

Series 61

16mm 22.5mm 21x21mm 21x27mm IP65 5A 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.

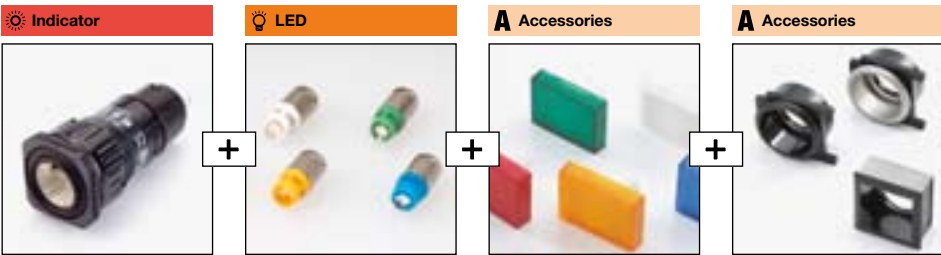
Product Profile

The Series 61 is a high quality, modular switch range that includes pushbuttons, indicators, selector switches, keylock switches and Emergency-stops. Available in raised or flush mount.

Self cleaning snap-action and slow-make switching elements available.

Technical data see page 103

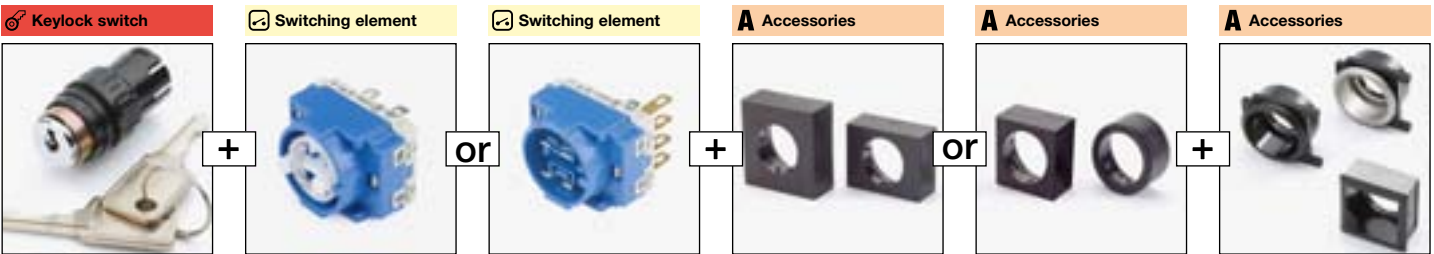
- IP65 Protection
- Switch Rating, 5A, 250VAC
- Raised Mounting into 16 mm cut out
- Flush Mounting into 22.5 mm, 21 x 21 mm and 21 x 27 mm cut out
- Illumination using midjet-grooved T13/4 lamps or single chip LED's
- All standard lenses are transparent with translucent diffuser available in different colours
- For keylock switches 135 different keys are available



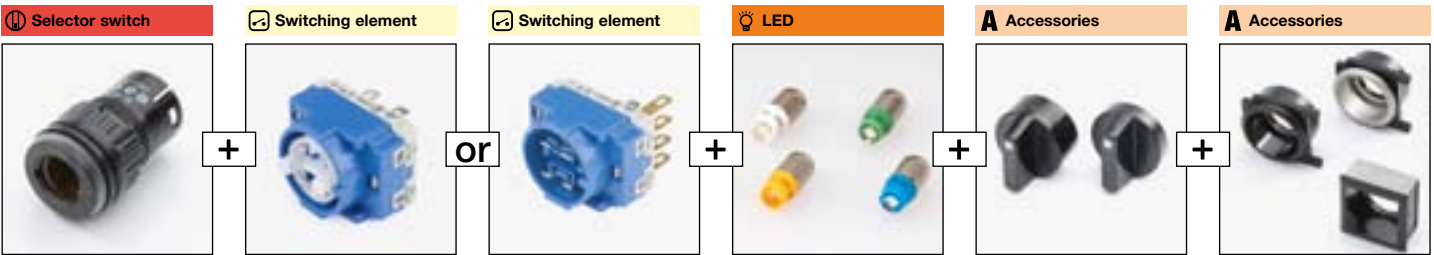
For a complete indicator you will need to order the appropriate LED, lens and bezel (for flush mount only)



For a complete illuminated pushbutton you will need to order the appropriate contact block, LED, lens and bezel (for flush mount only)



For a complete keylock switch you will need to order the appropriate LED, lens and bezel (for flush mount only)



For a complete selector switch you will need to order the appropriate contact block, LED, lever and bezel (for flush mount only)

Ordering Guide

Choice of front bezel determines front shape

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.



Indicator



Indicator bodies, raised, round, square and rectangular, black plastic, 16 mm mounting

Image	Part No.	Size
1	61-0050.02	24x24 mm
2	61-0030.02	18x24 mm
3	61-0020.02	18x18 mm
4	61-0010.02	18 mm Ø

Illuminated pushbutton



Illuminated pushbutton actuator, raised, round, square and rectangular, black plastic, 16 mm mounting

Image	Part No.	Function	Size
1	61-1150.0	Momentary	24x24 mm
1	61-1250.0	Maintained	24x24 mm
2	61-1130.0	Momentary	18x24 mm
2	61-1230.0	Maintained	18x24 mm
3	61-1120.0	Momentary	18x18 mm
3	61-1220.0	Maintained	18x18 mm
4	61-1110.0	Momentary	18 mm Ø
4	61-1210.0	Maintained	18 mm Ø

For complete switch also order **A**

For complete switch also order **A**

For complete switch also order **A**

Illuminated pushbutton



Illuminated flush mount pushbutton actuator, round, black plastic, 22.5 mm mounting

Part No.	Function
61-1100.0	Momentary
61-1200.0	Maintained

Emergency-stop switch



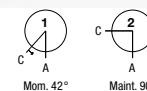
Emergency-stop, twist release and key release, 27 mm diameter for 16 mm mounting, foolproof to EN 60947-5-5 and DIN EN ISO 13850

Part No.	Product reference
61-3440.4/1	Twist release
61-5441.4/K	Key release

Keylock switch



Keylock switch, actuator, 2 position for raised and flush mount



Graphic	Part No.	Function	Key rem.
1	61-2101.0/D	Momentary	A
2	61-2201.0/D	Maintained	A
2	61-2203.0/D	Maintained	C
2	61-2205.0/D	Maintained	C + A

For complete switch also order **A**

For complete switch also order **A**

For complete switch also order **A**

For flush mount order front bezel and front bezel set



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



Keylock switch, actuator, 3 position for raised and flush mount



Graphic	Part No.	Function	Key rem.
3	61-2501.0/D	Momentary/Momentary	A
4	61-2601.0/D	Maintained/Maintained	A
4	61-2602.0/D	Maintained/Maintained	B
4	61-2603.0/D	Maintained/Maintained	C
4	61-2604.0/D	Maintained/Maintained	A + B
4	61-2605.0/D	Maintained/Maintained	C + A
4	61-2606.0/D	Maintained/Maintained	C + B
4	61-2607.0/D	Maintained/Maintained	C + A + B
For flush mount order front bezel and front bezel set			

Keylock switch



Keylock switch, actuator, 3 position for raised and flush mount



Graphic	Part No.	Function	Key rem.
5	61-2701.0/D	Maintained/Momentary	A
5	61-2703.0/D	Maintained/Momentary	C
5	61-2705.0/D	Maintained/Momentary	C + A
6	61-2801.0/D	Momentary/Maintained	A
6	61-2802.0/D	Momentary/Maintained	B
6	61-2804.0/D	Momentary/Maintained	A + B
For flush mount order front bezel and front bezel set			

Selector switch



Selector switch, actuator, 2 and 3 position for raised and flush mount



Graphic	Part No.	Function
7	61-4110.0	Momentary
8	61-4210.0	Maintained
9	61-4510.0	Momentary/Momentary
10	61-4610.0	Maintained/Maintained
11	61-4710.0	Maintained/Momentary
12	61-4810.0	Momentary/Maintained

For complete switch also order  **A**

For complete switch also order  **A**

For complete switch also order   **A**

Contact block



Contact block for pushbuttons and 2 position keylock and selector switches, snap-action, solder/plug-in terminal

Part No.	Contact type	Contact material
61-8410.12	1NO	Silver
61-8410.22	1NO	Gold
61-8420.12	2NO	Silver
61-8420.22	2NO	Gold
61-8470.12	1NO/1NC	Silver
61-8470.22	1NO/1NC	Gold



Emergency-stop contact block, slow make, screw terminal or solder/plug-in terminal

Image	Part No.	Contact type	Contact material
1	61-8755.11	2NC	Silver
2	61-8755.17	2NC	Silver
1	61-8775.11	1NO/1NC	Silver
2	61-8775.17	1NO/1NC	Silver



Contact block, 3 position keylock and selector switch, snap-action, solder/plug-in terminal

Part No.	Contact type	Contact material
61-8520.12	2NO	Silver
61-8520.22	2NO	Gold

98

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.



ELEMENT



LED



ACCESSORIES

LED



LED, T1¼ MG, single chip, 12 Volt and 28 Volt.
Also available in 6 Volt, 24 Volt and 48 Volt

Colour	Part No.	Voltage
Red	10-2J09.1062	12VAC/DC, 7/14mA
Yellow	10-2J09.1064	12VAC/DC, 7/14mA
Green	10-2J09.1065	12VAC/DC, 7/14mA
Blue	10-2J09.1066	12VAC/DC, 7/14mA
White	10-2J09.1069	12VAC/DC, 7/14mA
Red	10-2J13.1062	28VAC/DC, 7/14mA
Yellow	10-2J13.1064	28VAC/DC, 7/14mA
Green	10-2J13.1065	28VAC/DC, 7/14mA
Blue	10-2J13.1066	28VAC/DC, 7/14mA
White	10-2J13.1069	28VAC/DC, 7/14mA

A Accessories



Lens, plastic for raised, rectangular indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9331.2	18x24 mm
Yellow	61-9331.4	18x24 mm
Green	61-9331.5	18x24 mm
Blue	61-9331.6	18x24 mm
Clear	61-9331.7	18x24 mm



Lens, plastic for raised, square indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9351.2	24x24 mm
Yellow	61-9351.4	24x24 mm
Green	61-9351.5	24x24 mm
Blue	61-9351.6	24x24 mm
Clear	61-9351.7	24x24 mm

A Accessories



Lens, plastic for raised, square indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9321.2	18x18 mm
Yellow	61-9321.4	18x18 mm
Green	61-9321.5	18x18 mm
Blue	61-9321.6	18x18 mm
Clear	61-9321.7	18x18 mm



Lens, plastic for raised, round indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9311.2	18 mm Ø
Yellow	61-9311.4	18 mm Ø
Green	61-9311.5	18 mm Ø
Blue	61-9311.6	18 mm Ø
Clear	61-9311.7	18 mm Ø



Lens, plastic for flush mount, rectangular indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9681.2	24x30 mm
Yellow	61-9681.4	24x30 mm
Green	61-9681.5	24x30 mm
Blue	61-9681.6	24x30 mm
Clear	61-9681.7	24x30 mm



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A Accessories



Lens, plastic for flush mount, round indicator and pushbutton actuators

Colour	Part No.
Red	61-9642.2
Yellow	61-9642.4
Green	61-9642.5
Blue	61-9642.6
Clear	61-9642.7



Lens, plastic for flush mount, square indicator and pushbutton actuators

Colour	Part No.	for switch
Red	61-9671.2	24 x 24 mm
Yellow	61-9671.4	24 x 24 mm
Green	61-9671.5	24 x 24 mm
Blue	61-9671.6	24 x 24 mm
Clear	61-9671.7	24 x 24 mm



Lever for selector switch, raised and flush mount, coloured lever bar options available as indicated

Colour	Part No., Raised	Part No., Flush mount
Red	52-928.20	61-9028.20
Yellow	52-928.40	61-9028.40
Green	52-928.50	61-9028.50
Blue	52-928.60	61-9028.60
White	52-928.9	61-9028.9
Black	52-928.0	61-9028.0

A Accessories



Keylock switch front bezel, raised black plastic

Image	Part No.	for switch
1	61-9250.0	24 x 24 mm
2	61-9230.0	18 x 24 mm
3	61-9220.0	18 x 18 mm
4	61-9210.0	18 mm Ø



Keylock switch front bezel, flush mount or raised, black plastic

Image	Part No.	for switch
1	61-9230.0	24 x 30 mm
2	61-9220.0	24 x 24 mm
3	61-9210.0	25 mm Ø



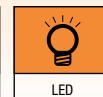
Front bezel set for flush mount indicator, illuminated pushbutton and square and rectangular keylock switch

Image	Part No.	Material	Size
1	61-9933.10	Plastic black	25 mm Ø
2	61-9933.0	Aluminium nat.	25 mm Ø
3	61-9931.0	Plastic black	24 x 30 mm
4	61-9930.0	Plastic black	24 x 24 mm

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ELEMENT



LED



ACCESSORIES

A Accessories



Front bezel set for round flush mount selector, round keylock switch and square selector switch

Image	Part No.	Material	Size
1	61-9932.10	Plastic black	25 mm Ø
2	61-9936.0	Plastic black	24x24 mm
3	61-9932.0	Aluminium nat.	25 mm Ø



Flap guard, raised and flush mount

Image	Part No.	Size	Mounting
1	61-9922.0	24x30 mm	Flush
2	61-9921.0	24x24 mm	Flush
3	61-9924.0	25 mm Ø	Flush
4	61-9920.0	24x24 mm	Raised
5	51-925	18x24 mm	Raised
6	51-920	18x18 mm	Raised



Blanking plate

Image	Part No.	Size	Mounting hole
1	61-9450.0	24x24 mm	16 mm Ø
2	61-9452.0	24x30 mm	21x27 mm
3	61-9451.0	24x24 mm	21x21 mm
4	51-947.0	18x24 mm	16 mm Ø
5	51-948.0	18x18 mm	16 mm Ø
6	51-949.0	18 mm Ø	16 mm Ø
	61-9453.0	25 mm Ø	22.5 mm Ø

A Accessories



Flat receptacle for plug-in terminal size 2.8x0.5 mm and insulation socket

Image	Part No.
1	31-929
2	31-946



Emergency-stop protective shroud, yellow painted aluminium with 16 mm mounting hole

Part No.
61-9965



Emergency-stop label, 43 mm diameter, English, German, French and no markings

Part No.	Markings
61-9970.0	no markings
61-9970.2	EMERGENCY STOP
61-9970.1	NOT AUS
61-9970.3	ARRET D'URGENCE
61-9970.6	NOT-HALT



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A Accessories



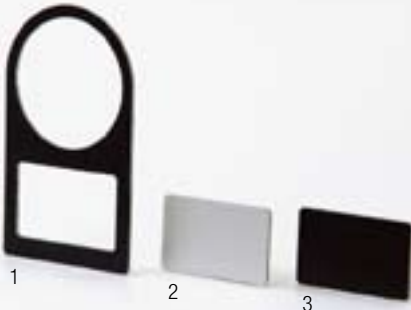
Emergency-stop switch enclosure with 16 mm mounting hole, 65 mm (w) x 65 mm (h) x 57 mm (d) and cable gland M16, IP66

Image	Part No.	Thread
1	61-9480.5	
2	61-9481.6	M16



Lens remover for flush mount, mounting tool, lens remover for raised, contact block remover and LED remover

Image	Part No.	Product description
1	61-9730.0	Lens remover for flush mount
2	01-907	Mounting tool
3	02-905	Lens remover for raised
4	61-9711.0	Contact block remover
5	61-9740.0	LED remover



Legend plate, adhesive, natural anodised aluminium finish for flush mount round pushbuttons, 25 mm mounting hole

Image	Part No.	Size	Colour
1	61-9980.0	50x30 mm Ø	Black
2	704.968.0		Aluminium
3	704.968.1		Black

A Accessories

Lens plastic transparent; illuminated ring; for raised and flush mounting, round indicators and illuminated pushbuttons			Lens aluminium; convex raised; for raised and flush mounting, round indicators and illuminated pushbuttons			Lens with spot illumination; aluminium; for raised and flush mounting, round indicators and illuminated pushbuttons		
Colour	Part No.	Comment	Colour	Part No.		Colour	Part No.	
Red	61-9643-201		Red	61-9842.2		Red	61-9841.2A	
Orange	61-9643-301		Yellow	61-9842.4		Yellow	61-9841.4A	
Yellow	61-9643-401		Green	61-9842.5		Green	61-9841.5A	
Green	61-9643-501		Blue	61-9842.6		Blue	61-9841.6A	
Blue	61-9643-601		Aluminium	61-9842.8		Aluminium	61-9841.8A	
Clear	61-9643-701		Black	61-9842.0		Black	61-9841.0A	

Actuator with snap-action switching element

Switching system

Self-cleaning, double-break snap-action switching system with contact opening width 2x0.5mm (switch with small contact opening width as per EN IEC 61058-1).

The switching elements are optionally equipped with the following switching functions:

One to three normally open (NO) or normally closed (NC), or any combination of NO and NC plus connections for T1 3/4 LED or lamp. The number of switching elements cannot exceed three.

The switching elements provided for the 3-position switch actuators are equipped with max. 2NC or 2NO or any combination. The number of switching elements cannot exceed two.

Material

Lens

Raised mounting Polymethylmethacrylat (PMMA), as per UL 94 HB, flush mounting Polycarbonat (PC), as per UL 94 V0, or Aluminium anodized

Front bezel

Polyetherimid (PEI), as per UL 94 V0, or Aluminium anodized

Front ring

Aluminium anodized

Material of contact

Silver or silver with gold plating

Switching element

Diallylphthalate (DAP), as per UL 94 V0 and Polyamide (PA 66), as per UL 94 V0

Actuator housing

Polyetherimide (PEI), as per UL 94 V0, self-extinguishing

Mechanical characteristics

Terminals

	rigid	flexible	superflexible
1 wire	0.5 ... 1.5 mm ²	0.5 ... 0.75 mm ²	0.5 mm ²
2 wires	0.75 mm ²	0.5 mm ²	

Actuating torque

Selector-/Keylock switch	2.5 ... 10 Ncm
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Actuating force

Pushbutton	2.7 ... 3.6 N
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Actuating travel

Pushbutton	3 mm		
Selector-/ keylock switch	2 positions	3 positions	
Momentary action	approx. 42°	approx. 2 x 42°	
Maintained action	approx. 90°	approx. 2 x 90°	

Rebound time

The rebound times apply to normal manual activation

Contact making	3 ms
Contact breaking	5 ms

Mechanical lifetime

as per DIN IEC 60512-5-6 and EN IEC 60947-5-1

Pushbutton maintained action	1 million	cycles of operation
Pushbutton momentary action	2 million	cycles of operation
Keylock switch	50 000	cycles of operation
Selector switch	100 000	cycles of operation

Electrical characteristics

Standards

The devices comply with: EN IEC 61058-1 and EN IEC 60947-5-1

Rated Operational Voltage U_e

250 VAC/DC as per EN IEC 60947-1

Rated Insulation Voltage U_i

320 VAC, as per EN IEC 60947-5-1

Rated Impulse Withstand Voltage U_{imp}

4 kV, as per EN IEC 60947-5-1

Contact resistance

New state with silver contact $\leq 100 \text{ m}\Omega$

as per DIN IEC 60512-2-4, measured at 100 mA, 10 V

New state with gold plated contact $\leq 50 \text{ m}\Omega$

as per DIN IEC 60512-2-3, measured at 20 mV, 10 mA

Electrical life

$\geq 50\,000$ cycles of operation at 250 VAC, 5 A, $\cos\phi$ 0.95, as per EN IEC 60947-5-1

Electrostatic discharge

Keylock switch 11 kV

Conventional free air thermal current I_{th}

5 A, as per EN IEC 60947-5-1

the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating

Switch rating AC with silver contact or silver contact with gold plating, service category AC-15, as per EN IEC 60947-5-1

Voltage	125 VAC	250 VAC
Current	2.5 A	2 A

Switch rating DC for silver contact or silver contact with gold plating, service category DC-13, as per EN IEC 60947-5-1

Voltage	250 VDC
Current	0.15 A

Recommended minimum operational data

Material of contact	Silver	Silver with gold plating
Voltage	20 VAC/DC	5 VAC/DC
Current	100 mA	10 mA

Electric strength

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

Overvoltage category

III, as per EN IEC 60947-5-1

Protection class

Class II, as per EN IEC 61058-1

Degree of pollution

3, as per EN IEC 60947-1

Environmental conditions

- Storage temperature**
−40 °C ... +85 °C
- Operating temperature**
−25 °C ... +55 °C
- Protection degree**
as per EN IEC 60529
Frontside IP65 | rear side IP40
- Shock resistance**
(semi-sinusoidal)
max. 100m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27
- Vibration resistance**
(sinusoidal)
max. 100m/s² at 10Hz ... 500Hz, 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, 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**
CB (IEC 60947)
CB (IEC 61058)
CSA
ENEC (EN 61058)
Germanischer Lloyd
GOST
UL
VDE
- Declaration of conformity**
CE

Actuator with slow-make switching element

Switching system
Double-break slow-make system, contact opening width 2x1.5mm, with 2x2 contact points per switching element.
NC-contact elements in the slow-make elements fulfill requirements of switches with forced opening as per EN IEC 60947-5-1 2.17
The slow-make elements are optionally obtainable with the following switching functions: 1 NO or 2 NO, 1 NC or 2 NC, 1 NO + 1 NC.

Material

- Lens**
Raised mounting Polymethylmethacrylat (PMMA), as per UL 94 HB, flush mounting Polycarbonat (PC), as per UL 94 V0, or Aluminium anodized
- Front bezel**
Polyetherimid (PEI), as per UL 94 V0, or Aluminium anodized
- Front ring**
Aluminium anodized
- Material of contact**
Silver or gold (specified for operation for low level switching)
- Switching element**
Diallylphthalate (DAP), as per UL 94 V0 and Polyamide (PA 66), as per UL 94 V0
- Actuator housing**
Polyetherimide (PEI), as per UL 94 V0, self-extinguishing

Mechanical characteristics

Terminals			
- Solder	rigid	flexible	superflexible
1 wire	0.5 ... 1.5 mm ²	0.5 ... 0.75 mm ²	0.5 mm ²
2 wires	0.75 mm ²	0.5 mm ²	
- Screw			
1 wire	0.5 ... 1.5 mm ²	0.5 ... 0.75 mm ²	0.5 mm ²
2 wires	0.75 mm ²	0.5 mm ²	0.5 mm ²
Actuating torque			
Selector-/ Keylock switch		4 ... 16Ncm	
Actuating force			
Pushbutton		3.5 ... 11 N	
Emergency-stop switch		max. 65 N	
Actuating travel			
Pushbutton		3 mm	
Emergency-stop switch		10 mm	
Selector-/ keylock switch		2 positions	3 positions
Momentary action		approx. 42°	approx. 2 x 42°
Maintained action		approx. 90°	approx. 2 x 90°
Rebound time			
2ms, contact making and contact breaking			
the rebound times apply to normal manual activation			
Mechanical lifetime			
as per DIN IEC 60512-5-6 and EN IEC 60947-5-1			
Pushbutton maintained action		1 million	cycles of operation
Pushbutton momentary action		2 million	cycles of operation
Emergency-stop pushbutton		6 050	cycles of operation
Keylock switch		50 000	cycles of operation
Selector switch		100 000	cycles of operation

Electrical characteristics

Standards

The devices comply with: EN IEC 61058-1 and EN IEC 60947-5-1, EN IEC 60947-5-5 (Emergency-stop)

Electrical life

≥50 000 cycles of operation at 250 VAC, 5 A, $\cos\phi$ 0.95, as per EN IEC 60947-5-1

Switching Element of Emergency-stop 6050 cycles of operation, as per EN IEC 60947-5-5

Electrostatic discharge

Keylock switch 11 kV

Electric strength

4000 VAC, 50 Hz, 1 min., as per DIN IEC 60512-2
between all terminals and earth

Overvoltage category

III, as per EN IEC 60947-5-1

Protection class

Class II, as per EN IEC 61058-1

Degree of pollution

3, as per EN IEC 60947-1

Electrical characteristics for silver contacts

Rated Operational Voltage U_e

250 VAC/DC as per EN IEC 60947-1

Rated Insulation Voltage U_i

320 VAC, as per EN IEC 60947-5-1

Rated Impulse Withstand Voltage U_{imp}

4 kV, as per EN IEC 60947-5-1

Contact resistance

New state $\leq 50 \text{ m}\Omega$, as per DIN IEC 60512-2-4, measured at 100 mA, 10 V

Conventional free air thermal current I_{th}

5 A, as per EN IEC 60947-5-1

the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

Switch rating

Switch rating AC with silver contact and screw terminal, service category AC-15, as per EN IEC 60947-5-1

Voltage	125 VAC	250 VAC
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Current	3 A	2 A
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Switch rating with silver contact and screw terminal, service category

DC-13, as per EN IEC 60947-5-1

Voltage	250 VDC
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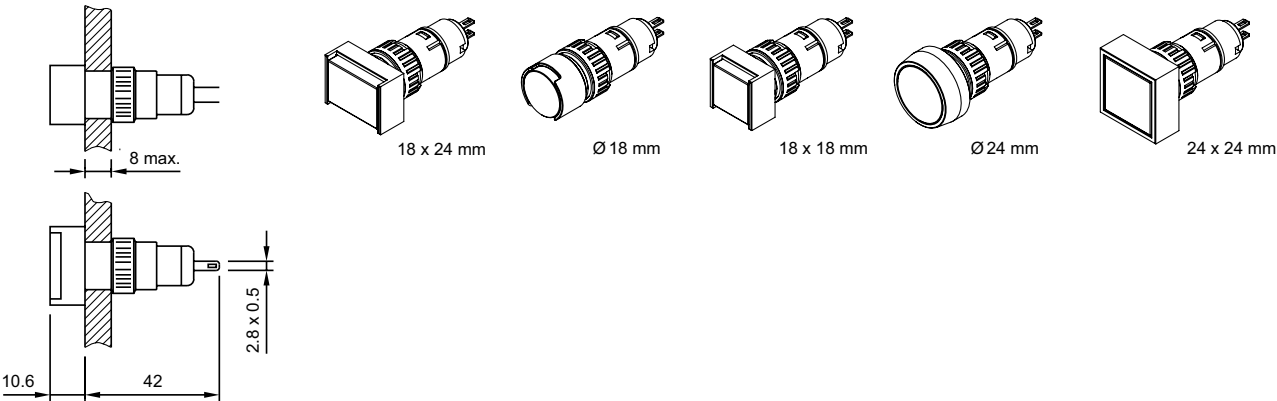
Current	0.2 A
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Recommended minimum operational data

20 VAC/DC, 100 mA

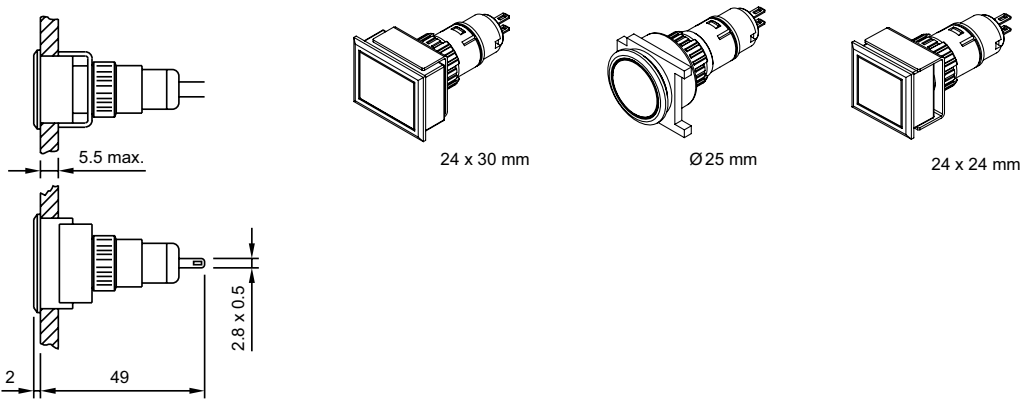
61 Indicator

Raised, Round, Square, Rectangular



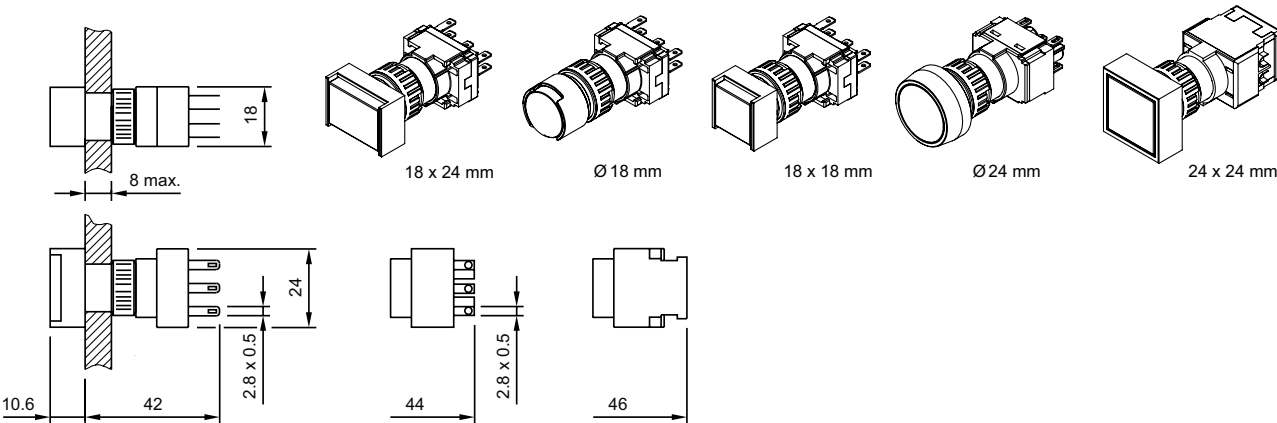
61 Indicator

Flush, Round, Square, Rectangular



61 Illuminated Pushbutton

Raised, Round, Square, Rectangular



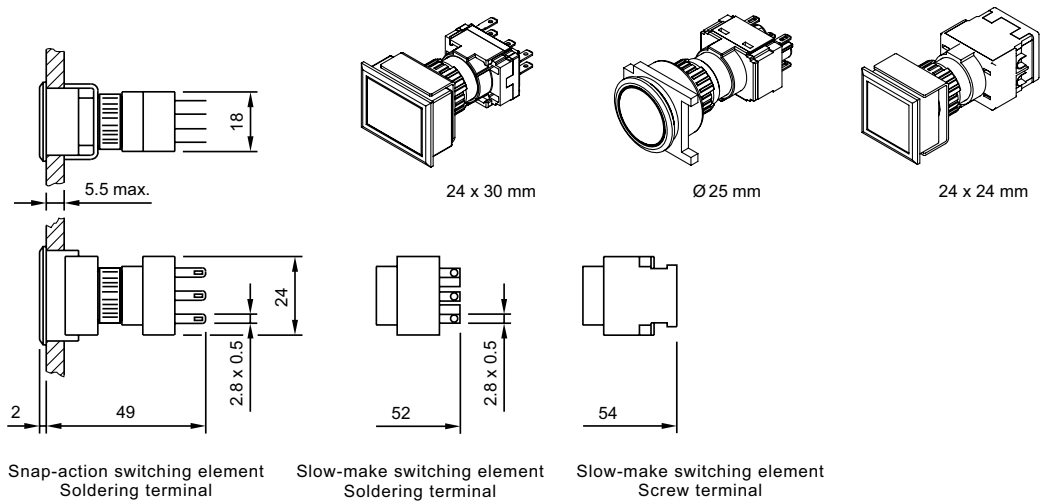
Snap-action switching element
Soldering terminal

Slow-make switching element
Soldering terminal

Slow-make switching element
Screw terminal

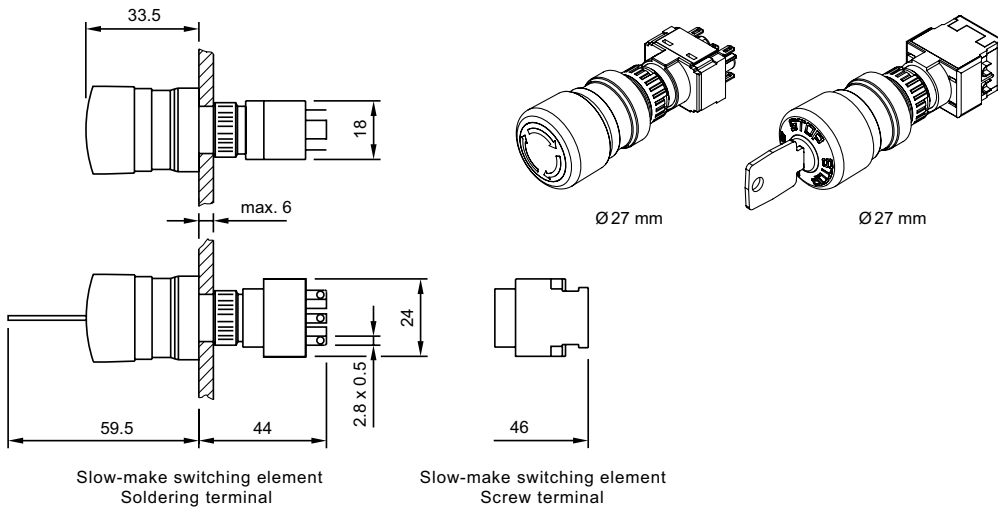
61 Illuminated Pushbutton

Flush, Round, Square, Rectangular



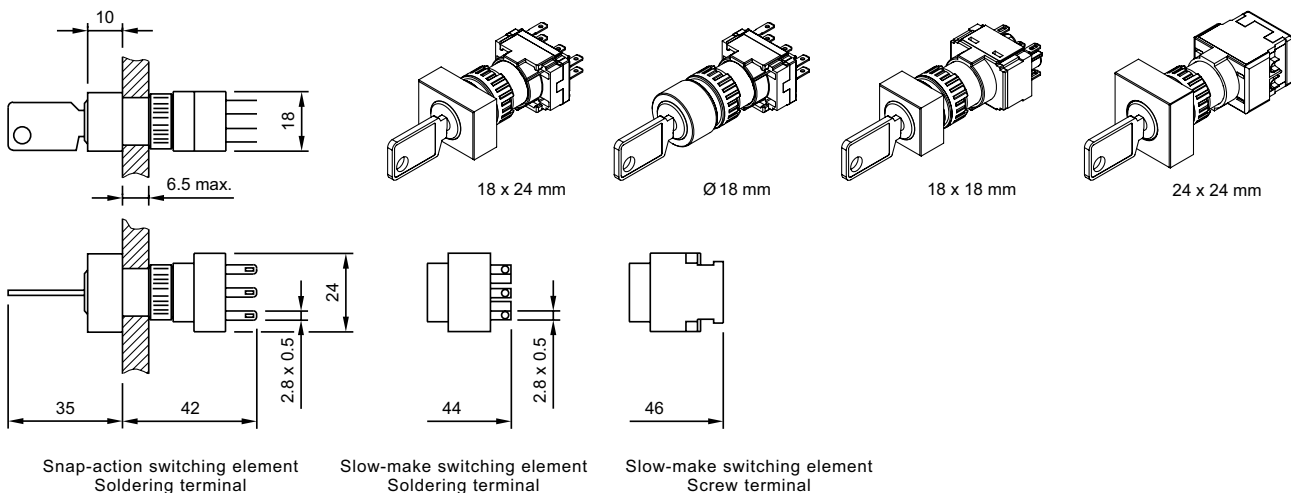
61 Emergency-stop switch

ISO 1385, Twist release, Key release



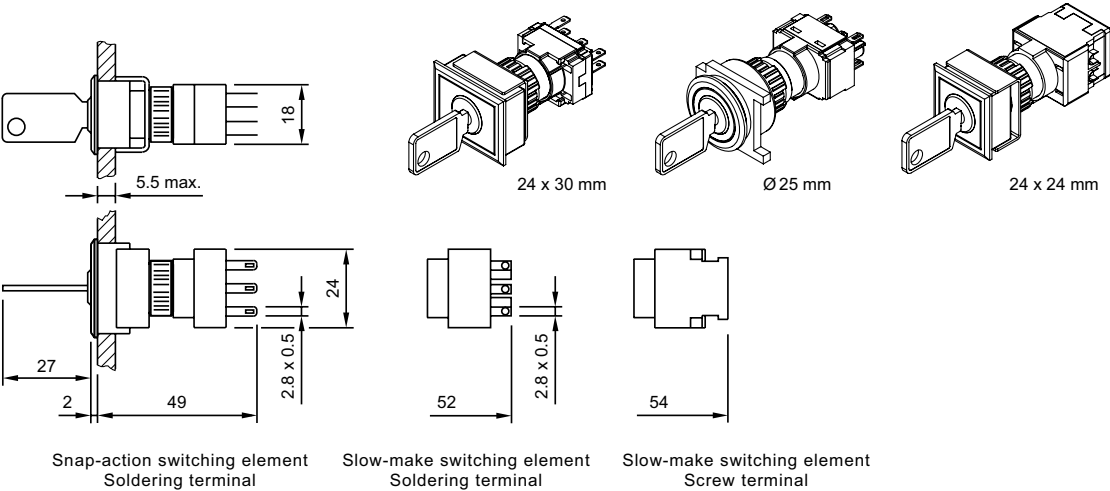
61 Keylock switch

2 & 3-Position, Raised, Round, Square, Rectangular



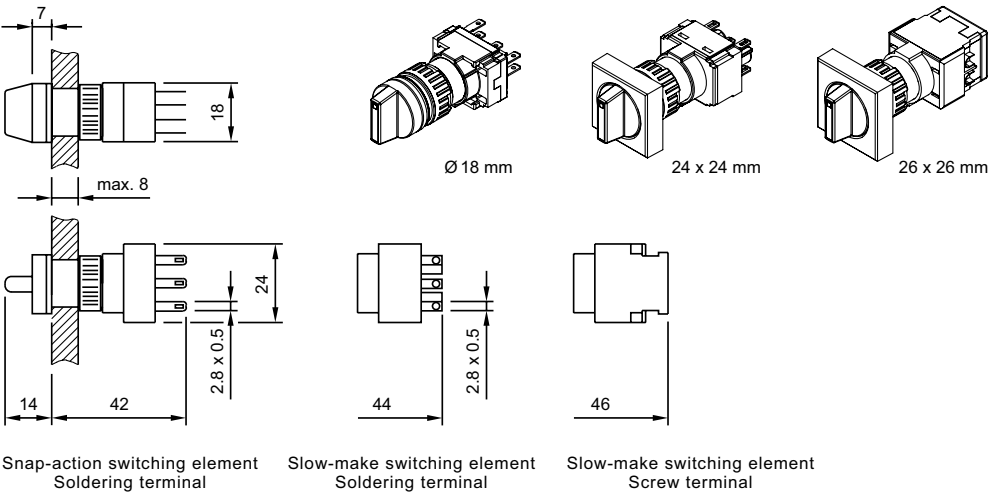
61 Keylock switch

2 & 3-Position, Flush, Round, Square, Rectangular



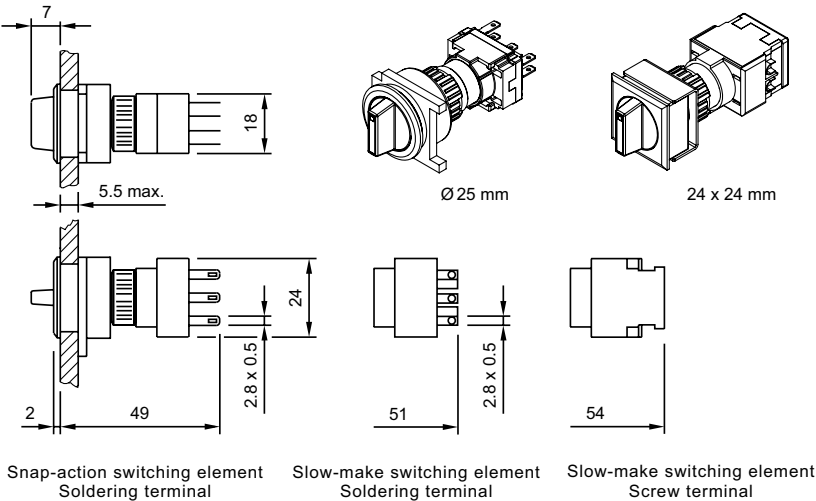
61 Selector switch

2 & 3-Position, Raised, Round, Square, Rectangular



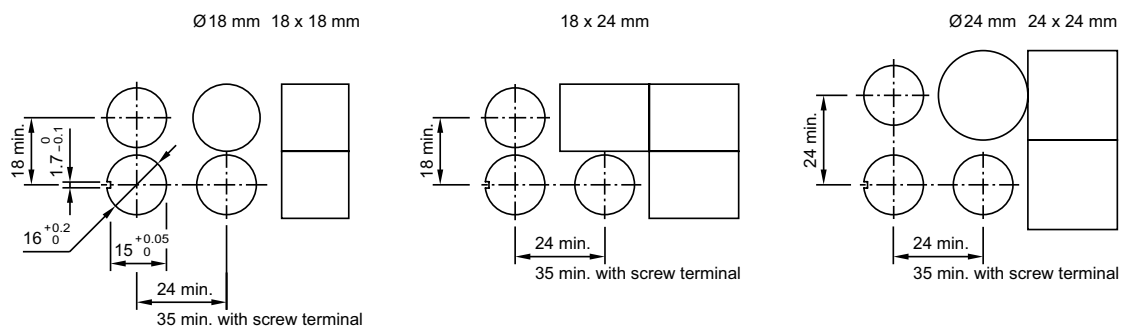
61 Keylock switch

2 & 3-Position, Flush, Round, Square, Rectangular



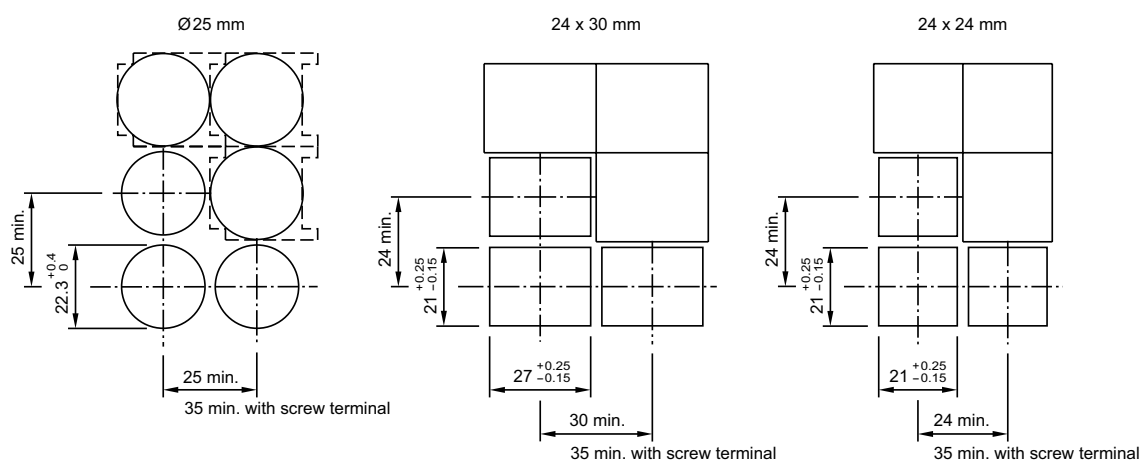
61 Cut-outs

Raised Indicators, Pushbuttons, Keylocks and Selectors



61 Cut-outs

Indicator Flush, Pushbutton Flush



61 Cut-outs, Emergency-Stop

ISO 13850, Twist release, Key release

