

Safety switches with  
separate actuator

Thermoplastic enclosure

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Metal enclosure

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01-08-0084

# Safety switches with separate actuator

## Range of application

Safety switches with a separate actuator are suitable for sliding, hinged and particularly removable safety guards, which need to be closed to ensure the necessary operational safety. They are also suitable for mounting on profile sections and retrofitting on existing equipment. In combination with an appropriate safety control module, all safety switches shown in this chapter achieve Control Category 3 or 4 to EN 954-1.

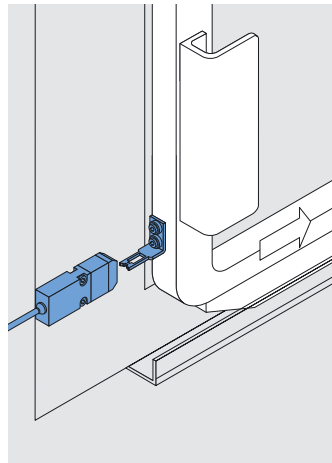
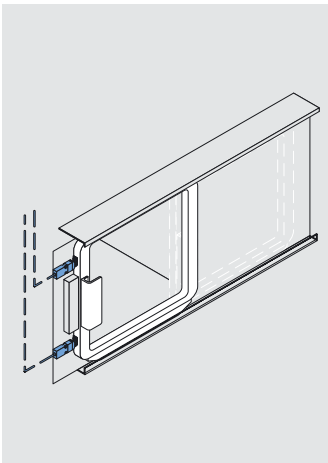
## Design and operating principle

On the safety switches with a separate actuator, the switching element is not physically connected to the actuator, but functionally brought together or separated by switching. When the guard device is opened, the actuator is separated from the base unit. In this process, NC contacts are positively opened and NO contacts closed. A wide range of coded actuators is available, also suitable for small radii.

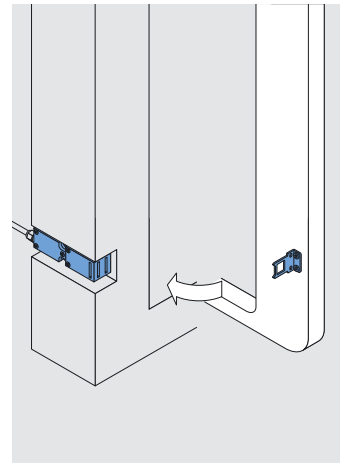
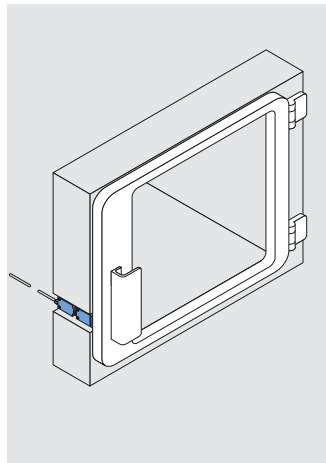
The protection class of all the safety switches is IP 65/67. The safety switches can be fitted in any desired mounting position.

## Application

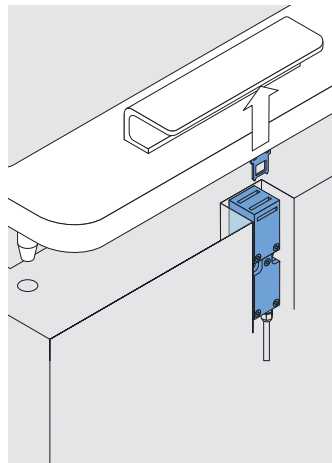
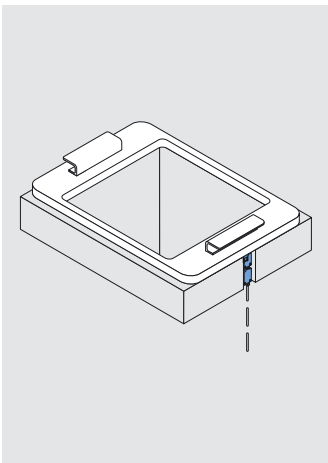
### on hinged guards



### on sliding guards



### on removable guards




# Safety switches with separate actuator

## // Series ST 14

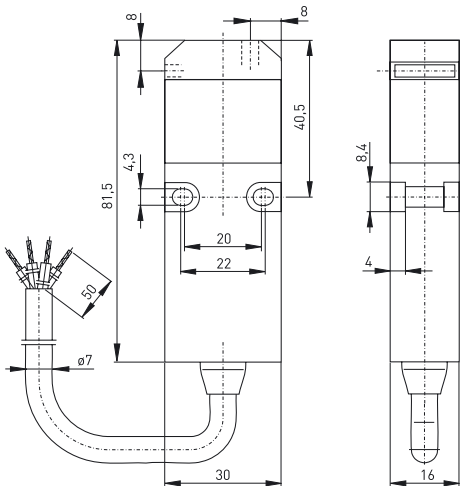
### Features/Options

- Thermoplastic enclosure
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact with double break
- Slow action with overlapping contacts available
- Version with cable on left-hand side available
- With pre-wired cable, cable length 1 meter
- Ex-version available
- With gold-plated contacts available on request
- Available with connector M12 x 1, 4-pole

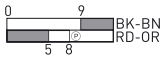
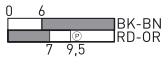

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1. 4301
<b>Actuator</b>	
<b>Protection class</b>	IP 67 to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	cable 4x AWG20, UL 2464
<b>Cable section</b>	4 x 0.56 mm <sup>2</sup>
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	8 mm
<b>Ambient temperature</b>	-20 °C ... +80 °C
<b>Mechanical life</b>	> 1 million operations
<b>Approvals</b>	


// ST 14



### Contact variants: switch travel/contacts

	Slow action
1 NC / 1 NO contact	<b>ST 14 1Ö/1S</b> 
1 NC / 1 NO contact with overlapping	<b>ST 14 UE</b> 
2 NC contacts	<b>ST 14 2Ö</b> 

### Ordering details

<b>ST 14 1Ö/1S-s-1m</b>

Cable length 1 m, (2 m, 5 m, 10 m)
Cable on side
Contact type 1NC/1NO, (2Ö, UE)
Series
Safety door switch

# Safety switches with separate actuator

## // Series ST 14, actuators

### Features/Options

#### ST 14-B1

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards  
a = 140 mm and b = 1000 mm
- Axial misalignment x = 30 mm

#### ST 14-B3

- Especially fit for hinged guards
- Actuating radius on hinged guards  
a = 50 mm
- Axial misalignment x = 14 mm

### Features/Options

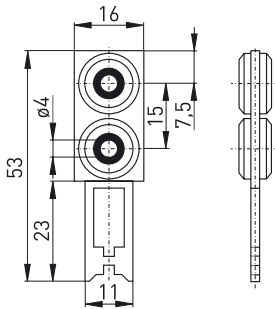
#### ST 14-B5

- Rubber mounting damps vibrations on guard devices
- Suitable for hinged guards
- Actuating radius on hinged guards  
a = 140 mm and b = 1000 mm
- Axial misalignment x = 15 mm

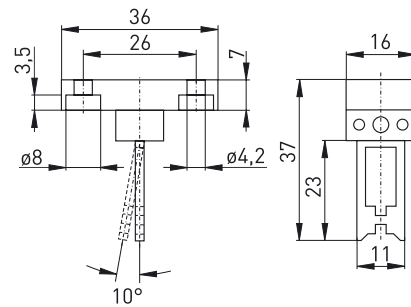
### Note

Inserted position of actuator = 0 in switch travel diagram. The actuators are not included with the switches.

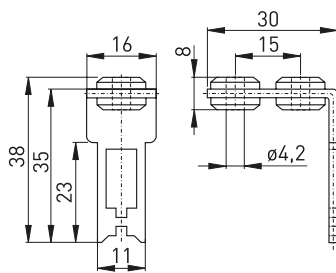
### // Straight actuator ST 14-B1



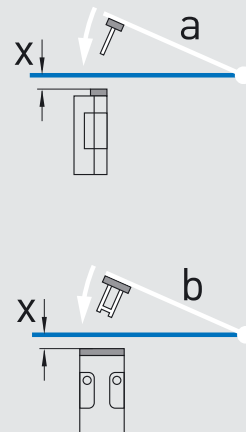
### // Flexible actuator ST 14-B3



### // Angled actuator ST 14-B5



### // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Safety switches with separate actuator

## // Series ES 95 AZ

### Features/Options

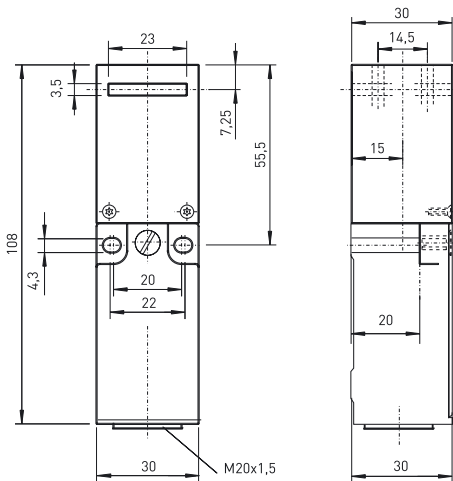
- Thermoplastic enclosure
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact with double break
- Wiring compartment
- Mounting details to EN 50 047
- Horizontal mounting slots
- Actuator heads can be repositioned in factory in 4 x 90° steps
- With connector M12 x 1, 4-pole available
- Ex-version available
- Gold-plated contact possible on request

// ES 95 AZ



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1. 4301
<b>Actuator</b>	IP 67 to EN 60529
<b>Protection class</b>	IP 67 to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	9 mm
<b>Ambient temperature</b>	-20 °C ... +80 °C
<b>Mechanical life</b>	> 1 million operations
<b>Approvals</b>	



### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC / 1 NO contact	<b>ES 95 AZ 1Ö/1S</b>
2 NC contacts	<b>ES 95 AZ 2Ö</b>

### Ordering details

**ES 95 AZ 1Ö/1S**

# Safety switches with separate actuator

## // Series ES 95 AZ, actuators

### Features/Options

#### 95 AZ-B1

- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- x = 11 mm

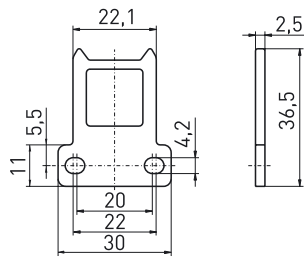
#### 95 AZ-B5

- Especially fit for hinged guards
- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- x = 13.5 mm

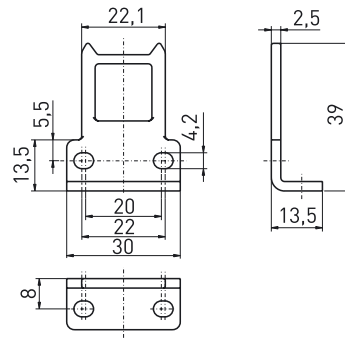
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

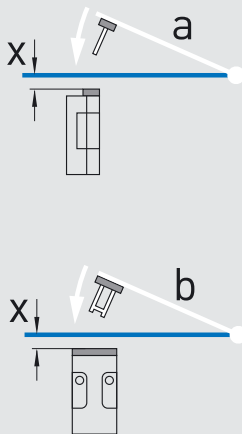
### // Straight actuator 95 AZ-B1



### // Angled actuator 95 AZ-B5



### // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Safety switches with separate actuator

## // Series ST 61

### Features/Options

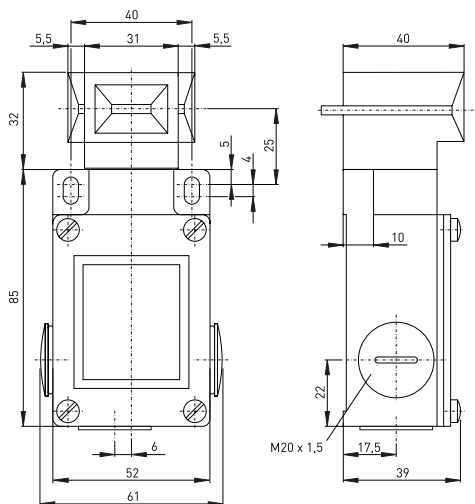
- Metal enclosure
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact with double break
- 3 cable entries M20 x 1.5
- Wiring compartment
- Ex-version available
- With gold-plated contacts available on request
- Long life
- High level of contact reliability with low voltages and currents

// ST 61



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15
<b>Enclosure</b>	aluminium die cast, paint finish
<b>Actuator</b>	stainless steel 1. 4301
<b>Protection class</b>	IP 65 to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	plug-in connector
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> [incl. conductor ferrules]
<b>Cable entry</b>	3 x M20 x 1.5
<b>U<sub>imp</sub></b>	6 kV
<b>I<sub>e</sub>/U<sub>e</sub></b>	ES 61: 16 A/400 VAC ES 61 2NC: 6 A/400 VAC
<b>Max. fuse rating</b>	ES 61: 16 A gL/gG D-fuse ES 61 2NC: 6 A gL/gG D-fuse
<b>Mechanical life</b>	> 1 million operations
<b>Utilisation category</b>	AC-15
<b>Max. fuse rating</b>	ES 61: 16 A gL/gG D-fuse ES 61 2NC: 6 A gL/gG D-fuse
<b>Positive break travel</b>	10 mm
<b>Ambient temperature</b>	-20 °C ... +80 °C
<b>Mechanical life</b>	> 1 million operations



### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC / 1 NO contact	ST 61 1Ö/1S 
2 NC contacts	ST 61 2Ö 

### Ordering details

ST 61 1Ö/1S

Contact type 1NC/1NO, (2Ö)  
Series  
Safety door switch

# Safety switches with separate actuator

## // Series ST 61, actuators

### Features/Options

#### ST 61-B1

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards
  - a = 140 mm and b = 1000 mm
- x = 30 mm

### Features/Options

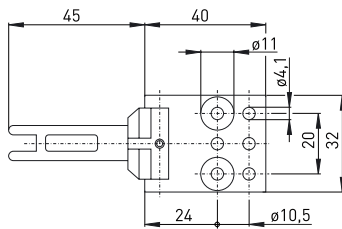
#### ST 61-B5

- Rubber mounting damps vibrations on guard devices
- Especially fit for hinged guards
- Actuating radius on hinged guards
  - a = 140 mm and b = 1000 mm
- x = 15 mm

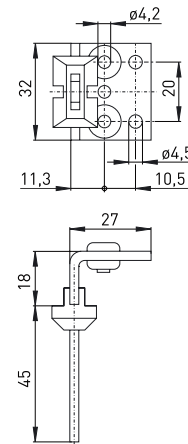
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

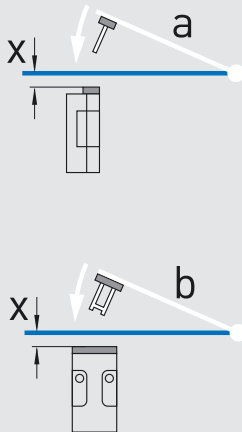
## // Straight actuator ST 61-B1



## // Angled actuator ST 61-B5



## // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment