Series 51

Product Profile

The Series 51 is a high quality switch range that includes pushbuttons, indicators, selector switches and keylock switches. It is possible to choose up to 4NO/4NC snap-action switching elements per switch. Low level switching elements are also available.

Technical data see page 80

- IP65 Protection
- Switch Rating, 5A, 250VAC
- Raised Mounting into 16 mm cut out
- Illumination using midgert-grooved T1¾ lamps or single chip LED’s
- All standard lenses are transparent with translucent diffuser available in different colours
- For keylock switches 2 key systems and 145 different keys are available

16 mm IP65 5 A 250VAC

Choose one component from each of the coloured sections to assemble a complete switch. For other options or further information please contact your local sales office.

For complete switch also order ✡ A

For complete switch also order ✡ A

For complete switch also order ✡ A
Choose one component from each of the coloured sections to assemble a complete switch.
For other options or further information please contact your local sales office.

Keylock switch

1. **Keylock switch, 2 position, raised, snap-action, square, black plastic, 18 x 18 mm**
   - Contact: 1NO/1NC A
   - Key rem.: A

2. **Keylock switch, 2 position, raised, snap-action, rectangular, black plastic, 18 x 24 mm**
   - Contact: 1NO/1NC A + C
   - Key rem.: A

3. **Keylock switch, 3 position, raised, snap-action, rectangular, black plastic, 18 x 24 mm**
   - Contact: 2x 1NO/1NC A
   - Key rem.: 2x 1NO/1NC A
   - Key rem.: A + B + C

Selector switch

1. **Selector switch, 2 position, raised, snap-action, round, black plastic, 18 mm**
   - Contact: 1NO/1NC A
   - Key rem.: A

2. **Selector switch, 3 position, raised, snap-action, round, black plastic, 18 mm**
   - Contact: 2x 1NO/1NC A
   - Key rem.: 2x 1NO/1NC A
   - Key rem.: A + B + C

3. **Selector switch, 3 position, raised, snap-action, round, black plastic, 18 mm**
   - Contact: 2x 1NO/1NC A
   - Key rem.: 2x 1NO/1NC A
   - Key rem.: A + B + C

LED

1. **LED, T1 ¾ MG, single chip, 12 Volt and 28 Volt. (Also available in 6 Volt, 24 Volt and 48 Volt)**
   - Colour: Red
   - Part No.: 10-2-009.1062
   - Contact type: 12 VAC/DC, 15 mA

2. **LED, T1 ¾ MG, single chip, 12 Volt and 28 Volt. (Also available in 6 Volt, 24 Volt and 48 Volt)**
   - Colour: Yellow
   - Part No.: 10-2-009.1064
   - Contact type: 12 VAC/DC, 15 mA

3. **LED, T1 ¾ MG, single chip, 12 Volt and 28 Volt. (Also available in 6 Volt, 24 Volt and 48 Volt)**
   - Colour: Green
   - Part No.: 10-2-009.1065
   - Contact type: 12 VAC/DC, 15 mA

4. **LED, T1 ¾ MG, single chip, 12 Volt and 28 Volt. (Also available in 6 Volt, 24 Volt and 48 Volt)**
   - Colour: Blue
   - Part No.: 10-2-009.1066
   - Contact type: 12 VAC/DC, 15 mA

5. **LED, T1 ¾ MG, single chip, 12 Volt and 28 Volt. (Also available in 6 Volt, 24 Volt and 48 Volt)**
   - Colour: White
   - Part No.: 10-2-009.1069
   - Contact type: 28 VAC/DC, 7/14 mA

For complete switch also order 🔄 A

For complete switch also order 🔄 A

---

**Series 51**

16 mm  IP65  5 A  250 VAC
Choose one component from each of the coloured sections to assemble a complete switch.
For other options or further information please contact your local sales office.

A Accessories

Lens, opaque for rectangular pushbutton actuators, not for illumination

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>51-901.0</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-903.4</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Green</td>
<td>51-903.5</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Blue</td>
<td>51-903.6</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Clear</td>
<td>51-903.7</td>
<td>18 x 24 mm</td>
</tr>
</tbody>
</table>

Lens, front transparent/rear translucent for rectangular indicator and pushbutton actuators

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>51-903.2</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-903.4</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Green</td>
<td>51-903.5</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Blue</td>
<td>51-903.6</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Clear</td>
<td>51-903.7</td>
<td>18 x 24 mm</td>
</tr>
</tbody>
</table>

Lens, opaque for square pushbutton actuators, not for illumination

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>51-901.0</td>
<td>18 x 18 mm</td>
</tr>
</tbody>
</table>

Accessories

Lens, opaque for square indicator and pushbutton actuators

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>51-953.2</td>
<td>18 x 18 mm</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-953.4</td>
<td>18 x 18 mm</td>
</tr>
<tr>
<td>Green</td>
<td>51-953.5</td>
<td>18 x 18 mm</td>
</tr>
<tr>
<td>Blue</td>
<td>51-953.6</td>
<td>18 x 18 mm</td>
</tr>
<tr>
<td>Clear</td>
<td>51-953.7</td>
<td>18 x 18 mm</td>
</tr>
</tbody>
</table>

Lens, opaque for round pushbutton actuators, not for illumination

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>51-931.0</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-933.4</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Green</td>
<td>51-933.5</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Blue</td>
<td>51-933.6</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Clear</td>
<td>51-933.7</td>
<td>18 mm Ø</td>
</tr>
</tbody>
</table>

Lens, front transparent/rear translucent for round indicator and pushbutton actuators

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>51-931.0</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Yellow</td>
<td>51-933.4</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Green</td>
<td>51-933.5</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Blue</td>
<td>51-933.6</td>
<td>18 mm Ø</td>
</tr>
<tr>
<td>Clear</td>
<td>51-933.7</td>
<td>18 mm Ø</td>
</tr>
</tbody>
</table>
Choose one component from each of the coloured sections to assemble a complete switch.
For other options or further information please contact your local sales office.

## A Accessories

Lever for selector switch, coloured lever bar options available as indicated

<table>
<thead>
<tr>
<th>Colour</th>
<th>Part No.</th>
<th>Image</th>
<th>Part No.</th>
<th>Size</th>
<th>Image</th>
<th>Part No.</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>52-928.0</td>
<td>1</td>
<td>51-925</td>
<td>18 x 24 mm</td>
<td>1</td>
<td>51-947.0</td>
<td>18 x 24 mm</td>
</tr>
<tr>
<td>Red</td>
<td>52-928.20</td>
<td>2</td>
<td>51-920</td>
<td>18 x 18 mm</td>
<td>2</td>
<td>51-948.0</td>
<td>18 x 16 mm</td>
</tr>
<tr>
<td>Yellow</td>
<td>52-928.40</td>
<td>3</td>
<td>52-928.40</td>
<td>18 mm</td>
<td>3</td>
<td>51-949.0</td>
<td>18 mm</td>
</tr>
<tr>
<td>Green</td>
<td>52-928.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>52-928.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flap guard, raised in square and rectangular

Blanking plate

## Accessories

Mounting tool, lens and LED remover

<table>
<thead>
<tr>
<th>Image</th>
<th>Part No.</th>
<th>Product description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01-907</td>
<td>Mounting tool</td>
</tr>
<tr>
<td>2</td>
<td>02-905</td>
<td>Lens remover</td>
</tr>
<tr>
<td>3</td>
<td>61-9740.0</td>
<td>LED remover</td>
</tr>
</tbody>
</table>
Actuator with snap-action switching element

Switching system
Self-cleaning, double-break, snap action switching system (with contact gap 2 x 0.5 mm).
1 normally closed or 1 normally open contact per element.
Snap-action switching elements with soldering terminals at the sides: up to 4 switching element can be on a pushbutton (max. 4 normally closed and 4 normally open contacts).
Snap-action switching element with axial plug-in terminals 2.8 mm stachable, only 1 switching element can be on a pushbutton.

Material
Material of contact
Gold plated silver
Switch housing
Axial soldering-/plug-in terminal 2.8 mm:
Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing.
Soldering terminal: PA 6.6 Ultramid
Actuator housing
Polyetherimide, self-extinguishing

Mechanical characteristics
Terminals
Snap-action switching element with tinned soldering terminals at the sides:
Max. wire diameter 2 wires 1.2 mm
Max. wire cross-section of stranded cable 1 x 1 mm²
Snap-action switching element with axial soldering terminals, which can also be used as plug-in terminals 2.8 x 0.5 mm:
Max. wire diameter 2 wires 1 mm
Max. wire cross-section of stranded cable 2 of 0.75 mm² or 1 x 1.0 mm²
Actuating torque
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements. Measured at the key or lever of the keylock- or selector switch.
Actuating force
4 N ... 6 N, depending on the number of switching elements
Actuating travel
Illuminated pushbutton 3 mm
Keylock-/selector switch actuator 2 positions:
1x ca. 42° deflection momentary action
1x ca. 90° deflection maintained action
Rebound time
≤5 ms

Environmental conditions
Storage temperature
-40 °C ... +85 °C
Service temperature
-25 °C ... +55 °C
For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree
IP65 front side, as per IEC 60529

Electrical characteristics
Standards
IEC 61058, EN 61058
Rated voltage
250 VAC/VDC
Rated current
5 A
Contact resistance
Starting value (initial) ≤50 mΩ
Electrostatic discharge
≤15 kV (Keylock switch)
Conventional free air thermal current
5 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.
Switch rating
250 VAC, 5 A (cos ø 1)
250 VAC, 3 A (cos ø 0.3)
Switch rating AC (cos ø 0.7)
Voltage 125 VAC 250 VAC
Current 3 A 2 A
Switch rating DC (inductive) L/R = 30 ms
Voltage 24 VDC 60 VDC 110 VDC 220 VDC
Current 2 A 0.7 A 0.2 A 0.1 A

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

Protection class
Class II

Series 51  Technical Data
Technical Data

Approvals

Approbations
CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
UL
Declaration of conformity
CE

Actuator with snap-action switching element block (Keylock-/selector switch 3 positions)

Switching system
Self-cleaning, double-break, snap action switching system
1 normally closed or 1 normally open contact per element.

Material

Material of contact
Gold plated hardsilver
Switch housing
Diallylphthalate (DAP), heat-resistant and self-extinguishing
Actuator housing
Polyetherimide, self-extinguishing

Mechanical characteristics

Terminals
Soldering terminal which can also be used as plug-in terminal
2.8 x 0.5 mm:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm²
Actuating torque
2.5 Ncm ... 5.5 Ncm, depending on the number of switching elements. Measured at the key or lever of the keylock- or selector switch.
Actuating travel
Keylock-/selector switch actuator with 3 positions
2x ca. 42° deflection momentary action
2x ca. 90° deflection maintained action
Rebound time
≤5 ms
Mechanical lifetime
Keylock switch 50 000 cycles of operation
Selector switch 100 000 cycles of operation

Electrical characteristics

Electrostatic discharge
≤15 KV (Keylock switch)

Conventional free air thermal current
5 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

Switch rating
250 VAC, 5 A (cosφ 0.75)

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

Protection class
Class II

Environmental conditions

Storage temperature
−40 °C ... +85 °C

Service temperature
−25 °C ... +55 °C for selector switches mounted as a block, make sure the heat can escape freely

Protection degree
Front side, as per IEC 60529
IP65 keylock switch
IP40 selector switch

Approvals

Approbations
CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
UL
Declaration of conformity
CE
**Technical Drawings**

**Series 51**

### 51 Cut-outs

**Indicator, Pushbutton, Round, Square, Rectangular**

<table>
<thead>
<tr>
<th>Size</th>
<th>Measurements</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 x 18 mm</td>
<td>16 x 18 mm</td>
<td>![Diagram 1]</td>
</tr>
<tr>
<td>18 x 24 mm</td>
<td>16 x 24 mm</td>
<td>![Diagram 2]</td>
</tr>
<tr>
<td>Ø18 mm</td>
<td>16 Ø18 mm</td>
<td>![Diagram 3]</td>
</tr>
</tbody>
</table>

### 51 Cut-outs

**Keylock 2-Position Round, Keylock 2-Position Square, Keylock 2-Position Rectangular, 2 & 3-Position Selector Round**

<table>
<thead>
<tr>
<th>Size</th>
<th>Measurements</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 x 18 mm</td>
<td>16 x 18 mm</td>
<td>![Diagram 4]</td>
</tr>
<tr>
<td>18 x 24 mm</td>
<td>16 x 24 mm</td>
<td>![Diagram 5]</td>
</tr>
<tr>
<td>Ø18 mm</td>
<td>16 Ø18 mm</td>
<td>![Diagram 6]</td>
</tr>
</tbody>
</table>