947-5-1 with anti-twist device

#### Terminals

Soldering terminals 2.8 mm x 0.5 mm (solderable), CuSn6 tin-plated  
Flat ribbon cable 2-, 4-, or 6-poles 0.35 mm<sup>2</sup> (AWG 22)

#### Tightening torque

Fixing nut 0.8 Nm

#### Actuating force

17 N ± 4 N

#### Actuating travel

Approx. 5 mm

#### Mechanical lifetime

250 000 cycles of operations

### Electrical characteristics

#### Standards

The devices comply with: EN IEC 60947-5-1, EN IEC 60947-5-5 (emergency stop), DIN EN ISO 13850, EN IEC 60204

#### Illumination

LED red with pole reversal, constant current source

Operation Voltage 5 VDC ... 30 VDC

Current consumption 9.7 mA ... 12.4 mA

#### Rated Operational Voltage $U_o$

250 VAC, as per EN IEC 60947-1

#### Rated Insulation Voltage $U_i$

250 V, as per EN IEC 60947-1

#### Rated Impulse Withstand Voltage $U_{imp}$

4 kV, as per EN IEC 60947-1

#### Electrical life

50 000 cycles of operations

(inductive  $\cos\phi$  0,95) as per EN IEC 60947-5-1

#### Air thermal $I_{th}$

5 A (plug in)

3 A (cable leads)

#### Switching voltage and switching current

Switch rating AC with silver contact (gold plated), service category AC-15, as per EN IEC 60947-5-1

|         |         |         |
|---------|---------|---------|
| Voltage | 120 VAC | 240 VAC |
|---------|---------|---------|

|         |     |       |
|---------|-----|-------|
| Current | 3 A | 1.5 A |
|---------|-----|-------|

Switch rating DC for silver contact (gold plated), service category DC-13, as per EN IEC 60947-5-1

| NO contacts<br>(48 VA) | NC contacts<br>(60 VA) | NO/NC contacts |
|------------------------|------------------------|----------------|
| 12 VDC/2.0 A           | 12 VDC/2.5 A           | 125 VDC/0.22 A |
| 24 VDC/2.0 A           | 24 VDC/2.5 A           | 250 VDC/0.11 A |
| 48 VDC/1.0 A           | 48 VDC/1.25 A          |                |
| 60 VDC/0.8 A           | 60 VDC/1.0 A           |                |

#### Recommended minimum operating data

Silver contacts (gold plated)

|         |          |
|---------|----------|
| Voltage | 1 VAC/DC |
|---------|----------|

|         |      |
|---------|------|
| Current | 1 mA |
|---------|------|

#### Electric strength

500 VAC, 50 Hz, 1 minute, as per DIN IEC 60512-2

#### Rated conditional short-circuit current

1000 A, type of short-circuit unit 6 A gG, as per EN IEC 60947-5-1

#### Protection class

Class II, as per EN IEC 60947-5

## Overvoltage category

III, as per EN IEC 60947-1

## Degree of pollution

3, as per EN IEC 60947-1

## Ambient conditions

### Storage temperature

-25 °C ... +80 °C

### Operating temperature

-25 °C ... +70 °C

### Front protection

IP65 front side, as per EN IEC 60529

IP66 front side, as per EN IEC 60529

IP67 front side, as per EN IEC 60529

IP20 (cable lead connection)

### Impact resistance

IK07, as per IEC 62262

### Shock resistance

(semi-sinusoidal)

Max. 150 m/s<sup>2</sup>, pulse width 11 ms, 3-axis,

as per EN IEC 60068-2-27

### Vibration resistance

(sinusoidal)

Max. 50 m/s<sup>2</sup> at 10 Hz ... 500 Hz, 10 cycles, 3-axis,

as per EN IEC 60068-2-6

## Climate resistance

Damp heat, cyclic

96 hours, +25 °C/97 %, +55 °C/93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, steady

56 days, +40 °C/93 % relative humidity,

as per EN IEC 60068-2-78

Dry heat

96 hours, +65 °C, as per EN IEC 60068-2-2

Low temperature

96 hours, -25 °C, as per EN IEC 60068-2-1

Saline mist

96 hours, +35 °C in chemical solution NaCl,

as per EN IEC 60068-2-11

## Approvals

### Approbations

CB (IEC 60947-5-1, IEC 60947-5-5)

UL NISD

CCC

### Declaration of conformity

CE

2006/42/EC (MD)

2011/65/EC (RoHS)

## Switching element illuminated pushbutton

### Switching system

Short-travel switching system with 2 independent contact points and tactile operation.

Guarantees reliable switching even of very light loads.

Fitted with 1 normally open contact.

### Material

#### Connection cable

Plastic, short-time heat-resistant up to 105 °C

#### Material of contact

Silver alloy gold plated

#### Switching element

Plastic, as per UL 94 V0 and

Plastic, as per UL 94 HB

### Mechanical characteristics

#### Terminals

Plug-in terminals 2.8 mm x 0.8 mm (solderable)

Flat ribbon cable 0.5 mm<sup>2</sup>

PCB terminal

#### Actuating force

4.0 N ±0.2 N

#### Tightening torque

Fixing screw mounting flange 0.4 Nm

#### Actuating travel

~0.5 mm

#### Resistance to heat of soldering

250 °C, 3 s (PCB assembly)

320 °C, 3 s (when using a soldering iron)

# 84 Technical data

## Mechanical lifetime

≥ 1 million cycles of operations

## Electrical characteristics

### Illumination

Single-Chip LED, green, orange, red, yellow, white and blue

Operation Voltage 12 VDC 24 VDC  
Current consumption 10 mA 10 mA

### Electrical life

as per EN IEC 60512-5

|                                 |                                       |
|---------------------------------|---------------------------------------|
| 5 million cycles of operation   | 24 VAC, 50 mA at 480 Ω                |
| 5 million cycles of operation   | 24 VAC, 100 mA at 240 Ω               |
| 2 million cycles of operation   | 42 VAC, 50 mA at 840 Ω                |
| 2 million cycles of operation   | 42 VAC, 100 mA at 420 Ω               |
| 300 000 cycles of operation     | 42 VAC, 100 mA at $\cos\varphi$ 0.4   |
| 250 000 cycles of operation     | 42 VAC, 200 mA at $\cos\varphi$ 0.395 |
| 1 million cycles of operation   | 12 VDC, 250 mA at 48 Ω                |
| 1 million cycles of operation   | 24 VDC, 50 mA at 480 Ω                |
| 1 million cycles of operation   | 24 VDC, 100 mA at 240 Ω               |
| 5 million cycles of operation   | 42 VDC, 25 mA at 1680 Ω               |
| 1.5 million cycles of operation | 42 VDC, 50 mA at 840 Ω                |
| 100 000 cycles of operation     | 42 VDC, 100 mA at 420 Ω               |
| 500 000 cycles of operation     | 24 VDC, 200 mA at L/R = 30 ms         |
| 300 000 cycles of operation     | 42 VDC, 100 mA at L/R = 30 ms         |
| 100 000 cycles of operation     | 42 VDC, 200 mA at L/R = 30 ms         |

## Switching voltage and switching current

Voltage 50 mVAC/DC ... 42 VAC/DC  
Current 10 µA ... 100 mA  
Power max. 2 W

## Electric strength

500 VAC, 50 Hz, 1 minute, as per DIN IEC 60512-2

## Ambient conditions

### Storage temperature

-40 °C ... +85 °C

### Operating temperature

-25 °C ... +70 °C

## Protection degree

Back protection:

IP40, standard version

IP67, fully sealed version, with mounted actuator only.

## Shock resistance

(semi-sinusoidal)

Max. 100 m/s<sup>2</sup>, pulse width 11 ms, 3-axis,  
as per EN IEC 60068-2-27

## Vibration resistance

(sinusoidal)

Max. 50 m/s<sup>2</sup> at 10 Hz ... 500 Hz, 10 cycles, 3-axis,  
as per EN IEC 60068-2-6

## Switching element Halo Compact

### Switch configuration

A complete switch requires a halo compact programmable switch actuator body (transparent) and a lens. If the switch needs lens illumination in addition then a translucent plastic lens or aluminium lens with a window is required.

Use Halo Compact with illuminated pushbutton actuator (Part No. 84-1081.7) or with the indicator actuator (Part No. 84-0080.7).

The illumination style is selected by the connection of 24V to the pins.

### Material

#### Housing

Plastic

Plastic (sealing compound)

### Material of contact

Silver alloy, gold-plated

The materials used comply with the high EAO standards relating to quality, functional safety, service life and design.

## Mechanical characteristics

### Terminals

Soldering/plug-in terminals  
2.8 mm x 0.8 mm (solderable)

### Actuating force

4.0 N ± 0.2 N  
(measured at the lens)

### Actuating distance

~ 0.5 mm

### Mechanical lifetime

≥ 1 million cycles of operation

## Electrical characteristics

### Switching element

Short-travel snap-action switching system with two independent contact points and tactile operation.

Number of contacts: one normal open contact

### Output

Electronic high-side switch

### Pre-configured light sequences

- Full illumination
- Blinking (interval: 1 second)
- Rotating/chasing (one full rotation per second)
- Process (changeover a group of 4 LEDs per second)

### Special feature

Integrated electronic switch for maintained action (High-side switch)

### Operating voltage

24VDC ± 10 %

Max. 100 mA

### Current consumption

< 80 mA

### LED-colours

All versions available with eight SMD LEDs for halo illumination plus one single LED (3mm) for central illumination. The following variants are available:

- 8 x red LEDs + 1 white single LED
- 8 x green LEDs + 1 white single LED
- 8 x yellow LEDs + 1 white single LED
- 8 x white LEDs + 1 white single LED
- 8 x blue LEDs + 1 white single LED
- 8 x red/green bi-colour LEDs + 1 white single LED

| Light sequences central LED |             | IN1    | IN2    | IN3    |
|-----------------------------|-------------|--------|--------|--------|
| not illuminated             | illuminated |        |        |        |
| 1                           | –           | 0VDC   | 0VDC   | 0VDC   |
| 2                           | –           | +24VDC | 0VDC   | 0VDC   |
| 3                           | –           | 0VDC   | +24VDC | 0VDC   |
| 4                           | –           | +24VDC | +24VDC | 0VDC   |
| –                           | 5           | 0VDC   | 0VDC   | +24VDC |
| –                           | 6           | +24VDC | 0VDC   | +24VDC |
| –                           | 7           | 0VDC   | +24VDC | +24VDC |
| –                           | 8           | +24VDC | +24VDC | +24VDC |

\* Functionen of light sequence:

1/5 = Full illumination

2/6 = Blink

3/7 = Rotation

4/8 = Process

## Ambient conditions

### Storage temperature

–40 °C ... +85 °C

### Operating temperature

–25 °C ... +70 °C

### Degree of protection

IP67 front side

(with actuator Part No. 84-1081.7 and 84-0080.7)

### Shock resistance

(semi-sinusoidal)

Max. 100 m/s<sup>2</sup>, pulse width 6 ms, 3-axis, as per EN IEC 60068-2-27

### Vibration resistance

(sinusoidal)

Max. 50 m/s<sup>2</sup> at 10 Hz... 500 Hz, 10 cycles, 3-axis, as per EN IEC 60068-2-6

## Approvals

### Conformities

CE

2014/30/EU (EMC)

2011/65/EC (RoHS)

# 84 Technical data

## Actuator

### Material

#### Lens

Plastic, as per UL 94 V2 or Aluminium anodised

#### Actuator housing

Plastic, as per UL 94 V0 or Aluminium anodised

### Mechanical characteristics

#### Tightening torque

Fixing nut max. 80Ncm

#### Actuating force

4.0N ±0.2N (measured at the lens)

#### Actuating travel

1.2mm

#### Mechanical lifetime

≥ 1 million cycles of operation

### Electrical characteristics

#### Electrostatic breakdown value

Plastic case ≥15kV

Aluminium case ≥5kV

as per IEC 61000-4-2, mounted in plastic front panel

EAO reserves the right to alter specifications without further notice.

### Ambient conditions

#### Storage temperature

-40 °C ... +85 °C

#### Operating temperature

-25 °C ... +70 °C

#### Protection degree

IP 67 and IP40 front side, as per EN IEC 60529

#### Climate resistance

Damp heat, cyclic

96 hours, +25 °C/97 %, +55 °C/93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, state

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

Rapid change of temperature

100 cycles, -40 °C ... +80 °C, as per EN IEC 60068-2-14

### Approvals

#### Approbations

EBC (TSI/PRM)

NFF

#### Conformities

CE

2011/65/EC (RoHS)



## 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.

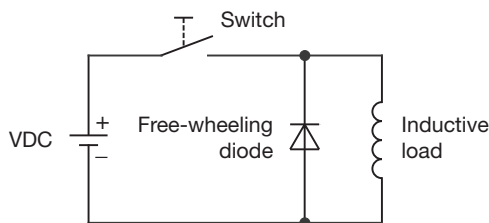
Fig. 1 shows an inductive load with a free-wheeling diode connected in parallel. This free-wheeling diode provides a path for the inductor current to flow when the current is interrupted by the switch. Without this free-wheeling diode, the voltage across the coil will be limited only by dielectric breakdown voltages of the circuit or parasitic elements of the coil. This voltage can be kilo-

volts in amplitude even when nominal circuit voltages are low (e.g. 12 VDC) see Fig. 2.

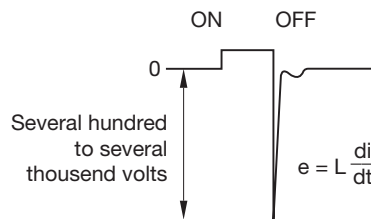
The free-wheeling diode should be chosen so that the reverse breakdown voltage is greater than the voltage driving the inductive load. The DC blocking voltage (VR) of the free-wheeling diode can be found in the datasheet of a diode. The forward current should be equal or greater than the maximum current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



## Note for soldering

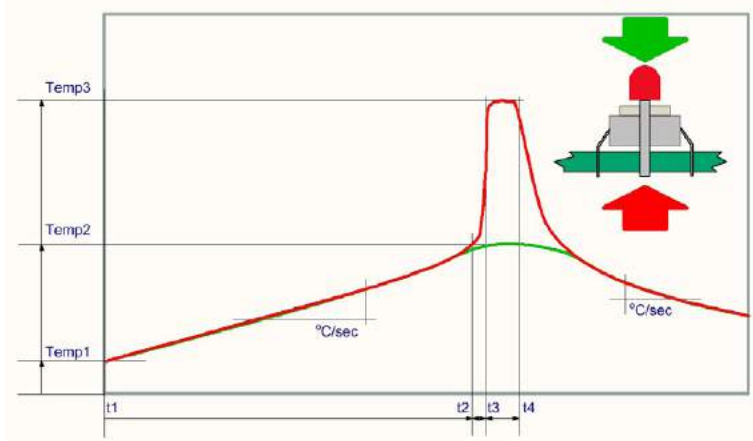
Process parameter for wave soldering

Basic specification for wave soldering J-STD 75 W4C.

|   |                                   |
|---|-----------------------------------|
| Maximum temperature on the component side (Temp 2):<br>(Temperature must not exceed during the entire processing) | 120 °C                            |
| Preheating phase (t1 ... t2):<br>Ramp up:   | 70 ... 120 sec<br>typ. + 1 °C/sec |
| Ramp up to maximum temperature (t2 ... t3):   | not defined                       |
| Maximum temperature on the soldering side (Temp 3):<br>Maximum time of soldering process (t3 ... t4):             | 250 °C<br>3 sec                   |
| Ramp down at 170 °C:  | typ. - 2 °C/sec                   |

# 84 Application guidelines

## Temperature curve wave soldering



Green curve: Temperature on the component side of the pcb  
 Red curve: Temperature on the soldering side of the pcb

Room temperature: Temp 1

Preheating: Temperature process = Temp 1 ... Temp 2  
 Process time = t1 ... t2

Ramp up to soldering temperature: Process time = t2 ... t3

Soldering phase: Temperature process = Temp 3  
 Process time = t3 ... t4

### Iron soldering

Basic specification for iron soldering IEC 60068-2-20

Maximum temperature at tip of iron: 320 °C  
 Maximum soldering time: 3 sec

### Cleaning/Lacquering

The switching elements are not sealed. Cleaning up the PCB may damage the contacts in the switching elements. For this reason, the following points should be noted:

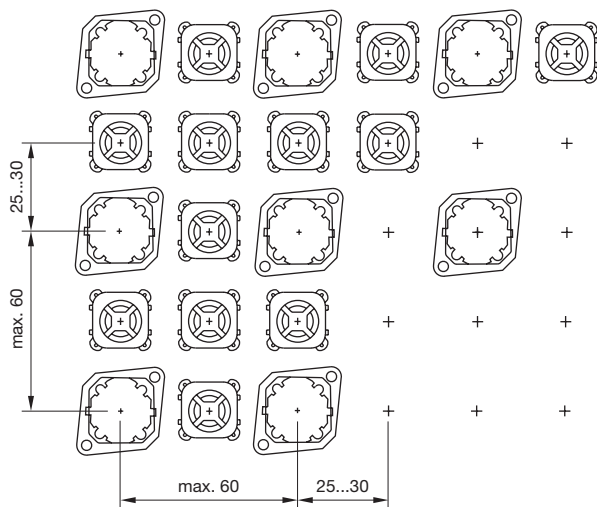
- When soldering make sure that the flux does not pass on the upper side of the PCB.
- When cleaning the PCB with detergents ensure that no dust or other debris may get inside of the switching elements.
- Ensure that no lacquer penetrates into the interior of the switching element when lacquering the PCB.

### Storage of components

To obtain the optimum solderability of the components, the following points should be noted during storage:

- Do not store components in locations with high temperature or humidity.
- Do not expose components to corrosive gases.
- Avoid direct sunlight for a long period.

## Arrangement mounting flange for switching- and illumination element, PCB mounting



The arrangement of the mounting flanges and their number is determined by the size of the front panel or PCB. To ensure uniform, tactile switching, we recommend a layout of the flanges as per adjacent sketch.

For large PCBs with several switching elements we recommend the following procedure:

1. Fit the actuator to the front panel.
2. Clip the mounting flange to the rear of the intended actuator.
3. Screw the PCB with the components soldered to it to the assembled mounting flange.

This arrangement applies to PCBs 1.6 mm thick.

### Dismantling mounting flange

The tool Part No. 84-998 must be used for removing the mounting flange from the actuator.

Before removing the flange, the PCB fixing screws must be loosened.

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