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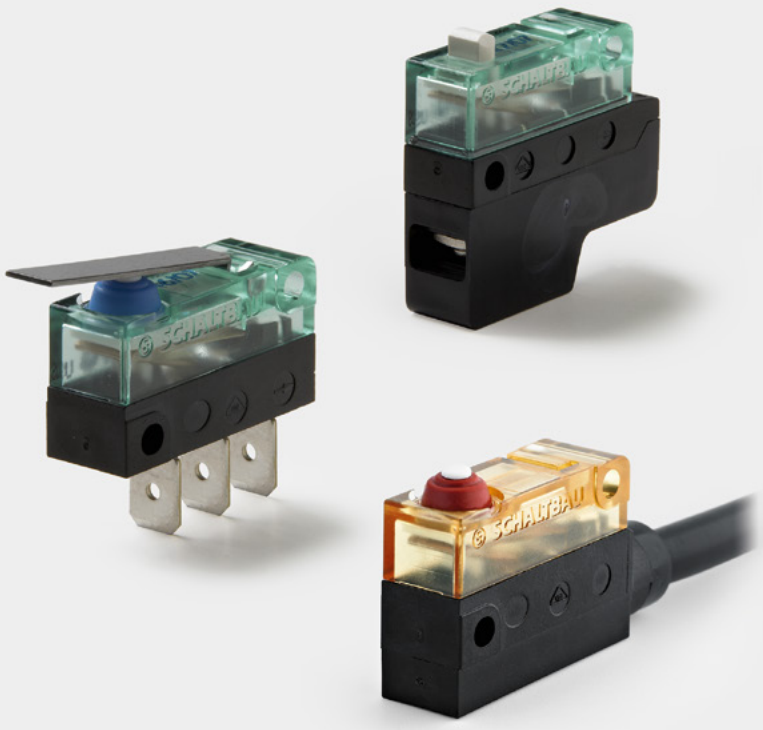
2

Snap-Action Switches

S870, S970 series

Snap-action switches
with positive opening operation
and self-cleaning contacts

Catalogue D70.en



Snap-action switches S870/S970 series

Single break SPDT switches with positive opening operation and wiping contacts

S870/S970 Series snap-action switches feature positive opening operation, which guarantees that even contacts which have become welded together due to a short-circuit will open reliably.

Wiping contacts protected against dust, humidity and contaminants ensure high reliability even with small contact loads. Versions with gold contacts are especially suited for switching low voltages and small currents.

A defined as well as repeatable switching action is possible thanks to the snap mechanism whose switching speed is virtually independent of the actuation speed. That is why snap-action switches are preferred in applications with slow actuation speeds , where they are used, for instance, as motor switches, position switches, or gear limit switches.

Features

S870/S970 series

Variants for extreme conditions: Ruggedized housing made from polyetherimide (PEI). Designed for use in harsh environments. Improved resistance to extremes of temperature, chemicals and impact.

Positive opening operation: Reliable breaking of the normally closed (NC) circuit even if the contacts have become welded together, in compliance with IEC 60947-5-1, Annex K.

Single break contacts: Changeover switch, also available as NC or NO versions with leads or cable connection. Compact design.

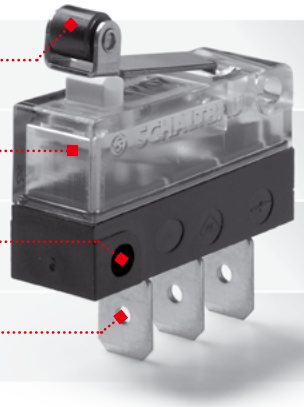
IP Rating: Degrees of protection against dust, humidity, contaminants, or access to hazardous parts to IEC 60529: Contacts: IP40, IP60 or IP67 / Terminals: IP00, IP20 or IP67

Self-cleaning contacts: Continuous low contact resistance ensures high contact reliability over the entire design life of the switch.

Contact material: Silver or gold

Design and function

S870/S970 series



- **Actuator**
  - Standard: Push button
  - Actuator styles: roller lever, plain lever or simulated roller lever
- **Contact area**
  - Microswitch with SPDT, NC or NO contacts
  - Positive opening operation and wiping contacts
  - Contact material: Silver or gold
- **Mounting**
  - Ganging (side mount)
- **Terminals**
  - Flat tabs / solder lugs / PCB
  - M3 screws with saddle clamp
  - Factory-potted cable or leads

S970 Better

Resistance to
- temperature
- chemicals
- impact

Variants for extreme conditions

Schaltbau has developed special variants for use in harsh environments. The S970 Series has a ruggedized housing made from polyetherimide (PEI) that stands for improved resistance to:

- temperatures from -55 °C to +150 °C*
- chemicals (e.g. acids and alkalis)
- impact (PEI 50% more resistant than PC)

The amber, transparent switches are ideally suited for applications where impact forces are high and/or frequent as well as for use in products that are exposed to strong chemicals or extremes of temperature.

The S9xx Series switches have the same design, dimensions and technical features as the switches of the standard S8xx series, allowing for easy replacement and upgrade from a standard switch without additional implementation effort.

Applications

S970 switches are typically used with systems and components that require a high degree of safety and reliability, such as

- Limit switches for machine, door and plant control systems
- Control switches for the driver's desk of rail vehicles or crane consoles
- Switching elements for automation
- Safety limit switches for control systems and plant controls

** Dependent on version*

Specifications subject to alterations!

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Ordering code

S870 / S970

Example: **S870 W1D1a**

Series

S870	S870 Series, standard
S970	S970 Series, with improved resistance to temperature, chemicals and impact

Contact configuration

W	SPDT
O	SPST-NC *1
S	SPST-NO *1

Ingress protection rating

	Contacts	Terminals
1	IP40	IP00 (IP20*2)
2	IP60	IP00
3	IP67	IP67

Terminals

A	Screw-type
B	Leads, opposite actuator side, length = 500 mm
D	Flat tabs, 6.3 x 0.8 mm
F	PCB, 180°
G	Solder lugs
L	Cable, opposite actuator side, length = 500 mm

Contact material

1	Silver
4	Gold

Actuator

Push button (standard)	a
Plain lever, short	k
Plain lever, long	l
Plain lever, medium	m
Roller lever, long	r
Roller lever, short	t
Simulated roller lever, medium	u
Simulated roller lever, long	v

Note:

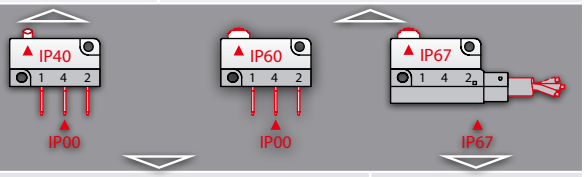
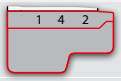
This product catalogue comprises only stock items. For some variants minimum quantities apply. Please ask for conditions.

Special variants:

If you need a special variant of the switch, please do not hesitate to contact us. Maybe the type of switch you are looking for is among our many special designs. If not, we can also supply customized designs. In this case minimum quantities apply.

*1 Only for versions with connected leads or cable

*2 Only for versions with screw-type terminals

Parameter	Identification	Version (sealed to)		
IP rating: contacts / terminals		IP40/00	IP60/00	IP67/67
Actuator styles				
▶ Push button (standard)	a			
▶ Plain lever, short	k			
▶ Plain lever, long	l			
▶ Plain lever, medium	m			
▶ Roller lever, long	r			
▶ Roller lever, short	t			
▶ Simulated roller lever, medium	u			
▶ Simulated roller lever, long	v			
▶ Series ▶ Contacts ▶ Ingress protection rating (IP code) ▶ Contact material	S870 / S970 W / O / S 1 / 2 / 3 1 / 4			
Terminals				
▶ M3 screws with saddle clamp	A			---
▶ Leads, opposite actuator side, length 500 mm	B	---		
▶ Flat tabs 6.3 x 0.8	D			---
▶ PCB terminals, 180°	F			---
▶ Solder lugs	G			---
▶ Cable, opposite acutator side, length 500 mm	L	---		



S870 W1D1 a / S970 W1D1 a
Sealed to IP40/IP00
Push button (standard)
Flat tabs 6.3x0.8



S870 W2D1 a / S970 W2D1 a
Sealed to IP60/IP00
Push button (standard)
Flat tabs 6.3x0.8



S870 W1F1 k / S970 W1F1 k
Sealed to IP40/IP00
Plain lever, short
PCB terminals 180°



S870 W1G1 u / S970 W1G1 u
Sealed to IP40/IP00
Simulated roller lever, medium
Solder lugs



S870 W3B1 r / S970 W3B1 r
Sealed to IP67/IP67
Roller lever, long
Leads



S870 W3L1 a / S970 W3L1 a
Sealed to IP67/IP67
Push button (standard)
Cable



S870 W1A1 t / S970 W1A1 t
Sealed to IP40/IP20
Roller lever, short
Screw-type terminals

Specifications

S870/S970 series

S870 / S970 series IP Rating: Contacts / Terminals ▶	Standard	IP40/IP00 + IP40/IP20	IP60/IP00	IP67/IP67
Contact configuration	IEC 60947	1x SPDT, Form C, single break contacts, 3 terminals / 1x SPST-NC, Form B single break contacts, 2 terminals / 1x SPST-NO, Form A, single break contacts, 2 terminals		
Conventional thermal current I_{th}	IEC 60947 UL 508	10 A @ T = 85° C 10 A @ T = 85° C		
Rated insulation voltage U_i	IEC 60947 UL 508	250 V 300 V		
Pollution degree	IEC 60947 UL 508	PD3 S870: PD3 / S970: PD2		
Rated impulse withstand voltage U_{imp}	IEC 60947	4 kV		
Overvoltage category	IEC 60947	OV3		
Utilization category Silver contacts Gold contacts Silver contacts	IEC 60947 UL 508*3	AC-15, 230 V AC / 1.5 A DC-13, 60 V DC / 0.5 A DC-13, 24 V DC / 2 A AC-15, 230 V AC / 1 A DC-13, 60 V DC / 0.5 A DC-13, 24 V DC / 2 A AC 240 V / 1.5 A DC 60 V / 0.5 A		
Contact gap, typical	---	3.0 mm		
Contact force, typical	---	0.3 N		
Contact resistance, typical, no leads connected	---	100 mΩ		
Positive opening force *2	IEC 60947	20 N		
Actuator travel for positive opening operation	IEC 60947	see page 6, 7		
Maximum actuator travel *2	IEC 60947	3.0 mm		
Actuation speed	IEC 60947	1.0 m/s max. 0.1 mm/s min.		
Vibration resistance, 10 … 500 Hz all directions (without aux. actuator at 10 µs max. opening time)	IEC 60068-2-6	50 g		
Shock resistance (without aux. actuator at 10 µs max. opening time)	IEC 60068-2-27	70 g, half sinus		
Short-circuit protection for silver contacts *1	IEC 60269-2	10 A gR		
Switching frequency, max.	IEC 60947	300 operations/minute		
Actuation force *2	IEC 60947	2.4 N max.	3.0 N max.	3.0 N max.
Release force *2	IEC 60947	0.5 N min.	0.5 N min.	0.5 N min.
Ingress protection rating (IP code)				
Contacts	IEC 60529	IP40	IP60	IP67
Terminals Screw-type	IEC 60529	IP20	---	---
Flat tabs	IEC 60529	IP00	IP00	---
PCB / Solder lugs	IEC 60529	IP00	IP00	---
Leads / Cable	IEC 60529	---	---	IP67
Mechanical endurance	IEC 60947	10 million cycles, min.	5 million cycles, min.	5 million cycles, min.
Ambient temperature	IEC 60947			
Flat tabs / PCB / Solder lugs S870		–40 °C … +85 °C	–40 °C … +85 °C *5	---
S970		–55 °C … +150 °C	–55 °C … +150 °C *5	---
Leads *4 S870/S970		---	---	–20 °C … +85 °C *5
Cable *4 S870/S970		---	---	–30 °C … +85 °C *5
Material				
Contacts	---	silver (Ag90Ni10) or gold (AuNi3Ag26)		
Terminals	---	brass, silver or gold plated		
Seal *6	---	S870: silicon, blue / S970: silicon, red		
Housing, upper part	---	S870: PC, light green, transparent / S970: PEI, amber, transparent		
Housing, lower part	---	S870: PC, black / S970: PEI, black		
Cable / Leads *4	UL/CSA	Insulation: PVC / leads: AWG 18		
Mounting position	---	any		
Weight, no leads connected	---	approx. 7 g, no aux. actuator / cable / leads		
Approvals	---			

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Notes:

Data valid for new switches under laboratory conditions and at room temperature, unless otherwise mentioned.

**1 Data for gold contacts upon request*

**2 Measured next to push button*

**3 General Purpose*

**4 Others upon request*

**5 A slower release actuation can occur due to rapid or large changes in air pressure and/or temperature, and/or long periods actuated or stored at low temperatures.*

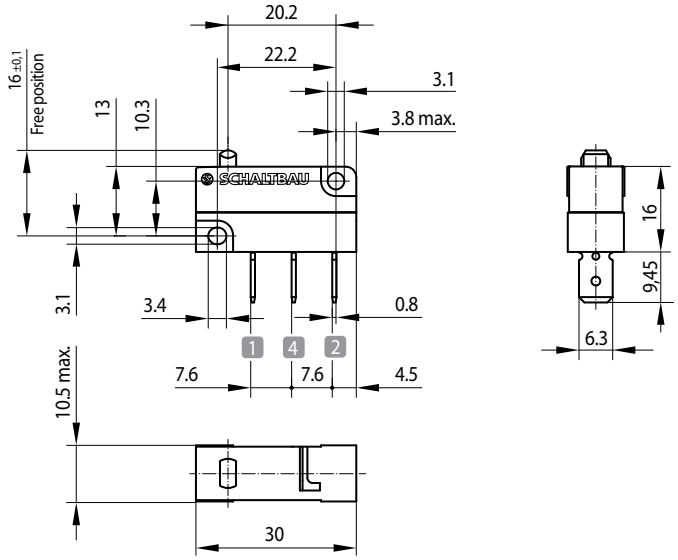
**6 Only versions sealed to IP60/IP00 and IP67/IP67*

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Dimension and circuit diagrams

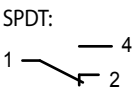
S870/S970 series

- **Dimensions S870 W1D1a / S970 W1D1a**



Circuit diagram

SPDT:

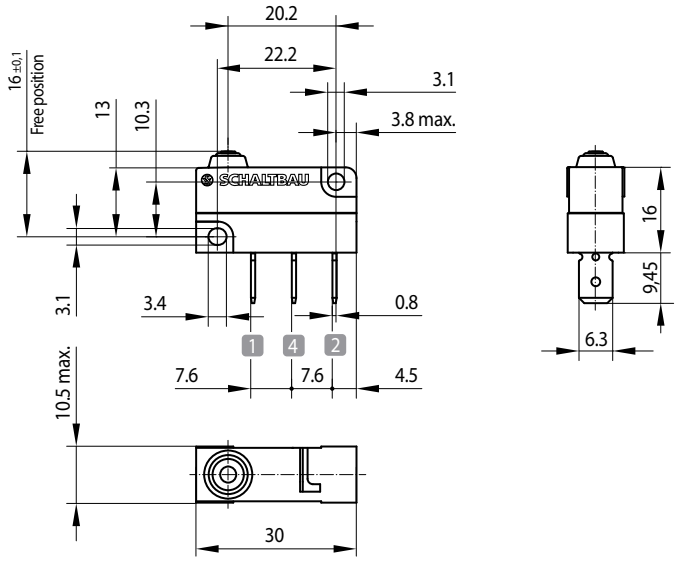




S870 W1D1a / S970 W1D1a

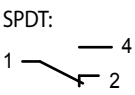
S870 W 1D1a	SPDT
S870 W 1 D1a	Contacts IP40 Terminals IP00
S870 W1 D 1a	Flat tabs 6.3x0.8 mm
S870 W1D 1 a	Contact material silver
S870 W1D1 a	Push button (standard)
S970 W 1D1a	SPDT
S970 W 1 D1a	Contacts IP40 Terminals IP00
S970 W1 D 1a	Flat tabs 6.3x0.8 mm
S970 W1D 1 a	Contact material silver
S970 W1D1 a	Push button (standard)

- **Dimensions S870 W2D1 a / S970 W2D1 a**



Circuit diagram

SPDT:

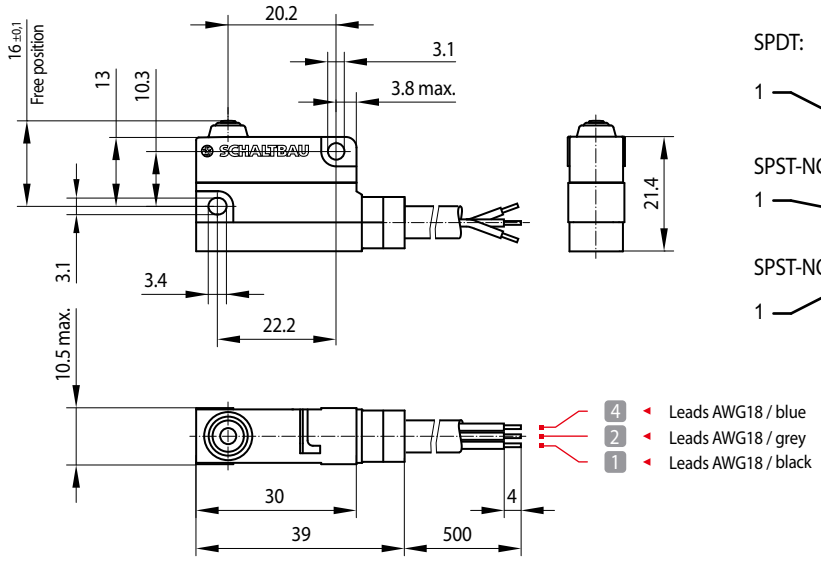




S870 W2D1a / S970 W2D1a

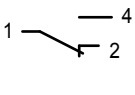
S870 W 2D1a	SPDT
S870 W 2 D1a	Contacts IP60 Terminals IP00
S870 W2 D 1a	Flat tabs 6.3x0.8 mm
S870 W2D 1 a	Contact material silver
S870 W2D1 a	Push button (standard)
S970 W 2D1a	SPDT
S970 W 2 D1a	Contacts IP60 Terminals IP00
S970 W2 D 1a	Flat tabs 6.3x0.8 mm
S970 W2D 1 a	Contact material silver
S970 W2D1 a	Push button (standard)

- **Dimensions S870 W3L1 a / S970 W3L1 a**

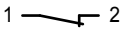


Circuit diagram

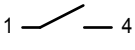
SPDT:



SPST-NC:



SPST-NO:





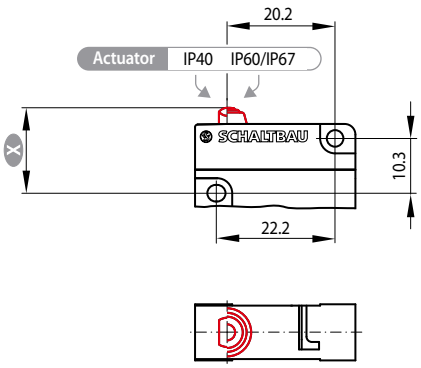
S870 W3L1a / S970 W3L1a

S870 W 3L1a	SPDT
S870 W 3 L1a	Contacts IP67 Terminals IP67
S870 W3 L 1a	Cable, length 500 mm
S870 W3L 1 a	Contact material silver
S870 W3L1 a	Push button (standard)
S970 W 3L1a	SPDT
S970 W 3 L1a	Contacts IP67 Terminals IP67
S970 W3 L 1a	Cable, length 500 mm
S970 W3L 1 a	Contact material silver
S970 W3L1 a	Push button (standard)

Actuator styles, actuator positions

S870/S970 series

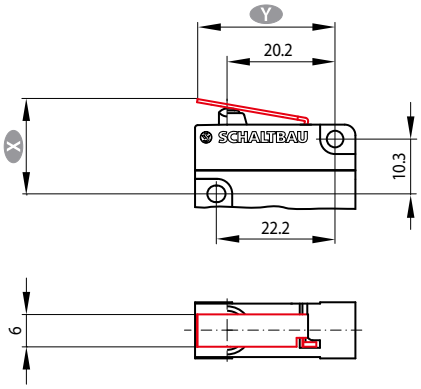
- **Push button (standard)** Actuator style **a**



Actuator position	Push button (standard) a Dimension X in mm
Free position	16.0 ± 0.1
Operating position	14.8 ± 0.2
Release position	15.1 ± 0.2
Total positive opening travel	13.3
Total travel position	13.0
Movement differential *(between operating and release position)*	0.3 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position.*
Data is valid for new switches.

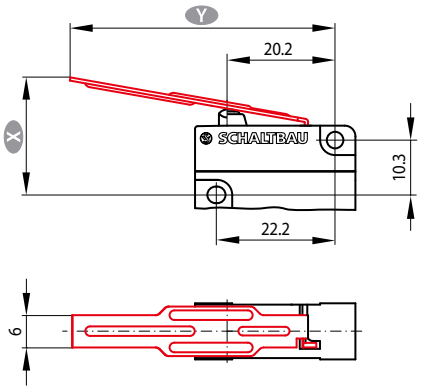
- **Plain lever, short** Actuator style **k**



Actuator position	Plain lever k Dimension X in mm
Lever length Y	25.7
Free position	17.5 ± 0.2
Operating position	15.9 ± 0.3
Release position	16.2 ± 0.3
Total positive opening travel	13.7
Total travel position	13.4
Movement differential *(between operating and release position)*	0.3 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position.*
Data is valid for new switches.

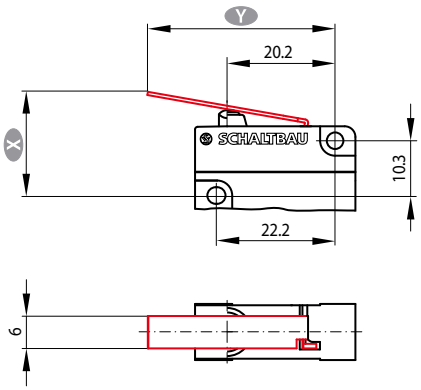
- **Plain lever, long** Actuator style **l**



Actuator position	Plain lever l Dimension X in mm
Lever length Y	49.2
Free position	21.4 ± 0.5
Operating position	18.0 ± 0.6
Release position	18.8 ± 0.6
Total positive opening travel	13.2
Total travel position	12.9
Movement differential *(between operating and release position)*	0.8 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position.*
Data is valid for new switches.

- **Plain lever, medium** Actuator style **m**

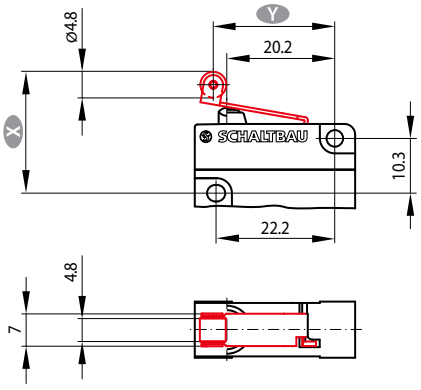


Actuator position	Plain lever m Dimension X in mm
Lever length Y	34.9
Free position	19.0 ± 0.25
Operating position	16.7 ± 0.35
Release position	17.3 ± 0.35
Total positive opening travel	13.5
Total travel position	13.2
Movement differential *(between operating and release position)*	0.6 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position.*
Data is valid for new switches.

Actuator styles, actuator positions (continued)

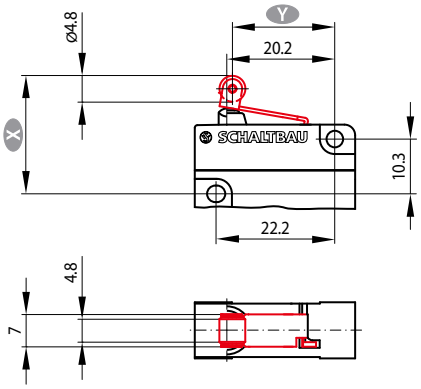
- **Roller lever, long** Actuator style **r**



Actuator position	Roller lever r Dimension X in mm
Lever length Y	22.6
Free position	22.4 ± 0.3
Operating position	21.1 ± 0.4
Release position	21.4 ± 0.4
Total positive opening travel	19.3
Total travel position	19.0
Movement differential *(between operating and release position)*	0.3 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.*

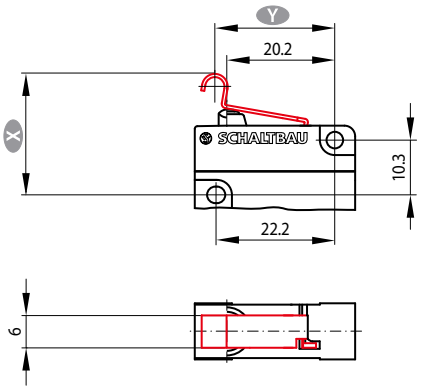
- **Roller lever, short** Actuator style **t**



Actuator position	Roller lever t Dimension X in mm
Lever length Y	19.1
Free position	21.9 ± 0.3
Operating position	20.7 ± 0.4
Release position	21.0 ± 0.4
Total positive opening travel	19.3
Total travel position	19.0
Movement differential *(between operating and release position)*	0.3 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.*

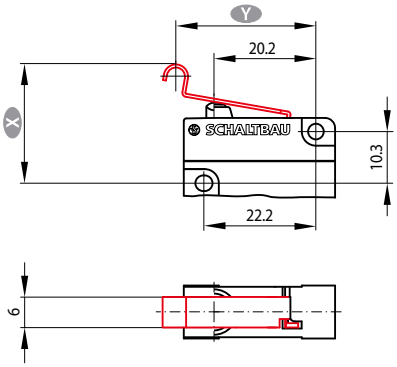
- **Simulated roller lever, medium** Actuator style **u**



Actuator position	Simulated roller lever u Dimension X in mm
Lever length Y	22.6
Free position	22.4 ± 0.3
Operating position	21.1 ± 0.4
Release position	21.4 ± 0.4
Total positive opening travel	19.3
Total travel position	19.0
Movement differential *(between operating and release position)*	0.3 *(typical)*

Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.*

- **Simulated roller lever, long** Actuator style **v**



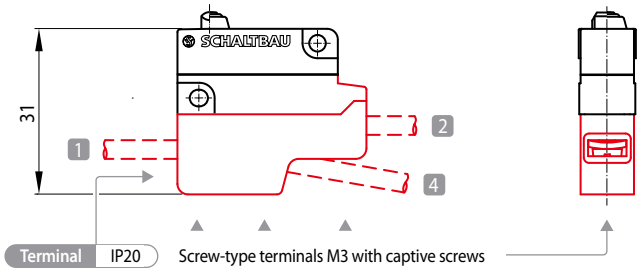
Actuator position	Simulated roller lever v Dimension X in mm
Lever length Y	27.6
Free position	23.3 ± 0.3
Operating position	21.5 ± 0.4
Release position	22.0 ± 0.4
Total positive opening travel	19.2
Total travel position	18.8
Movement differential *(between operating and release position)*	0.3 *(typical)*

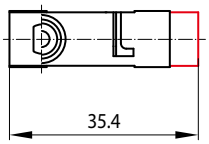
Note: *To ensure the proper working of the positive opening operation it is necessary to depress the plunger to the point of total positive opening travel. However, it must not be pushed beyond total travel position. Data is valid for new switches.*

Terminals

S870/S970 series

- **M3 screws** terminal style **A**

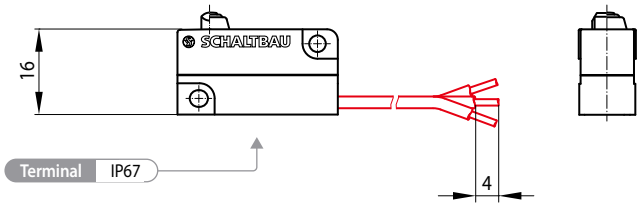


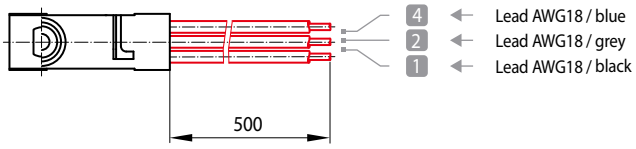


Note:

- *Single and multiple-wire conductors with wire gauges AWG 20 ... 15 (0.5 mm² ... 1.5 mm²) can be clamped with or without wire end ferrules.*
- *2 conductors max. with same wire gauge can be clamped per terminal*
- *Tightening torque of terminal screws should be 1 Nm max.*

- **Leads, on side opposite actuator** terminal style **B**



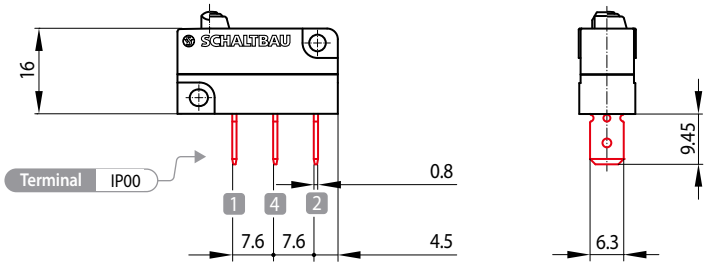


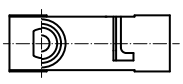
Note:

Contact configuration:

Lead			
2 */ grey*	•	•	
4 */ blue*	•		•
1 */ black*	•	•	•

- **Flat tabs, straight** terminal style **D**





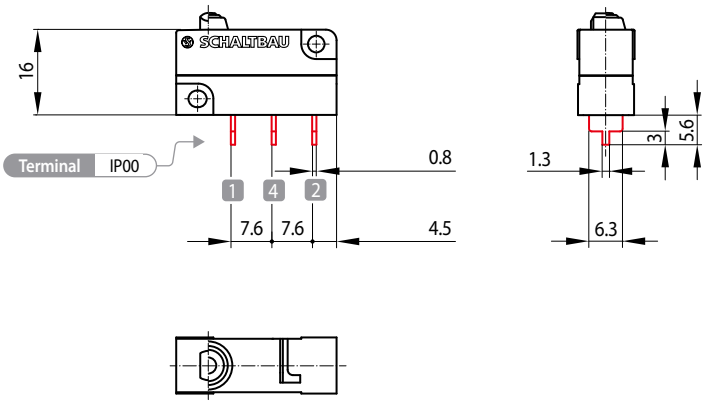
Note:

- *Flat tabs 6.3 x 0.8 mm*

Terminals (continued)

S870/S970 series

- **PCB terminals, straight** terminal style **F**



Note:

Hand soldering:

- *Soldering apparatus: Hand-held soldering iron*
- *Solder: Flux-filled solder wire, leadfree*
- *Temperature/duration: 400 °C; 5 s max. **

Selective soldering:

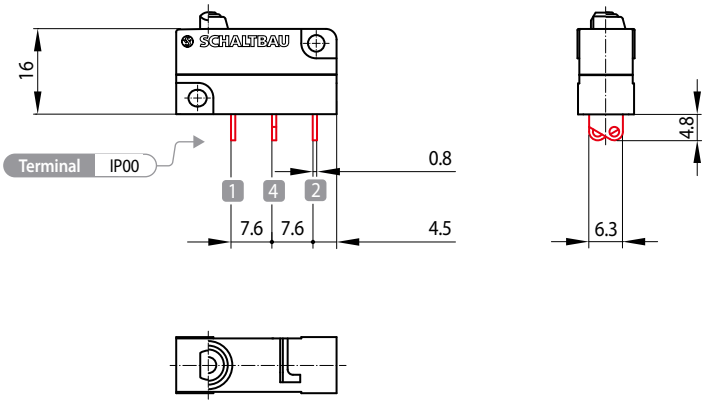
- *Soldering apparatus : Selective soldering station*
- *Solder: Leadfree solder for selective and wave soldering*
- *Temperature/duration: 300 °C; 2,5 s; 3 mm wave distance; Flux time 1 s*

Wave soldering:

- *Soldering apparatus : Wave soldering station, 1 wave (Wörthmann wave)*
- *Solder: Leadfree solder for selective and wave soldering*
- *Temperature/duration: 260 °C; 5 s; 66 mm wave distance; conveyor speed 0.8 m/min*
  Preheating approx. 113 s at 110 ... 145 °C (typical)

* *PCB; 1.6 mm; through-contacted*

- **Solder lugs, straight** terminal style **G**

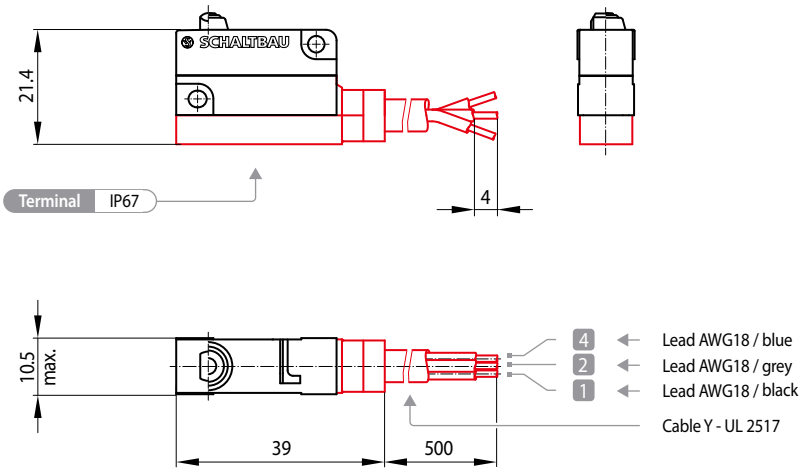


Note:

Hand soldering:

- *Soldering apparatus: Hand-held soldering iron*
- *Solder: Flux-filled solder wire, leadfree*
- *Temperature/duration: 400 °C; 5 s max., pre-tinned leads*

- **Cable, on side opposite actuator** terminal style **L**



Note:

Contact configuration:

Lead			
2 */ grey*	•	•	
4 */ blue*	•		•
1 */ black*	•	•	•

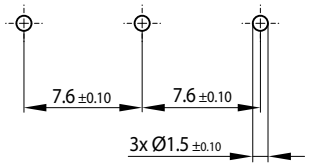
Mounting
S870/S970 series

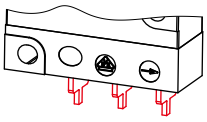
Ganging (side mount)

- through the two transversal holes in the body of the switch by means of a collar screw or threaded bolt .
  Tightening torque 0.7 Nm max.
- Alternatively, DUO-Clips or retaining rings can be used.

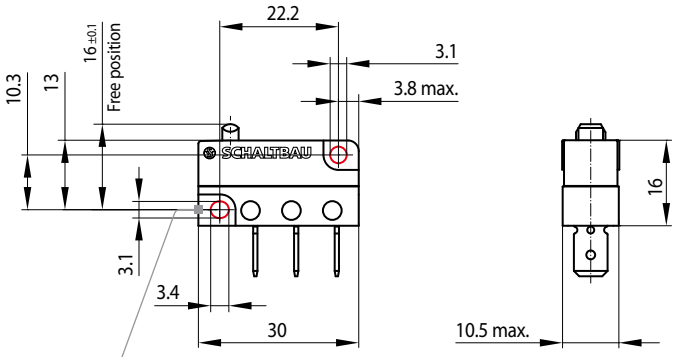
Mounting on PCB (only S870 Wx[F]xx / S970 Wx[F]xx)

- Holes for PCB terminals, straight





S870 / S970
PCB terminals, straight



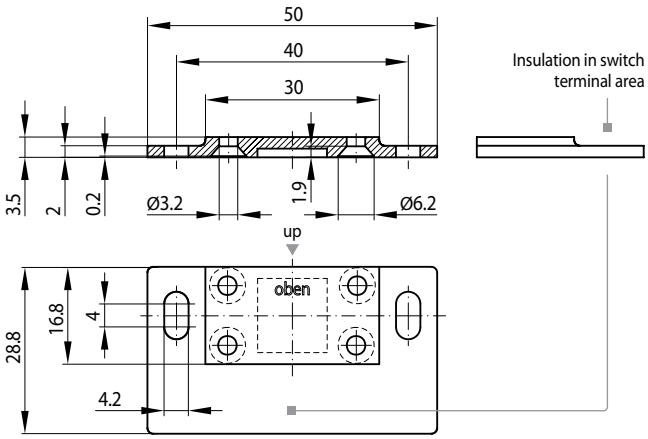
2xM3 collar screw/threaded bolt including washer,
Tightening torque 0.7 Nm max.

Mounting Mounting plates
S870/S970 series

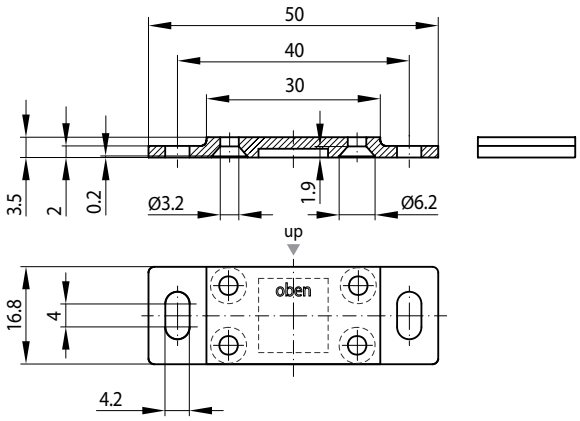
For mounting the switches on uninsulated surfaces use mounting plates with the following features:

- Suitable for side mounting of the switch on the left and on the right
- Material: polyamide PA66, flammability rating UL 94V-0

Long mounting plate, ordering code: MP g



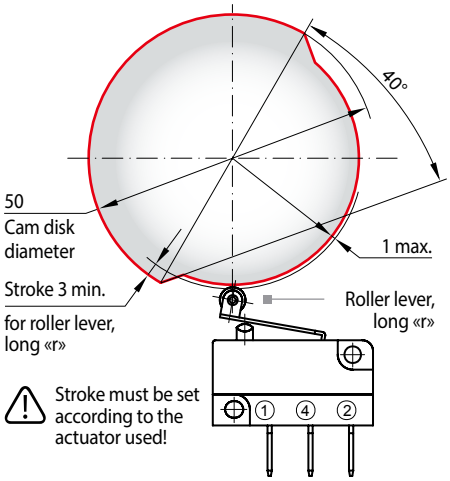
Short mounting plate, ordering code: MP k



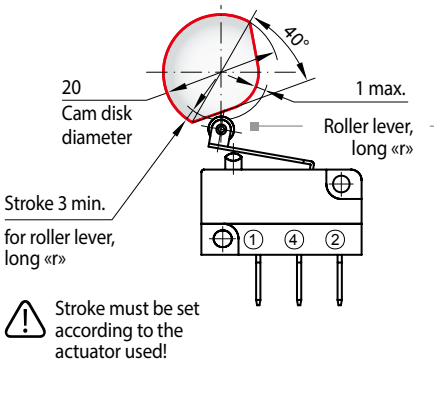
Mounting Use with cam discs and linear actuators
S870/S970 series

Snap-action switches are designed for actuation with and without a roller lever.
A roller lever, however, is required if the direction of actuation deviates more than ±15° from the plunger axis.
The following illustration shows the use of cam discs and linear actuators using the example of the **S870/S970 with roller lever, long**.

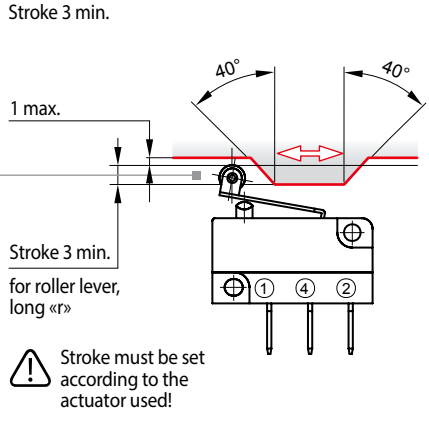
Example: Cam disk, diameter 50 mm



Example: Cam disk, diameter 20 mm



Example: Linear cam



Mounting and safety instructions, environmental conditions

S870/S970 series

Mounting instructions:

- Snap-action switches should be mounted by qualified professional staff only.
- Observe the required clearance and creepage distances. This is also applicable for connected wires.
- It is necessary to use insulating plates when ganging or mounting switches on uninsulated surfaces.
- The switches can be mounted in any orientation.
- When mounting the switches make sure to use 2 fastening elements (e.g. screws).
- Only use adequate fastening elements such as cylinder head or collar screws and DUO-clips, including washers. The value for maximum tightening torque must not be exceeded.
- The actuator should not be pre-tensioned when in the free position. When actuated the actuator should travel beyond the operating position for at least 50% of the predefined overtravel, all the way to the total travel position.
- Avoid tilting the screw when mounting to prevent mechanical tension on the housing.
- To ensure the proper function of the positive opening operation it is necessary to depress the plunger to the total travel position.
- To prevent mechanical destruction of the switch, make sure that actuation of the switch does not exceed the specified total travel position. Avoid using the switch as a mechanical end stop.
- High-impact actuation of the switch can have a negative effect on its mechanical life.
- When securing stripped wire ends in the terminal clamp, make sure the wire insulation is flush with the clamp.
- Prevent a transfer of forces to the switch terminals, and ensure that connected leads have a functioning strain relief.

Non-permissible environmental conditions:

- Cleaning agents, adhesives, solvents, or screw-retaining varnish must be compatible with polycarbonate (S870) and polyetherimide (S970) respectively. Never use chemicals not compatible with polycarbonate for S870 Series switches or not compatible with polyetherimide for S970 Series snap-action switches.
- Using such chemicals can result in cracks, deformation, breakage and dissolution of the housing or complete destruction of the respective switch.
- Switches sealed to IP 67 are immersion protected. That means there is no ingress of water in a harmful quantity when a new switch (which is not operated) is immersed in water (1 m depth) for 30 minutes. This degree of protection cannot be warranted, however, when chemicals not compatible with polycarbonate are used for S870 Series switches or not compatible with polyetherimide for S970 Series switches.

Standards

- **IEC 60947-1:** Low-voltage switchgear and controlgear, Part 1: General rules
- **IEC 60947-5-1, Annex K:** Special requirements for control switches with direct opening action
- **UL508:** Industrial control equipment
- **IEC 60529:** Degrees of protection provided by enclosures (IP Code)
- **UL 94V-0:** Flammability Standard
- Dimensions according to **DIN 41636-2**, type A
- **DIN EN ISO 13849-1:** Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
- **IEC 60068-2-6:** Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)
- **IEC 60068-2-27:** Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock

For other applicable standards please refer to the specifications table on page 4.

Safety instructions

S870/S970 series

- In case of moisture of any kind or impact of aggressive substances, chemicals, solvents or acids appropriate protective measures must be taken by the user in accordance with IEC 60364-4-41:2005, modified (Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock). One such measure is the limitation of the voltage range.
- Be sure to make regular visual inspections.
- Improper handling of the switch, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.
- The switch suitability has to be confirmed by the customer for the specific application, and under application conditions.
- For applications with both a high ambient temperature of >40°C and a high I_{th} current, a correction factor i.a.w. DIN EN 60204-1 Tab. 6 and Table D.1 must be applied for the wire and current.

Defective parts must be replaced immediately!

For a detailed list of all safety instructions see here:
schaltbau.info/safety2en!

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- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

Snap-action switches

- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Snap-action switch made of robust polyetherimide (PEI)
- Snap-action switch with two galvanically isolated contact bridges
- Special switches to suit customer requirements

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Emergency disconnect switches

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- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

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