

SIEMENS



Configuration Manual

# Industrial Controls

SIRIUS

Command and Signaling Devices

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# SIEMENS

## Industrial Controls

### SIRIUS Command and signaling devices

#### Configuration Manual

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## Legal information

### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

<b>⚠ DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
<b>⚠ WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
<b>⚠ CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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### Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.



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# Introduction

## 1.1 Purpose of this documentation

This manual describes the possible uses of SIRIUS command and signaling devices.

In order to provide users with the information they need to operate the system safely, this manual provides a general explanation of operating principles, selection and installation of pushbuttons, EMERGENCY STOP mushroom pushbuttons, indicator lights, two-hand operation consoles, cable-operated switches, foot switches, signaling columns and integrated signal lamps.

## 1.2 Target group

This documentation contains information for the following target groups:

- Decision makers
- Technologists
- Project planning engineers
- Commissioning engineers

## 1.3 Required knowledge

A general knowledge of the following areas is needed in order to understand this documentation:

- Low-voltage controls
- Digital circuit logic
- Automation systems
- AS-Interface
- ATEX
- Safety and security systems

## 1.4 Online configurator

Various configurators are available online to assist you during the configuration process.

You can select the individual components and plan your system in accordance with your specific requirements.

The modular principle of the SIRIUS range of pushbuttons and indicator lights allows individual assembly of component configurations.

Using the SIRIUS 3SB3/3SF5 online configurator, you can select the component properties that suit your application. You can save your selection, export it as a text file or order it directly. The configurator automatically compiles a document list of the information available in Service&Support for every component. You can use it as the basis for putting together your system documentation.

The configurator (<http://www.siemens.com/sirius/configurators>) helps you to select the range of components and suitable accessories for your particular application.



## 1.5 Latest information

### Up-to-the-minute information

For further assistance, contact:

**Technical Assistance:**

Phone: +49 (911) 895-5900 (8:00 – 17:00 CET)

Fax: +49 (911) 895-5907

**Mailing address:**

SIEMENS AG

Technical Assistance

Breslauer Str. 5

D-90766 Fürth, Germany

Internet: (<http://www.siemens.com/industrial-controls/technical-assistance>)

E-mail: (<mailto:technical-assistance@siemens.com>)

### Selection data and ordering data

You can find additional information about command and signaling devices on the Internet in the Industry Mall.

Here, you have access to

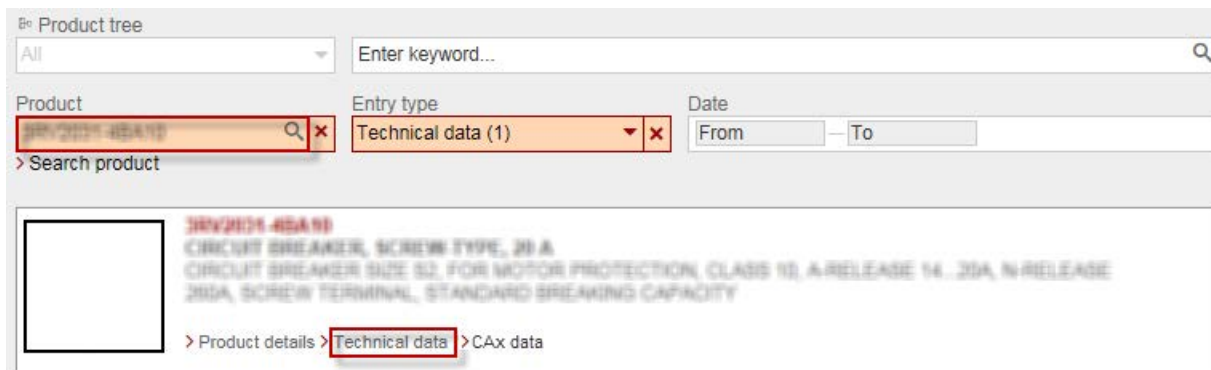
- Catalogs/brochures (<http://www.siemens.com/industrial-controls/catalogs>)
- Online configuration (<http://www.siemens.com/sirius/configurators>)

## 1.6 Technical data in Siemens Industry Online Support

### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.



## Safety notes

### 2.1 Important notes

The products described here have been developed to perform safety-related functions as part of an overall system or machine. A complete safety-oriented system generally features sensors, evaluation units, signaling units, and reliable shutdown concepts. It is the responsibility of the manufacturer to ensure that a system or machine is functioning properly as a whole. Siemens AG, its regional offices, and associated companies (hereinafter referred to as "Siemens") cannot guarantee all the properties of an overall installation or machine that has not been designed by Siemens. Nor can Siemens assume liability for recommendations that appear or are implied in the following description. No new guarantee, warranty, or liability claims beyond the scope of the Siemens general terms of supply are to be derived or inferred from the following description.

2.2 Before commencing work: Isolating the equipment from the supply system and ensuring that it cannot be reconnected.

## 2.2 Before commencing work: Isolating the equipment from the supply system and ensuring that it cannot be reconnected.

 **DANGER**

**Hazardous voltage Will cause death or serious injury.**

- Disconnect the system and all devices from the power supply before starting work.
- Secure against switching on again.
- Verify that the equipment is not live.
- Ground and short-circuit.
- Erect barriers around or cover adjacent live parts.

 **DANGER**

**Hazardous voltage Will cause death or serious injury.**

**Qualified Personnel.**

The equipment / system may only be commissioned and operated by qualified personnel. For the purpose of the safety information in these operating instructions, a "qualified person" is someone who is authorized to energize, ground, and tag equipment, systems, and circuits in accordance with established safety procedures.

## Overview

### 3.1 3SB3 command and signaling devices

	3SB3 command and signaling devices		
	3SB3 pushbuttons and indicator lights	3SB3 enclosures	3SB38 two-hand operation consoles
<b>Description</b>	Indicator lights, pushbuttons, key-operated switches, illuminated pushbuttons, EMERGENCY STOP mushroom pushbuttons, selector switches, contact blocks and lampholders	Pushbuttons, indicator lights in enclosure, EMERGENCY STOP enclosures, customer-specific enclosures also available on request	Two-hand operation consoles including EMERGENCY STOP and 2 mushroom pushbuttons, additional command devices can be installed
<b>Design</b>	Plastic or metal Round version 22 mm in diameter and square version 26 x 26 mm	Plastic or metal	Plastic or metal
<b>Installation / Connection</b>	One-man assembly without special tools, actuators equipped on a modular basis with contact blocks and lampholders. Screw terminal, spring-type terminal, solder pin connection	Base mounting or front plate mounting	Can be mounted on a wall, stand, or directly within the system. Screw terminals
<b>Degree of protection</b>	IP66/IP67 (plastic) and IP67 and NEMA4 (metal)	IP65 / IP67 (metal)	IP65
<b>Approval</b>	UL, CSA, CE, BG (3SB3 EMERGENCY STOP)	UL, CSA, CE, BG (3SB3 EMERGENCY STOP)	EN 574, DIN 24980
<b>Relevant standards</b>	IEC/EN 60947-1; IEC/EN 60947-5-1; IEC/EN 60947-5-5		
<b>AS-Interface</b>	Possibility of direct connection of EMERGENCY STOP devices via standard AS-Interface with safety-related communication	Enclosure with integrated AS-Interface Standard command devices and EMERGENCY STOP can be mounted inside an enclosure. Modular structure	Metal consoles can be retrofitted with safe AS-Interface.
<b>Safety</b>	EMERGENCY STOP mushroom pushbuttons for shutdown of systems in an emergency situation	EMERGENCY STOP function with latching according to ISO 13850	EMERGENCY STOP function with latching according to ISO 13850
<b>Options</b>	<ul style="list-style-type: none"> <li>Online configurator for customer-specific enclosures: (<a href="http://www.siemens.com/sirius/configurators">http://www.siemens.com/sirius/configurators</a>)</li> <li>Do-it-yourself labeling using Label Designer: (<a href="http://www.siemens.com/sirius-label-designer">http://www.siemens.com/sirius-label-designer</a>)</li> <li>Solvent-resistant metal series</li> </ul>		

### 3.2 "Intrinsic safety" type of protection EEx i according to ATEX directive 94/9/EC

The pushbuttons and indicator lights in round design can also be used in hazardous areas. The 3SB34 ..-0. contact blocks and the 3SB34 ..-1A lampholders (with 3SB39 01-1.A LED lamp) with screw terminals or spring-type terminals can be used.

### 3.3 3SE / 8WD command devices

	3SE command devices		8WD signaling devices	
	3SE7 cable-operated switches	3SE29 foot switches	8WD4 signaling columns	8WD5 integrated signal lamps
<b>Description</b>	System consisting of a switch and wire, with and without latching function, LED position indication with very high luminosity	Foot-operated command devices with 1 or 2 pedals, with and without protective cover, latching and momentary-contact versions of contacts	Optionally with continuous light, repeated flash, rotating light or single flash, buzzers, sirens and LED elements	Optionally with continuous light, incandescent lamp or LED, single flash and rotating light Colors: Red, green, yellow, clear, blue
<b>Design</b>	Metal	Plastic and metal	Diameter 50/70 mm	Thermoplastic enclosures, diameter 70 mm
<b>Installation / Connection</b>	Screw terminals	Screw terminals	Bayonet lock means that no tools are required for installation or lamp replacement; base mounting, pipe mounting, bracket mounting, single-hole mounting, spring-type terminal or screw terminal	Mounting by means of Pg 29 screw base with nut, screw terminal
<b>Degree of protection</b>	IP65/IP67	IP65	IP65 (diameter 70 mm)	IP65
<b>Approval</b>	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE	UL, CSA, CE
<b>Relevant standards</b>	Acc. to ISO 13849-1; up to Performance Level e (EN 954-1, up to Cat. 4) EMERGENCY STOP acc. to ISO 13850 (EN 418)	Positive opening of NC contacts acc. to IEC/EN 60947-5-1	IEC/EN 60947-5-1	IEC/EN 60947-5-1

	3SE command devices		8WD signaling devices	
	3SE7 cable-operated switches	3SE29 foot switches	8WD4 signaling columns	8WD5 integrated signal lamps
<b>AS-Interface</b>	Variant with ASIsafe adapter	Can be connected to ASIsafe via fail-safe modules using conventional wiring	<ul style="list-style-type: none"> <li>• Can be directly connected to AS-Interface via an integrated adapter element</li> <li>• A/B technology</li> <li>• Addressing socket</li> <li>• LED status indications for diagnostics</li> <li>• Manual switchover to ext. auxiliary voltage</li> </ul>	
<b>Safety</b>	EMERGENCY STOP function with latching according to ISO 13850	Safety foot switches with latching function acc. to ISO 13850		
<b>Options</b>	Visibility of LED signal indication over a distance of 50 m	Safe locking even when operated beyond the pivot point	<ul style="list-style-type: none"> <li>• Flexible module combinations; can be stacked as required</li> <li>• Signal and acoustic elements with variably adjustable sound and volume</li> </ul>	

## 3.4 Failure rates

Using the B10 value, the failure rate of the command and signaling devices is calculated according to the following formula:

$$\lambda = [0.1 \times C / B10]$$

$$\lambda D = [0.1 \times C / B10d]$$

$\lambda$  = Total failure rate of a command and signaling device

$\lambda D$  = Failure rate of dangerous failures

C = Operating cycle per hour

B10d = B10 / Proportion of dangerous failures

### SN 31920 standard

The B10 value for devices subject to wear is expressed in the number of operating cycles. This is the number of operating cycles at which during a lifetime test, 10% of the test objects have failed (or: number of operating cycles after which 10% of the devices have failed).

---

#### Note

Refer to the respective data sheet for the B10 value and the proportion of dangerous failures.

---



## 3SB2 pushbuttons and indicator lights

### 4.1 Application areas

The 3SB2 pushbuttons and indicator lights are provided for front plate mounting and rear connection with flat connectors. Contact blocks and lampholders with solder pins are also available for use on PCBs. The 3SB2 series with a nominal diameter of 16 mm is ideal for use in confined operating areas.

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**Note**

Lamps and LED modules are designed solely for use with SIRIUS command and signaling devices. They are not suitable for use in domestic lighting systems.

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#### Pushbuttons and indicator lights

Pushbuttons and indicator lights are used for switching, controlling and signaling of electrical loads. Current operating states can be detected and switch positions can be indicated. Pushbuttons and indicator lights are available in round or square design.

Application areas for pushbuttons and indicator lights:

- Control of machines
- Elevators
- Industrial control panels
- Rail / marine applications
- Power plants
- Mills / presses



#### Key-operated switches

Key-operated switches are used for operations that deserve special protection, e.g., for prevention of improper operation.

Application areas for key-operated switches:

- Switching operations deserving special protection
- Reset of an EMERGENCY STOP
- Alarm systems
- Elevators
- Operation of dangerous machines (e.g., waste compactors)




## 4.2 Overview of 3SB2 pushbuttons





				
	<b>Pushbuttons and illuminated pushbuttons, round plastic version, 16 mm in diameter</b>			
	Pushbutton with flat button	Illuminated pushbutton with flat button	Pushbutton with raised button	Illuminated pushbutton with raised button
	Article No.	Article No.	Article No.	Article No.
Black	3SB2000-0AB01 3SB2202-0AB01 3SB2203-0AB01	—	3SB2000-0LB01 3SB2202-0LB01	—
Red	3SB2000-0AC01 3SB2203-0AC01	3SB2001-0AC01 3SB2227-0AC01 3SB2207-0AC01	3SB2000-0LC01 3SB2203-0LC01	3SB2001-0LC01 3SB2227-0LC01 3SB2207-0LC01
Yellow	3SB2000-0AD01 3SB2202-0AD01	3SB2001-0AD01 3SB2226-0AD01 3SB2206-0AD01	3SB2000-0LD01 3SB2202-0LD01	3SB2001-0LD01 3SB2226-0LD01 3SB2206-0LD01
Green	3SB2000-0AE01 3SB2202-0AE01	3SB2001-0AE01 3SB2226-0AE01 3SB2206-0AE01	3SB2000-0LE01 3SB2202-0LE01	3SB2001-0LE01 3SB2226-0LE01 3SB2206-0LE01
Blue	3SB2000-0AF01 3SB2202-0AF01	3SB2001-0AF01 3SB2226-0AF01 3SB2206-0AF01	3SB2000-0LF01 3SB2202-0LF01	3SB2001-0LF01 3SB2226-0LF01 3SB2206-0LF01
White	3SB2000-0AG01 3SB2202-0AG01	—	3SB2000-0LG01 3SB2202-0LG01	—
Clear	3SB2000-0AH01 3SB2202-0AH01	3SB2226-0AH01 3SB2206-0AH01	3SB2000-0LH01 3SB2202-0LH01	3SB2226-0LH01 3SB2206-0LH01

### 4.3 Overview of 3SB2 indicator lights

		
	<b>Indicator light, round plastic version, 16 mm in diameter</b>	
	With concentric rings	With smooth lens, for labeling with insert caps
	Article No.	Article No.
Black	—	—
Red	3SB2001-6BC06	3SB2001-6CC06
Yellow	3SB2001-6BD06	3SB2001-6CD06
Green	3SB2001-6BE06	3SB2001-6CE06
Blue	3SB2001-6BF06	3SB2001-6CF06
White	3SB2001-6BG06	—
Clear	3SB2001-6BH06	3SB2001-6CH06

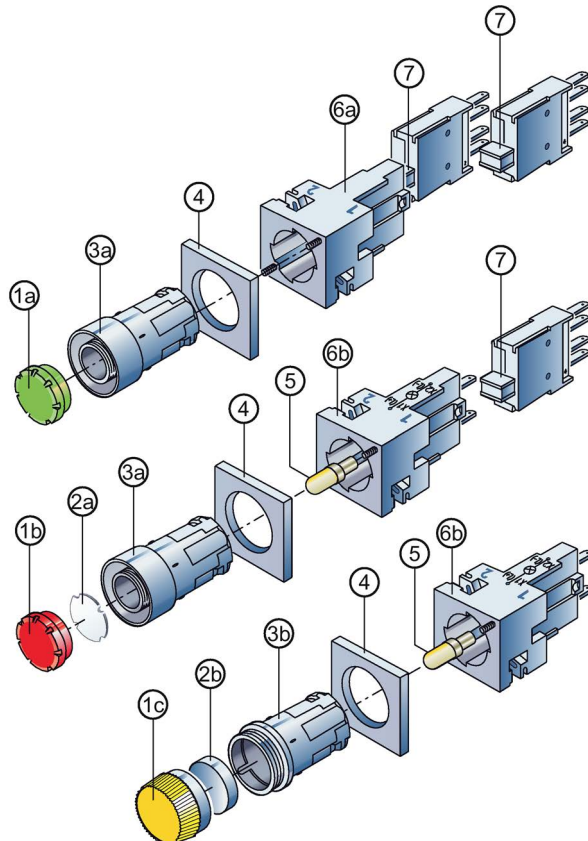
## 4.4 Overview of 3SB2 key-operated switches, selector switches and EMERGENCY STOP mushroom pushbuttons

				
<b>Key-operated switch</b>	<b>Selector switch with holder</b>			<b>EMERGENCY STOP mushroom pushbutton</b>
Diameter 16 mm, CES	Black, not illuminated		Illuminated	Diameter 16 mm
Article No.	Article No.		Article No.	Article No.
3SB2000-4LA01 <sup>1)</sup> 3SB2000-4LB01 <sup>1)</sup> 3SB2202-4LA01 <sup>1)</sup> 3SB2202-4LB01 <sup>1)</sup>	3SB2000-2AB01 <sup>1)</sup> 3SB2202-2AB01 <sup>1)</sup> 3SB2000-2HB01 <sup>1)</sup>	Red	3SB2000-2AC01 <sup>1)</sup> 3SB2202-2AC01 <sup>1)</sup> 3SB2000-2HC01 <sup>1)</sup> 3SB2000-2BC01 <sup>2)</sup> 3SB2210-2DC01 <sup>3)</sup> 3SB2000-2DC01 <sup>3)</sup> 3SB2000-2EC01 <sup>4)</sup> 3SB2210-2EC01 <sup>4)</sup>	3SB2000-1AC01 3SB2203-1AC01
3SB2000-4MA01 <sup>2)</sup>	3SB2000-2BB01 <sup>2)</sup>	Green	3SB2000-2AE01 <sup>1)</sup> 3SB2202-2AE01 <sup>1)</sup> 3SB2000-2HE01 <sup>1)</sup> 3SB2000-2BE01 <sup>2)</sup> 3SB2210-2DE01 <sup>3)</sup> 3SB2000-2DE01 <sup>3)</sup> 3SB2000-2EE01 <sup>4)</sup> 3SB2210-2EE01 <sup>4)</sup>	
3SB2000-4PB01 <sup>3)</sup> 3SB2000-4PC01 <sup>3)</sup> 3SB2000-4PA01 <sup>3)</sup> 3SB2210-4PB01 <sup>3)</sup> 3SB2210-4PA01 <sup>3)</sup>	3SB2210-2DB01 <sup>3)</sup> 3SB2000-2DB01 <sup>3)</sup> 3SB2000-2JB01 <sup>3)</sup>			
3SB2000-4QA01 <sup>4)</sup> 3SB2210-4QA01 <sup>4)</sup>	3SB2000-2EB01 <sup>4)</sup> 3SB2210-2EB01 <sup>4)</sup>	White	3SB2000-2AG01 <sup>1)</sup> 3SB2202-2AG01 <sup>1)</sup> 3SB2000-2HG01 <sup>1)</sup> 3SB2210-2DG01 <sup>3)</sup> 3SB2000-2DG01 <sup>3)</sup> 3SB2000-2EG01 <sup>4)</sup> 3SB2210-2EG01 <sup>4)</sup>	

1)		2 switch positions, latching
2)		2 switch positions, momentary-contact
3)		3 switch positions, latching
4)		3 switch positions, momentary-contact

## 4.5 Mounting

### 4.5.1 Version with flat connector

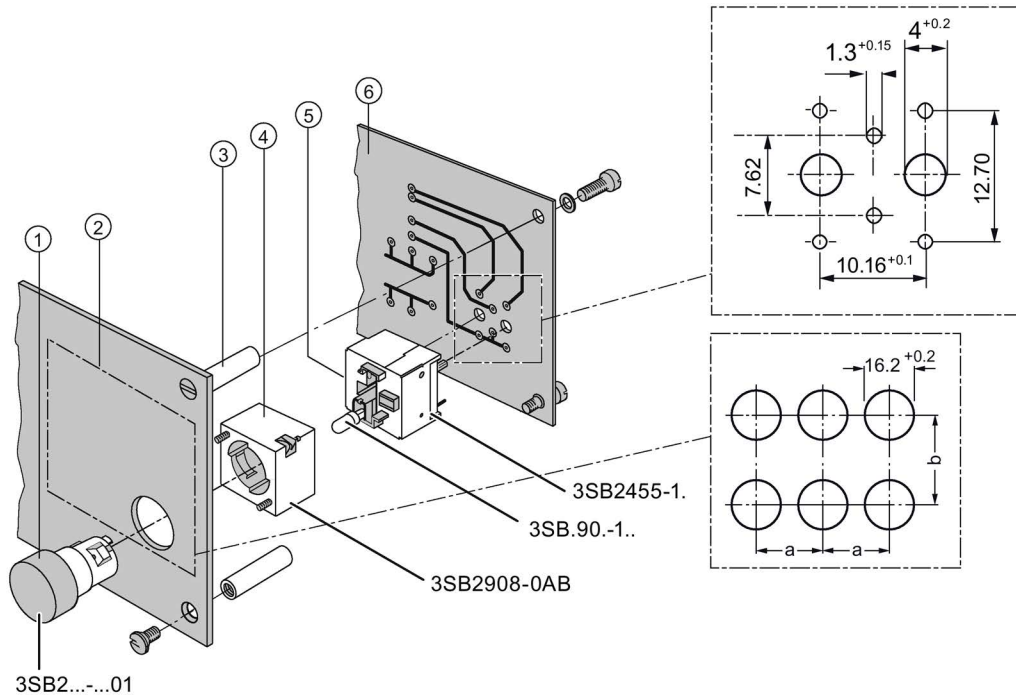


- ①a Button, flat
- ①b Illuminated button, flat
- ①c Screw lens for indicator light
- ②a Insert label, for inscription
- ②b Insert cap, for inscription
- ③a Collar with extruded front ring
- ③b Collar for indicator light
- ④ Frame for square design
- ⑤ Wedge base lamp W2 x 4.6 d
- ⑥a Holder
- ⑥b Lamp socket with holder
- ⑦ Contact blocks (1 NO or 1 NC) for snapping onto holder or lamp socket

### 4.5.2 Module mounting on a printed circuit board

**Note**

For use on printed circuit boards, special contact blocks and lampholders for soldering into the printed circuit board are available. For this purpose, these contact blocks/lampholders are fitted with 0.8 mm x 0.8 mm solder pins of length 3.5 mm.



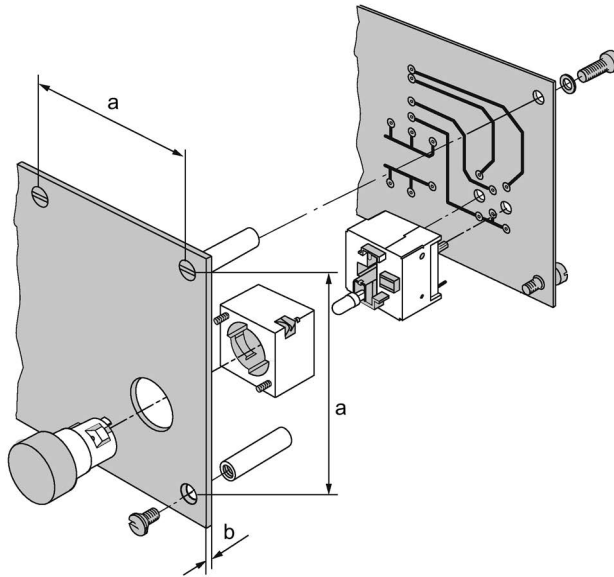
- ① Actuating element
- ② Front plate with minimum distances between actuators (see table below)
- ③ Spacing bolt
- ④ Holder
- ⑤ Lampholder or contact block
- ⑥ Printed circuit board

Minimum distances between actuators installed on front plate	a	b
Round version	19 mm	19 mm
Square version without labeling plate	21 mm	21 mm
Round and square version with labeling plate	21 mm	32 mm
For 2 selector switches with 3 switch positions, latching, side by side	21 mm	21 mm

## Distances between spacing bolts

**NOTICE****Risk of material damage.**

Make sure that the printed circuit board is supported by spacing bolts in such a way that it cannot sag or bend more than 0.1 mm when the command devices are actuated.

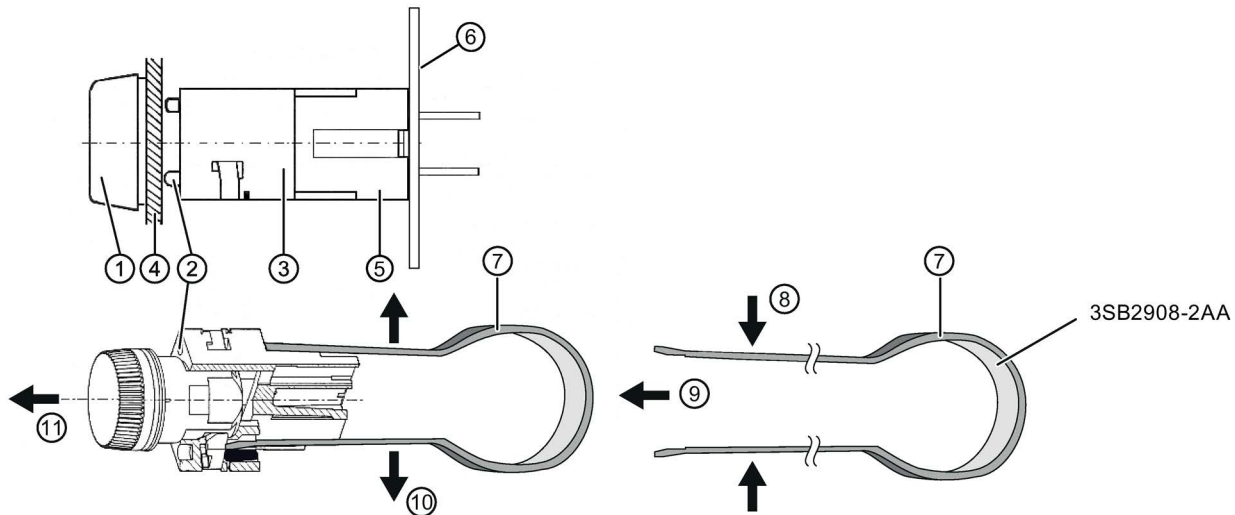


Printed circuit board thickness (b) (epoxy resin glass fiber mat)	Max. distance (a) between spacing bolts	Applies to
1.5 mm	80 mm	3SB2...
2.5 mm	150 mm	3SB2...
When using EMERGENCY STOP mushroom pushbuttons	50 mm	3SB2.0.-1AC01

**Note**

The EMERGENCY STOP 3SB2000-1AC... and 3SB2203-1AC... cannot be installed with labeling plate 3SB2900-0... or single frame 3SB2902-0...

### Module mounting



1. Insert the actuator ① from the front through the opening and latch it with the holder ③ (contact block holder).
2. Use the two clamping screws ② to securely fasten the holder ③ from the rear so that it cannot vibrate or twist. The maximum screw torque is 0.4 Nm. You can use front plates with a thickness of between 1 and 6 mm.  
With a front plate thickness ④ of > 3 mm, unscrew the clamping screws ② before assembling the holder.
3. Insert the contact blocks ⑤ into the locating groove at the side and snap them into position. Any installation position is possible. One or two contact blocks can be mounted on the holder.
4. Place the printed circuit board onto the solder pins of the contact blocks and lampholder and solder it. After soldering, the devices must be flush with the board and perpendicular to it.

### Dismantling the module

1. Unsolder the printed circuit board.
2. Release the snap-in hooks of the contact blocks.
3. Remove the clamping screws ② from the holder ③.
4. Press the two arms of the dismantling tool ⑦ (accessory 3SB2908-2AA) together ⑧ and insert it inside the leaf springs ⑨.  
When the arms of the tool are released ⑩, the tool unlocks the latch so that the holder ③ can be removed ⑪.

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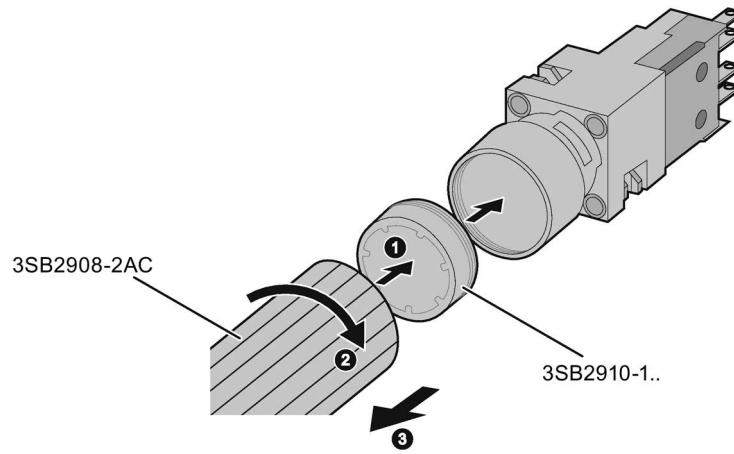
#### Note

If a command point is fitted with an indicator light or illuminated pushbutton, a lamp socket with lampholder must be used instead of a holder. It is suitable for incandescent lamps or LEDs with bases of type W2 x 4.6d.

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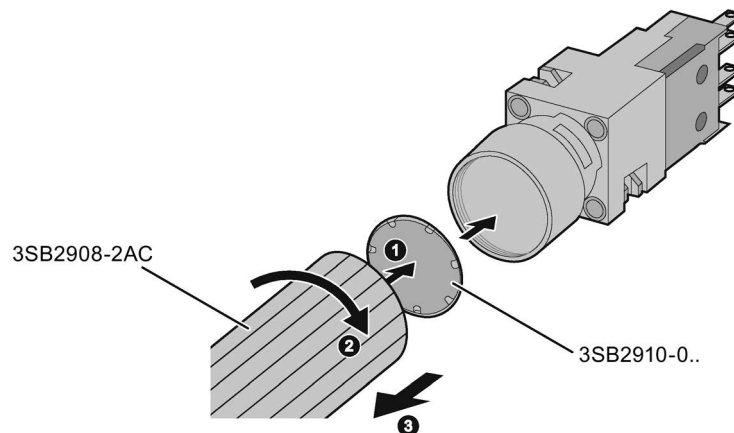


### 4.5.3 Mounting a screw lens



1. Place the screw lens 3SB2910-1.. on the holder.
2. Screw the lens into position using the assembly tool for buttons and lenses 3SB2908-2AC.
3. Dismantle by carrying out the above steps in reverse order.

### 4.5.4 Mounting a button



1. Place the button 3SB2910-0.. on the holder.
2. Screw the button into position using the assembly tool for buttons and lenses 3SB2908-2AC.
3. Dismantle by carrying out the above steps in reverse order.

### 4.5.5 Variants

Two device versions can be mounted:

- Round: The 3SB2 pushbuttons and indicator lights are assembled with the modules – actuator, holder, contact block and lampholder. Depending on the specific application, various versions can be assembled. Complete units are offered for the most commonly used applications.
- Square: With square, black frames (3SB2902-0AA) the round units can be given a square look. The frames are inserted underneath the round actuators. Further mounting is the same as for the round version.

### 4.5.6 Connections

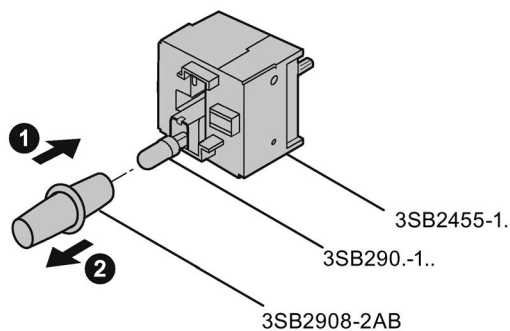
The contact blocks and lampholder are fitted with IEC 60760-compliant flat connectors which can also be used as solder connections.

All connectors are fitted with two tabs to allow loop-through.

### Solder pin connection

The command point comprises the actuator (e.g. 3SB2 pushbutton, illuminated pushbutton or indicator light) which is mounted in the front plate, and a contact block and a lampholder which are soldered to the PCB.

### 4.5.7 Lamp replacement



1. Place the 3SB2908-2AB assembly tool over the lamp.
2. Use the tool to remove the lamp from its socket.

## 4.6 Technical specifications

### 4.6.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link."

The screenshot shows the Siemens Industry Online Support search interface. At the top, there is a "Product tree" dropdown menu set to "All" and a search bar with the placeholder text "Enter keyword...". Below the search bar, there are three filters: "Product" with the value "3RV2011-4BA10", "Entry type" with the value "Technical data (1)", and "Date" with "From" and "To" fields. A "Search product" button is located below the filters. The search results section shows a product card for "3RV2011-4BA10" with a description: "CIRCUIT BREAKER, SCREW TYPE, 20 A, CIRCUIT BREAKER SIZE S2, FOR MOTOR PROTECTION, CLASS 10, A-RELEASE 14, 20A, N-RELEASE 20DA, SCREW TERMINAL, STANDARD BREAKING CAPACITY". Below the product card, there is a breadcrumb trail: "> Product details > Technical data > CAx data".

4.6 Technical specifications

<b>Type</b>	<b>3SB2</b>	
<b>Contact blocks and lampholders</b>		
<b>Standards</b>	IEC 60947-5-1, EN 60947-5-1 IEC 60947-5-5, EN 60947-5-5	
<b>Rated insulation voltage <math>U_i</math></b>	V	250
<b>Conventional thermal current <math>I_{th}</math></b>	A	10
<b>Rated operational currents <math>I_e</math> at rated operational voltage <math>U_e</math></b>		
Alternating current AC-12		
• At $U_e = 230$ V	A	10
Alternating current AC-15		
• At $U_e = 24$ V	A	4
• At $U_e = 60$ V	A	4
• At $U_e = 110$ V	A	4
• At $U_e = 230$ V	A	4
Direct current DC-12		
• At $U_e = 24$ V	A	6
• At $U_e = 60$ V	A	5
• At $U_e = 110$ V	A	2.5
• At $U_e = 230$ V	A	1
Direct current DC-13		
• At $U_e = 24$ V	A	3
• At $U_e = 60$ V	A	1.5
• At $U_e = 110$ V	A	0.7
• At $U_e = 230$ V	A	0.3
<b>Contact stability</b>		
• Test voltage	V	5
• Test current	mA	1
<b>Lamps</b>		
• Socket	Wedge base W2 x 4.6d	
Rated voltage	V	6, 12, 24, 30, 48, 60
Rated power, max.	W	1
<b>Short-circuit protection</b> weld-free according to IEC 60947-5-1		
• DIAZED fuse links, utilization category gL/gG	TDz 10 A, Dz 16 A	
• Miniature circuit breaker with C characteristic in accordance with IEC 60898 (VDE 0641)	A	10
<b>Mechanical endurance</b>		
Pushbutton	10 x 10 <sup>6</sup> operating cycles	
Actuators, rotary or latching	10 x 10 <sup>6</sup> operating cycles	
Illuminated pushbuttons	3 x 10 <sup>5</sup> operating cycles	
Illuminated pushbuttons	3 x 10 <sup>6</sup> operating cycles	

<b>Type</b>	<b>3SB2</b>
<b>Degree of protection</b> according to IEC 60529 (VDE 0470 Part 1)	
• Connection of contact blocks and lampholders behind the front plate	IP00
• Contact chambers of the contact blocks behind the front plate	IP40
<b>Touch protection</b> according to DIN EN 50274 and BGV A2 (VBG 4)	With voltages of > 50 V AC or 120 V DC, insulation sleeves must be fitted to the unassigned flat connectors.
<b>Connection</b>	
Tab connection with flat connectors for push-on contacts according to IEC 60760	Flat connector 2 x 2.8/0.8 mm
<b>Data according to UL and CSA</b>	
<b>Rated voltage</b>	
Contact blocks	V AC 250
Indicator light (lamp with wedge base W2 x 4.6 d)	V 60, 1 W
<b>Uninterrupted current</b>	A 5
<b>Switching capacity</b>	B 300, R 300
<b>Climatic withstand capability</b>	Climate-proof; suitable for marine applications
<b>Ambient temperature</b>	
• During operation, non-illuminated devices and complete with LED	°C -25 ... +70
• During operation, devices with incandescent lamp	°C -25 ... +60
• During storage, transport	°C -40 ... +80
<b>Degree of protection</b> according to IEC 60529 (VDE 0470 Part 1)	
Actuators and indicators	IP65
Actuators and indicators with protective cap	IP67
<b>Protective measures</b>	
• For mounting in metal front plates and enclosures	The actuators and lens assemblies must not be included in the protective measures.
• For fitting into enclosures with total insulation	The protective measure "Total insulation" is retained.
<b>Shock resistance</b> according to IEC 60068-2-27	
Shock amplitude	≤ 50g
Shock duration	ms 11
Shock form	Half-sine

## 4.7 Dimensional drawings

### 4.7.1 Actuating elements

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**Note**

All dimensions specified in mm.

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#### Pushbutton or illuminated pushbutton

With flat button

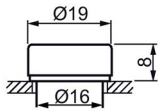


Figure 4-1 3SB20..-0A... / 3SB22..-0A...

#### Pushbutton or illuminated pushbutton

With raised button

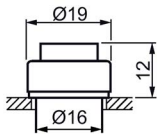


Figure 4-2 3SB20..-0L... / 3SB22..-0L...

#### Indicator light

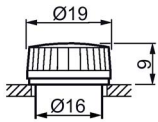


Figure 4-3 3SB2001-6..06

### Selector switch

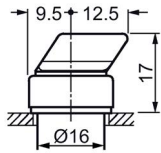


Figure 4-4 3SB2.0.-2..01

### CES key-operated switch

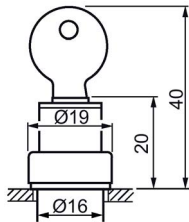


Figure 4-5 3SB2.0.-4..01

### EMERGENCY STOP mushroom pushbutton

Acc. to ISO 13850

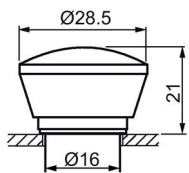
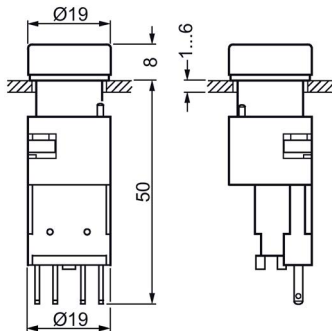


Figure 4-6 3SB2.0.-1AC01

### 4.7.2 Contact blocks with flat connector

#### Pushbutton and contact block

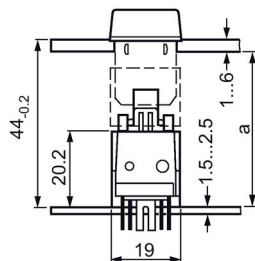
With holder for front plate mounting



### 4.7.3 Contact blocks with solder pins for mounting on printed circuit boards

#### Illuminated pushbutton switch

With contact block and lampholder with solder pins



Length a of spacing bolts:  $a = 44_{-0.2}$  minus thickness of front plate.

When backing plates are used, length a is reduced by 0.8 mm.



## 3SB3 pushbuttons and indicator lights

The 3SB3 pushbuttons and indicator lights are a modular command and signaling device program for front plate mounting, base mounting and rear conductor connection. As an alternative, individual elements can also be supplied for use on printed circuit boards. Complete units are offered for the most commonly used applications.

The 3SB3 series is available in the following versions.

Material	Shape of actuator	Article number
Plastic	Round	3SB32 (with holder)
		3SB30 (without holder)
	Square	3SB31 (with holder)
		3SB33 (complete device)
Metal	Round	3SB35 (with holder) / 3SB36 (complete device)

The operating surfaces of the pushbuttons and illuminated pushbuttons are concave. The lenses of the indicator lights are convex.

The metal version is available with a high degree of protection according to IP67 and NEMA 4.

A command point has the following components:

- An actuator or lens assembly in front of the front plate,
- A holder for mounting behind the front plate,
- Up to 3 contact blocks and/or one lampholder behind the front plate, and
- A comprehensive range of accessories for inscription.

Two contact blocks can be snapped onto the actuator in the standard version.

When three contact blocks or illuminated actuators are required, an additional holder must be plugged onto the actuator from the rear.

- 3SB3901-0AB holder for 3 contact blocks or for 2 contact blocks and 1 lampholder,
- 3SB3901-0AC holder with pressure plates for actuating a middle contact block when using a selector switch, key-operated switch and twin pushbutton with 3 contact blocks.

For illuminated pushbuttons, illuminated switches and illuminated selector switches the holder is included in the scope of supply as standard.

The contact blocks are fitted with a slow-action contact (1 NO contact or 1 NC contact) with double operating contacts. These ensure a high contact stability even with small voltages and currents (e.g., 5 V/1 mA). They are suitable for use in electronic systems as well as conventional controls.

## 5.1 Application areas

Secure and sturdy mounting of the actuators, indicators, holders and switch and light elements requires only one person.

They are integrated using conventional controls or via AS-Interface. For special ambient conditions, there are additional polyamide versions available for the metal series that are resistant to oils, for example.

Contact blocks have high contact stability and can be combined with actuators as required. The same also applies to lights and indicators.

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### Note

Lamps and LED modules are designed solely for use with SIRIUS command and signaling devices. They are not suitable for use in domestic lighting systems.

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### Pushbuttons and indicator lights

Pushbuttons and indicator lights are used for switching, controlling and signaling of electrical loads. Current operating states can be detected and switch positions can be indicated. Pushbuttons and indicator lights are available in round or square design.

Application areas for pushbuttons and indicator lights:

- Control of machines
- Elevators
- Industrial control panels
- Rail / marine applications
- Power plants
- Mills / presses

### Key-operated switches

Key-operated switches are used for operations that deserve special protection, e.g., for prevention of improper operation.

Application areas for key-operated switches:

- Switching operations deserving special protection
- Reset of an EMERGENCY STOP
- Alarm systems
- Elevators
- Operation of dangerous machines (e.g., waste compactors)

## **Enclosures**

When controllers are at a physically separate location, pushbuttons and indicator lights in enclosures serve as manual command devices. Their enclosures are equipped with the actuators and the lens assemblies with a nominal diameter of 22 mm.

The devices are suitable for use in any climate. Enclosures with handle are available for suspension (e.g. for crane control units).

The enclosed pushbuttons and indicator lights can be used with conventional controls or connected to the AS-Interface bus system.

## **EMERGENCY STOP mushroom pushbuttons**

These are used for safe and fast stopping of systems and machines in dangerous situations.

EMERGENCY STOP mushroom pushbuttons are certified according to ISO 13850 / EN 418.

The metal version is suitable for use in harsh conditions. The illuminated backing plate improves the visibility of the command point and provides a variety of information.

EMERGENCY STOP devices can be connected directly via the standard AS-Interface with safety-related communication. This applies to EMERGENCY STOP devices of the SIRIUS 3SB3 command devices for front plate mounting and mounting in enclosures.






A front plate-mounted EMERGENCY STOP can be connected directly to AS-Interface via a fail-safe module (F adapter) (see Overview of AS-Interface F adapter (Page 126)). For control systems according to IEC 60204-1 or EN 60204-1 (VDE 0113 Part 1), the mushroom pushbuttons of the 3SB3 series can be used as safety EMERGENCY STOP devices.




## **Resistance to moisture**

The devices are climate-proof (KTW 24) and suitable for standard industrial applications and operation in marine applications. For operation in oily atmospheres (organic oils/lubricants) we recommend actuators which are marked as "solvent-resistant".





## 5.2 Overview












### 5.2.1 Overview of 3SB3 pushbuttons and indicator lights

					
	Pushbutton with holder	Illuminated pushbutton with holder	Indicator light with holder	Indicator light with holder	Mushroom pushbutton with holder
	With flat button	With flat button	With concentric rings	With smooth lens	Diameter 40 mm
	Article No.	Article No.	Article No.	Article No.	Article No.
Plastic	3SB3000-.....	3SB3001-.....	3SB3001-.....	3SB3001-.....	3SB3000-.....
Metal	3SB3500-.....	3SB3501-.....	3SB3501-.....	3SB3501-.....	3SB3500-.....
Black	3SB3□00-0AA11	—	—	—	3SB3□00-1GA11
Red	3SB3□00-0AA21	3SB3□01-0AA21	3SB3□01-6BA20	3SB3□01-6AA20	3SB3□00-1GA21
Yellow	3SB3□00-0AA31	3SB3□01-0AA31	3SB3□01-6BA30	3SB3□01-6AA30	3SB3□00-1GA31
Green	3SB3□00-0AA41	3SB3□01-0AA41	3SB3□01-6BA40	3SB3□01-6AA40	3SB3□00-1GA41
Blue	3SB3□00-0AA51	3SB3□01-0AA51	3SB3□01-6BA50	3SB3□01-6AA50	—
White	3SB3□00-0AA61	3SB3□01-0AA61	3SB3□01-6BA60	3SB3□01-6AA60	—
Clear	—	3SB3□01-0AA71	3SB3□01-6BA70	3SB3□01-6AA70	—



				
	<b>Selector switches with holder</b>			
	Black, not illuminated		Illuminated, 2 switch positions, latching <sup>1)</sup>	Illuminated, 3 switch positions, latching <sup>3)</sup>
	Article No.		Article No.	Article No.
Plastic	3SB3000-.....		3SB3001-.....	3SB3001-.....
Metal	3SB3500-.....		3SB3501-.....	3SB3501-.....
Black	3SB3□00-2KA11 <sup>1)</sup>	Red	3SB3□01-2KA21	3SB3□01-2DA21
	3SB3□00-2LA11 <sup>2)</sup>	Yellow	3SB3□01-2KA31	3SB3□01-2DA31
	3SB3□00-2DA11 <sup>3)</sup>	Green	3SB3□01-2KA41	3SB3□01-2DA41
	3SB3□00-2EA11 <sup>4)</sup>	Blue	3SB3□01-2KA51	3SB3□01-2DA51
	3SB3□00-2GA11 <sup>5)</sup>	Clear	3SB3□01-2KA71	3SB3□01-2KA71
	3SB3□00-2FA11 <sup>6)</sup>			




5.2 Overview

				
	<b>Key-operated switches with holder</b>		<b>EMERGENCY STOP mushroom pushbuttons</b>	
	RONIS lock, lock number SB30	CES lock, lock number SSG10	Red, diameter 40 mm, with positive latching function according to ISO 13850	With lock release key
	Article No.	Article No.	Article No.	Article No.
Plastic	3SB3000-.....	3SB3000-.....	3SB3000-.....	3SB3000-.....
Metal	3SB3500-.....	3SB3500-.....	3SB3500-.....	3SB3500-.....
	3SB3□00-4AD11 <sup>7)</sup>	3SB3□00-4LD11 <sup>7)</sup>	<b>With rotate-to-unlatch mechanism</b>	3SB3□00-1BA20 3SB3□00-1JA20 3SB3□00-1YA20
	3SB3□00-4AD01 <sup>8)</sup>	3SB3□00-4LD01 <sup>8)</sup>	3SB3□00-1HA20	3SB3□00-1KA20 3SB3□00-1LA20 3SB3□00-1MA20
	3SB3□00-4BD01 <sup>9)</sup>	3SB3000-4LD05 (with key monitoring) <sup>8)</sup>	<b>With pull-to-unlatch mechanism</b>	
	3SB3□00-4DD11 <sup>10)</sup>		3SB3□00-1TA20	
	3SB3□00-4DD01 <sup>11)</sup>	3SB3□00-4PD11 <sup>10)</sup>	3SB3□00-1TA20-ZB01	

1)		2 switch positions, latching	7)		2 switch positions, latching, key removal in pos. O + I
2)		2 switch positions, momentary-contact	8)		2 switch positions, latching, key removal in pos. O
3)		3 switch positions, latching	9)		2 switch positions, momentary-contact, key removal in pos. O
4)		3 switch positions, momentary-contact	10)		3 switch positions, latching, key removal in pos. I + O + II
5)		3 switch positions, momentary-contact to left, latching to right	11)		3 switch positions, latching, key removal in pos. O
6)		3 switch positions, latching to left, momentary-contact to right			

## 5.2.2 Empty enclosure

Empty enclosure for contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)		No. of command points	Article No. Plastic	Article No. Metal
 3SB3802-0AA3	<ul style="list-style-type: none"> <li>With gray top part</li> <li>Cable entry top and bottom, both 1 x M20</li> </ul>	1	3SB3801-0AA3	3SB3801-2AA3
		2	3SB3802-0AA3	3SB3802-2AA3
 3SB3804-2AA3	<ul style="list-style-type: none"> <li>Cable entry at top and bottom, each 1 x M25</li> </ul>	3	3SB3803-0AA3	3SB3803-2AA3
		4	3SB3804-0AA3	3SB3804-2AA3
		6	3SB3806-0AA3	3SB3806-2AA3




Empty enclosure for EMERGENCY STOP, for contact blocks, lampholders and accessories with snap-on base mounting, also single-pole front plate blocks can be used (switching state is maintained upon opening)		No. of command points	Article No. Plastic	Article No. Metal
 3SB3801-0AB3	<ul style="list-style-type: none"> <li>With yellow top part, without protective collar</li> </ul>	1	3SB3801-0AB3	3SB3801-2AB3
	<ul style="list-style-type: none"> <li>With yellow top part, with protective collar<sup>1)</sup></li> </ul>	1	3SB3801-0AD3	3SB3801-2AD3
 3SB3801-2AD3	<ul style="list-style-type: none"> <li>With gray top part, with protective collar</li> </ul>	1	—	3SB3801-2AE3
 3SB3801-2EC3	<ul style="list-style-type: none"> <li>With yellow top part, with protective collar for 3 padlocks, for mushroom diameter 40 mm, can be locked (BKS, CES, O.M.R.)</li> </ul>	1	—	3SB3801-2EC3

1) The protective collar must only be used to protect against inadvertent actuating and must be fitted to allow unimpeded access to the EMERGENCY STOP mushroom pushbutton.

### 5.2.3 Enclosures with standard equipment







The following enclosure versions are available:

- Enclosures with standard equipment with 1 to 3 command points
- Enclosures with customized equipment with 1, 2, 3, 4 or 6 command points

EMERGENCY STOP mushroom pushbutton with positive latching according to ISO 13850 and rotate-to-unlatch mechanism		Article No. Plastic	Article No. Metal
 <p>Diameter 40 mm, with yellow top part, without protective collar Enclosure for command devices, 22 mm, round, yellow top part, with protective collar, 1 command point, EMERGENCY STOP mushroom pushbutton red, 40 mm, with rotate-to-unlatch mechanism</p>	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Screw terminals</li> </ul>	⊕ 1 NC 3SB3801-0DG3	3SB3801-2DG3
		⊕ 2 NC 3SB3801-0EG3	3SB3801-2EG3
 <p>Diameter 40 mm, with yellow top part, with protective collar Enclosure for command devices, 22 mm, round, yellow top part, with protective collar, 1 command point, EMERGENCY STOP mushroom pushbutton red, 40 mm, with rotate-to-unlatch mechanism</p>	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Screw terminals</li> </ul>	⊕ 1 NC 3SB3801-0DF3	3SB3801-2DF3
		⊕ 2 NC 3SB3801-0EF3	3SB3801-2EF3
 <p>Diameter 60 mm, with yellow top part, with protective collar for 5 padlocks Enclosure for command devices, 22 mm, round, yellow top part, with protective collar for 5 padlocks, 1 command point, EMERGENCY STOP mushroom pushbutton red, 60 mm, with rotate-to-unlatch mechanism</p>	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Screw terminals</li> </ul>	⊕ 2 NC —	3SB3801-2EA30
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Spring-type terminal</li> </ul>	⊕ 2 NC —	3SB3801-2EA30-0CC0

⊕ Positive opening according to IEC 60947-5-1, Appendix K



Enclosures, gray, for command devices, 22 mm round, with standard equipment		Article No. Plastic	Article No. Metal
	1 command point, equipment according to selection		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Front plate mounting at top and bottom, both 1 x M20</li> </ul>	3SB3801-0A. 3SB3801-1A.	3SB3801-2A. 3SB3801-3A.
	Mushroom pushbutton diameter 60 mm, black, with positive latching function and rotate-to-unlatch mechanism, with protective collar for 5 padlocks		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Spring-type terminal</li> </ul>	—	3SB3801-2EB30-0CC0
	2 command points, equipment according to selection		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Front plate mounting at top and bottom, both 1 x M20</li> </ul>	3SB3802-0A. 3SB3802-1A.	3SB3802-2A. 3SB3802-3A.
	3 command points, equipment according to selection		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M20</li> <li>• Front plate mounting at top and bottom, both 1 x M20</li> </ul>	3SB3803-0A. 3SB3803-1A.	3SB3803-2A. 3SB3803-3A.
	4 command points, equipment according to selection		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M25</li> <li>• Front plate mounting at top and bottom, both 1 x M25</li> </ul>	3SB3804-0A. 3SB3804-1A.	3SB3804-2A. 3SB3804-3A.
	6 command points, equipment according to selection		
	<ul style="list-style-type: none"> <li>• Base mounting at top and bottom, both 1 x M25</li> <li>• Front plate mounting at top and bottom, both 1 x M25</li> </ul>	3SB3806-0A. 3SB3806-1A.	3SB3806-2A. 3SB3806-3A.

## Safety circuits

IEC 60947-5-1 and EN 60947-5-1 require positive opening. With regard to personal protection, the assured opening of normally closed contact elements in all safety circuits is expressly prescribed for the electrical equipment of machines and is designated according to IEC 60947-5-1 with the positive opening symbol ⊕.

With the EMERGENCY STOP mushroom pushbuttons, Category 4 according to EN 954-1 can be achieved if the corresponding fail-safe evaluation devices are selected and correctly connected. This applies, for example, to the 3TK28 safety relays and corresponding devices from the ASIsafe, SIMATIC and SINUMERIK programs.

## 5.2.4 Overview of contact blocks

### 5.2.4.1 3SB3400 contact blocks for front plate mounting

**Note**

**Installation monitoring**




The monitored contact blocks of type 3SB3400-0M (screw terminal) and 3SB3403-0M (spring-type terminal) are NC contact blocks with positive opening operation. The NC contact opens automatically when the contact block drops out from the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped on.

Steps	Operating state of the contact block (monitored state)	System status
Delivery condition	Open	Mounting
Mounting	Open	
First actuation	Open	Commissioning
First unlatch (reset)	Closed	
Second actuation	Open	Normal operation
Second unlatch (reset)	Closed	
Contact block separated from actuator	Open	Fault (no reset)

Contact blocks for front plate mounting, with screw terminals		
<b>Contact block with one contact</b>	<b>Mounting depth 50 mm</b>	
 3SB3400-0B	1 NO	3SB3400-0B
	1 NO with gold-plated contacts	3SB3400-0BA
	1 NC	3SB3400-0C
	1 NC with gold-plated contacts	3SB3400-0CA
 3SB3400-0M	1 NC with installation monitoring contact <sup>1)</sup>	3SB3400-0M
<b>Contact block with two contacts</b>	<b>Mounting depth 63 mm</b>	
 3SB3400-0A	1 NO + 1 NC	3SB3400-0A
	1 NO + 1 NC with gold-plated contacts	3SB3400-0AA
	1 NO + 1 NC with dust protection <sup>2)</sup>	3SB3400-0N
	1 NO leading + 1 NC lagging	3SB3400-0H
	1 NO leading + 1 NC lagging with gold-plated contacts	3SB3400-0HA
	2 NO	3SB3400-0D
	2 NO with gold-plated contacts	3SB3400-0DA
	2 NO with dust protection <sup>2)</sup>	3SB3400-0P
	2 NC	3SB3400-0E
	2 NC with gold-plated contacts	3SB3400-0EA
2 NC with dust protection <sup>2)</sup>	3SB3400-0Q	
<b>Block with 2 diodes type 1N 4007</b>	<b>Mounting depth 63 mm</b>	
 3SB3400-2A		3SB3400-2A

1) The NC contact opens automatically when the contact block drops out from the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped on the actuator. Not suitable for mounting in 3SB38 enclosure.




2) With dust protection guard 3SB3001-0CH.

Contact blocks with lampholders for front plate mounting		
<b>Lampholder BA 9s</b>	<b>Mounting depth 50 mm</b>	
 3SB3400-1A	<ul style="list-style-type: none"> <li>Without lamp</li> </ul>	3SB3400-1A
	<ul style="list-style-type: none"> <li>With 24 V incandescent lamp</li> </ul>	3SB3400-1D
	BA 9s lampholders, mounting depth 50 mm	
	<ul style="list-style-type: none"> <li>With integrated voltage reducer and with 130 V lamp (3SX1731)</li> </ul>	3SB3400-1C
	<ul style="list-style-type: none"> <li>With built-in resistor for longer endurance and with 130 V lamp (3SX1731)</li> </ul>	3SB3400-1B
<b>Lampholder BA 9s</b>		
 3SB3400-1F	<ul style="list-style-type: none"> <li>With separate lamp test function with integrated voltage reducer and with 130 V lamp (3SX1731)</li> </ul>	3SB3400-1F
	<ul style="list-style-type: none"> <li>Without lamp, for incandescent lamp, max. 2.6 W; for LED lamp 24/48/230 V AC/DC</li> </ul>	3SB3400-1G
	<ul style="list-style-type: none"> <li>Without lamp, for incandescent lamp, max. 2.6 W; for LED lamp, AC or DC</li> </ul>	3SB3400-1L
	<ul style="list-style-type: none"> <li>Without lamp, for incandescent lamp, max. 2.6 W; for glow lamp, AC</li> </ul>	3SB3400-1H
<b>Lampholder with integrated LED</b>	<b>Mounting depth 50 mm</b>	
 3SB3400-1PA	<ul style="list-style-type: none"> <li>24 V AC/DC</li> </ul>	3SB3400-1P.
	<ul style="list-style-type: none"> <li>110 V AC</li> </ul>	3SB3400-1Q.
	<ul style="list-style-type: none"> <li>230 V AC</li> </ul>	3SB3400-1R.



## 5.2.4.2 3SB3403 contact blocks for front plate mounting

**Note****Installation monitoring**

The monitored contact blocks of type 3SB3400-0M (screw terminal) and 3SB3403-0M (spring-type terminal) are NC contact blocks with positive opening operation. The NC contact opens automatically when the contact block drops out from the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped on.

Contact blocks for front plate mounting with spring-type terminals		
<b>Contact block with one contact</b>	<b>Mounting depth 50 mm</b>	
 3SB3403-0B	1 NO	3SB3403-0B
	1 NO with gold-plated contacts	3SB3403-0BA
	1 NC	3SB3403-0C
	1 NC with gold-plated contacts	3SB3403-0CA
 3SB3403-0M	1 NC with installation monitoring contact <sup>1)</sup>	3SB3403-0M
<b>Contact block with two contacts</b>	<b>Mounting depth 63 mm</b>	
 3SB3403-0A	1 NO + 1 NC	3SB3403-0A
	1 NO + 1 NC with gold-plated contacts	3SB3403-0AA
	1 NO leading + 1 NC lagging	3SB3403-0H
	1 NO leading + 1 NC lagging with gold-plated contacts	3SB3403-0HA
	2 NO	3SB3403-0D
	2 NO with gold-plated contacts	3SB3403-0DA
	2 NC	3SB3403-0E
	2 NC with gold-plated contacts	3SB3403-0EA



1) The NC contact opens automatically when the contact block drops out from the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped on the actuator. Not suitable for mounting in 3SB38 enclosure.

Contact blocks with lampholders for front plate mounting		
<b>Lampholder BA 9s</b>	<b>Mounting depth 50 mm</b>	
 3SB3403-1C	<ul style="list-style-type: none"> <li>Without lamp<sup>1)</sup></li> </ul>	3SB3403-1A
	BA 9s lampholders, mounting depth 50 mm	
	<ul style="list-style-type: none"> <li>With integrated voltage reducer and with 130 V lamp (3SX1731) <sup>1) 2)</sup></li> </ul>	3SB3403-1C
<b>Lampholder with integrated LED</b>	<b>Mounting depth 50 mm</b>	
 3SB3403-1PA	<ul style="list-style-type: none"> <li>24 V AC/DC</li> </ul>	3SB3403-1P.
	<ul style="list-style-type: none"> <li>110 V AC</li> </ul>	3SB3403-1Q.
	<ul style="list-style-type: none"> <li>230 V AC</li> </ul>	3SB3403-1R.



1) Not suitable for square command devices

2) Can be used only for this lamp

### 5.2.4.3 3SB3420 / 3SB3423 contact blocks for base mounting

Contact blocks for base mounting		
	<b>Screw terminals</b>	
	Contact block with 1 contact, 1 NO	3SB3420-0B
	Contact block with 1 contact, 1 NO, gold-plated contacts	3SB3420-0BA
	Contact block with 1 contact, 1 NC	3SB3420-0C
	Contact block with 1 contact, 1 NC, gold-plated contacts	3SB3420-0CA
	<b>Spring-type terminal</b>	
	Contact block with 1 contact, 1 NO	3SB3423-0B
	Contact block with 1 contact, 1 NO, gold-plated contacts	3SB3423-0BA
	Contact block with 1 contact, 1 NC	3SB3423-0C
	Contact block with 1 contact, 1 NC, gold-plated contacts	3SB3423-0CA

## 5.2.4.4 EMERGENCY STOP mushroom pushbuttons with installation monitoring

	<b>EMERGENCY STOP mushroom pushbuttons with installation monitoring</b>	<b>Article No.</b>
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, plastic, red, 40 mm, latching, rotate-to-unlatch mechanism with yellow backing plate, without inscription, 2 x 1 NC with installation monitoring, 1 NO, screw terminals, with holder for 3 contact blocks	3SB3265-1HA20
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, plastic, red, 40 mm, latching, rotate-to-unlatch mechanism with yellow backing plate, inscription: NOT-HALT, 1 NC with installation monitoring, screw terminals	3SB3266-1HA20
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, metal, red, 40 mm, latching, rotate-to-unlatch mechanism with yellow backing plate, inscription: NOT-HALT, 1 NC with installation monitoring, screw terminals	3SB3666-1HA20
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, plastic, red, 40 mm, latching, rotate-to-unlatch mechanism, mechanical switch position indication, with yellow backing plate, inscription: NOT-HALT, 1 NC with installation monitoring, screw terminals	3SB3266-1HA26
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, metal, red, 40 mm, latching, rotate-to-unlatch mechanism, mechanical switch position indication, with yellow backing plate, inscription: NOT-HALT, 1 NC with installation monitoring, screw terminals	3SB3666-1HA26
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, plastic, red, 40 mm, latching, rotate-to-unlatch mechanism, with yellow backing plate, inscription: EMERGENCY STOP, 1 NC with installation monitoring, screw terminals	3SB3266-1HR20
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, metal, red, 40 mm, latching, rotate-to-unlatch mechanism, with yellow backing plate, inscription: EMERGENCY STOP, 1 NC with installation monitoring, screw terminals	3SB3666-1HR20
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, plastic, red, 40 mm, latching, rotate-to-unlatch mechanism, mechanical switch position indication, with yellow backing plate, inscription: EMERGENCY STOP, 1 NC with installation monitoring, screw terminals	3SB3266-1HR26
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, metal, red, 40 mm, latching, rotate-to-unlatch mechanism, mechanical switch position indication, with yellow backing plate, inscription: EMERGENCY STOP, 1 NC with installation monitoring, screw terminals	3SB3666-1HR26
	EMERGENCY STOP mushroom pushbutton, 22 mm, round, metal, red, 40 mm, latching, rotate-to-unlatch mechanism, with yellow backing plate, inscription: EMERGENCY STOP, with holder, 1 NC with installation monitoring, spring-type terminals	3SB3667-1HA20-0CC0

### Operating principle of the 3SB340.-0M contact block with installation monitoring

The SIRIUS 3SB340.-0M contact block monitors proper installation or correct connection to an EMERGENCY STOP actuator. If the contact module is incorrectly installed or is disconnected from the actuator, the contact block initiates an automatic shutdown of the machine or system. As long as operation continues, it is assured that all necessary contacts are functioning properly.

### Machine directive

In addition to increased safety, the SIRIUS 3SB340.-0M contact block also supports compliance with the Machinery Directive.

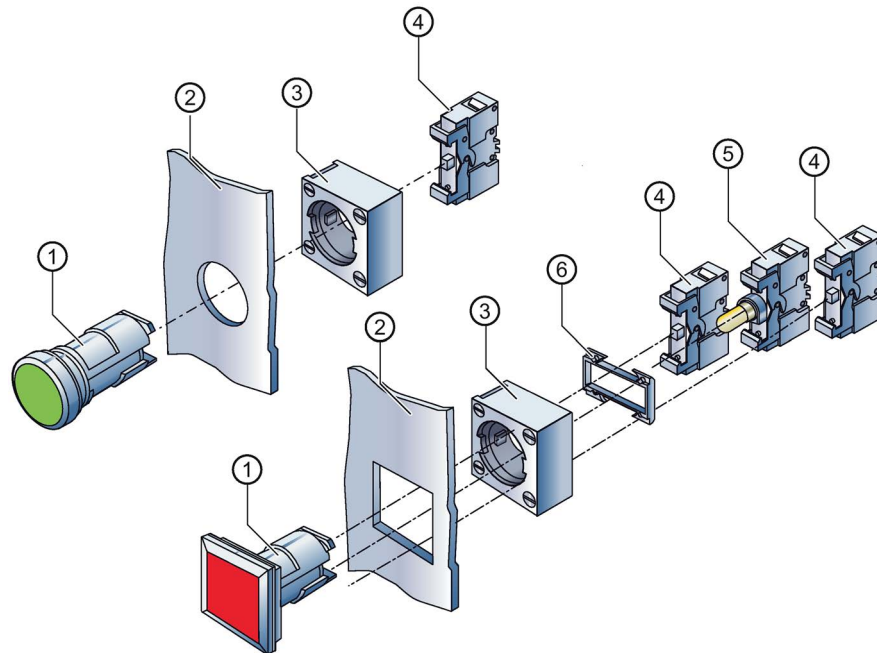
**During first commissioning:** The circuits are closed and the contact block is ready for use only after completion of the function test prescribed by the directive, thus, through an activation for the first time.

**During operation:** The installation status of the contact block is continuously monitored. If an error occurs, the machine is shut down automatically.



## 5.3 Mounting

### 5.3.1 3SB3 front plate mounting



- ① Actuating element
- ② Front plate
- ③ Holder
- ④ Contact block
- ⑤ Lampholder
- ⑥ Support element (for snapping on 3 contact blocks)

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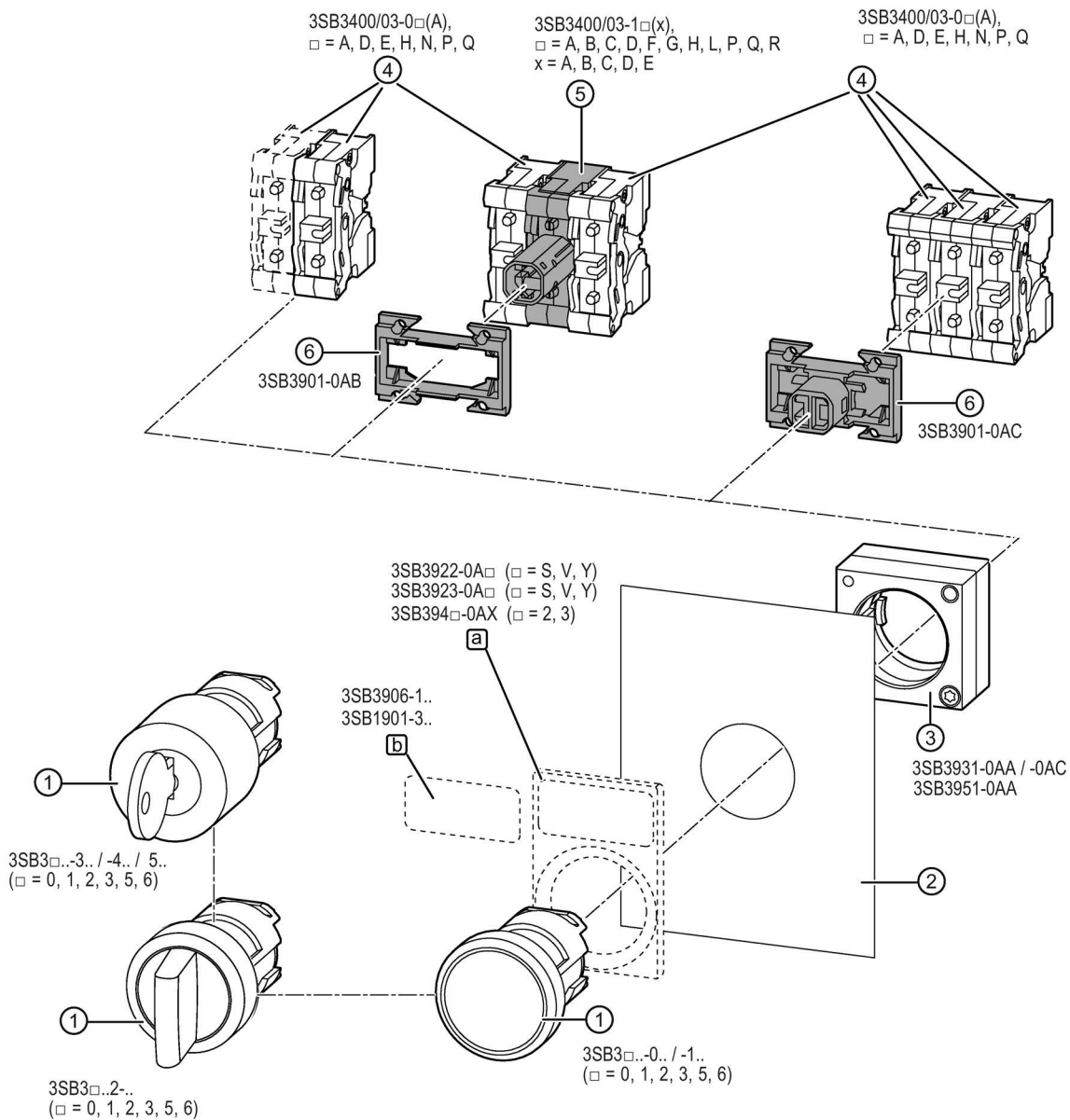
#### Note

##### Square cutout for front plate

The square cutout for the front plate can be punched with the 3SB3941-0AF blanking tool.

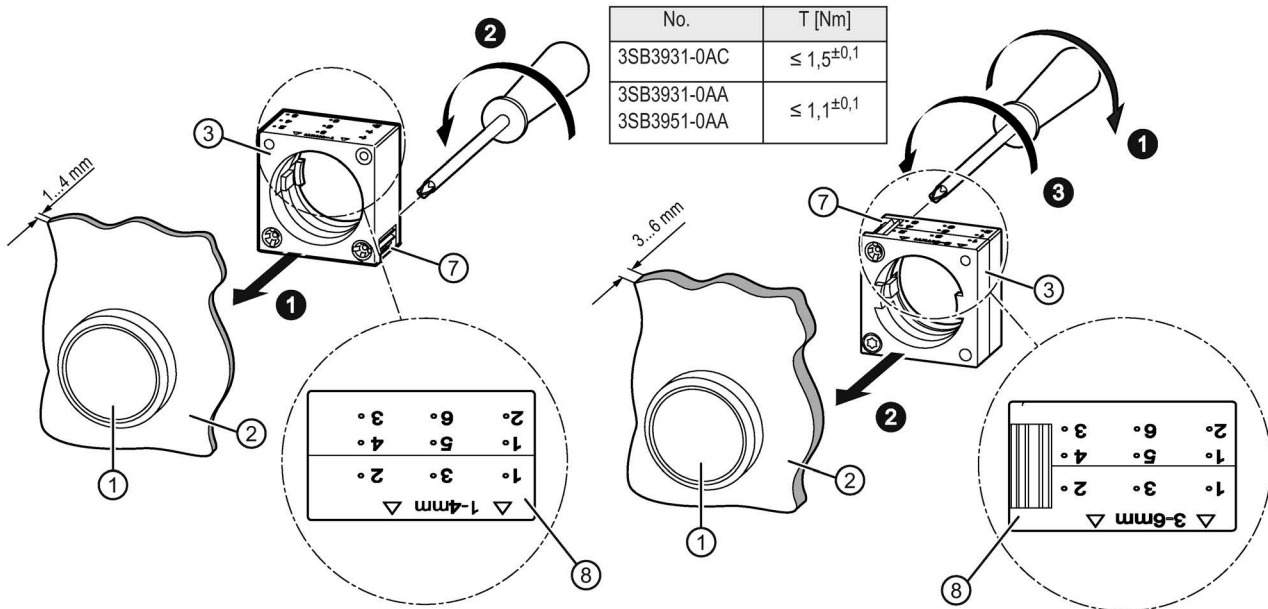
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### 5.3.2 Mounting on front plate



1. Insert the actuating element / indicator light ① from the front into the opening in the front plate ②.
2. If you wish to, you can insert a label holder (a) between the front plate ② and the actuating element / indicator light ① and attach a labeling plate (b) to it.

3. Attach the holder ③ from behind to the actuating element ①. Note the inscription on the holder ③ regarding the front plate thickness used and loosen the locking wheel ⑦ if necessary (turn to the right for a front plate thickness of 1 - 4 mm or to the left for a front plate thickness of 3 - 6 mm) before you place the holder on the actuating element.



#### NOTICE

##### Correct positioning of the holder depending on the front plate thickness

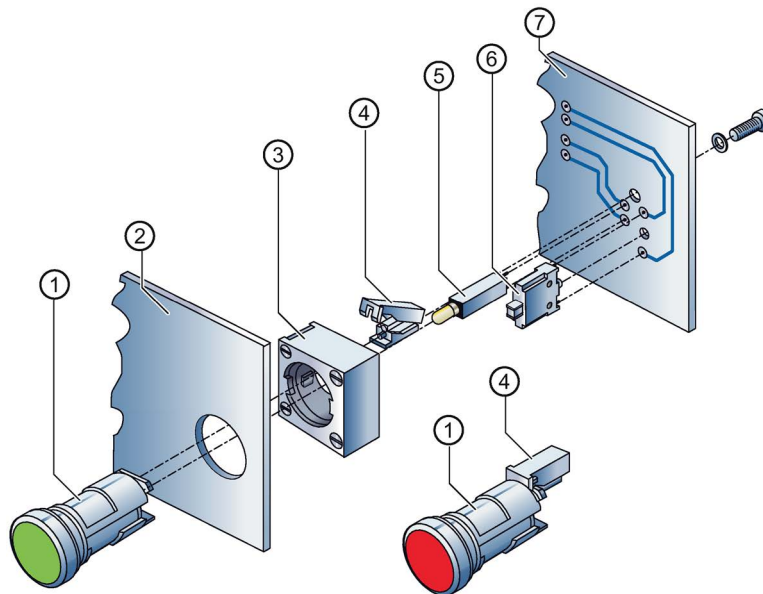
Read the information pertaining to front plate thickness ⑧ that is printed on the holder and place the holder (from behind) onto the actuating element in the arrow direction indicated.

4. Tighten the locking wheel ⑦ on the holder (tighten to the right for a front plate thickness of 1 - 4 mm, and to the left for a front plate thickness of 3 - 6 mm).
5. Mount the support ⑥ with pressure plate from behind onto the actuating element.
  - Support for actuation of the middle contact block (of 3 blocks) for front plate mounting (3SB3901-0AC).
  - Support for snap-mounting 3 contact blocks for pushbutton, mushroom pushbutton, push-pull button and pushbutton switch (3SB3901-0AB).
6. Snap the contact block ④ or the lampholder ⑤ onto the actuating element from behind.

#### Note

Single-pole contact blocks and lampholders for front plate mounting can also be used. The enclosures can be optionally equipped with actuating elements and contact blocks and connected to AS-Interface.

### 5.3.3 Mounting on printed circuit boards - 3SB3



- ① Actuating element
- ② Front plate
- ③ Holder
- ④ Printed circuit board holder
- ⑤ Lampholder
- ⑥ Contact block
- ⑦ Printed circuit board

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**Note**

**Round and square actuating elements**

The same method is used to attach round and square actuating elements.

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**Note**

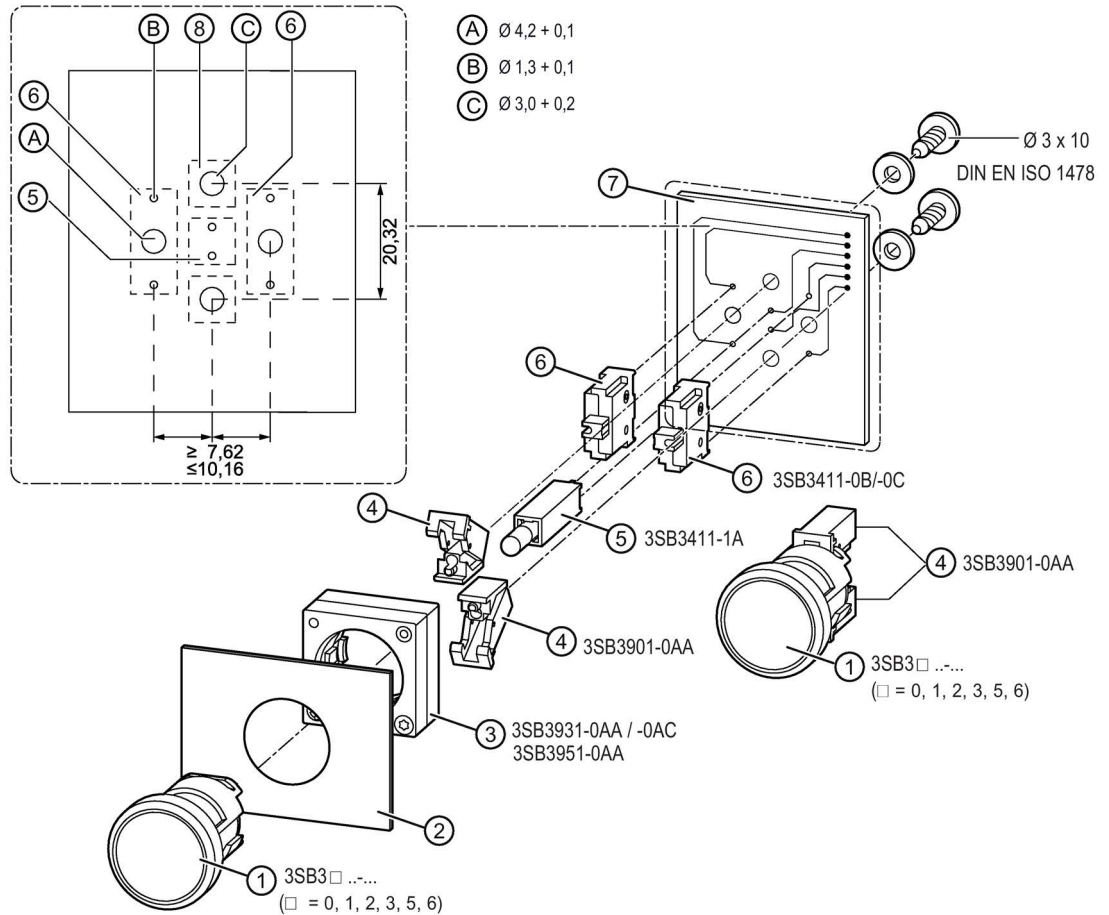
**Number of printed circuit board bases**

One or more printed circuit board bases must be used, depending on the application.

If the printed circuit board is attached, one printed circuit board base is sufficient. For an unattached printed circuit board, at least two printed circuit board bases must be used.

---

## 5.3.4 Mounting on printed circuit board



1. Insert the actuating element / indicator light ① from the front into the opening in the front plate ②.
2. Attach the holder ③ from behind to the actuating element ①. Note the inscription on the holder ③ regarding the front plate thickness and loosen the locking wheel if necessary (turn to the right for a front plate thickness of 1 - 4 mm or to the left for a front plate thickness of 3 - 6 mm) before you place the holder on the actuating element.

**NOTICE****Correct positioning of the holder depending on the front plate thickness**

Read the information pertaining to front plate thickness that is printed on the holder and place the holder (from behind) onto the actuating element in the arrow direction indicated.

3. Tighten the locking wheel on the holder (tighten to the right for a front plate thickness of 1 - 4 mm, and tighten first to the left and then to the right for a front plate thickness of 3 - 6 mm).
4. Equip the printed circuit board ⑦ with the components.
5. Snap-mount the printed circuit board base ④ on the actuating element.
6. Attach the printed circuit board ⑦ by two 3x10 screws to the printed circuit board base ④.

### 5.3.5 Holder

The purpose of the holder is to securely hold the actuating or signaling element. It is mounted on the rear face of the front plate.

The holder for the round versions is set to a front plate thickness of 1 to 4 mm when delivered and is placed in the direction of the arrow ↑ 1–4 mm ↑ on the actuator/indicator from the back. The fixing screw is located underneath, on the right.

For a front panel thickness of 3 to 6 mm, the holder is reversed and mounted in the direction of the arrow at ↑ 3–6 mm ↑ and the fixing screw is located on the upper right. In this case, the fixing screw must be rotated counterclockwise to its limit before mounting the holder.

The front plate thickness of 1 to 4 mm can be compensated with the holder for the square version.

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#### Note

#### **Note the maximum permissible front plate thickness!**

When label holders, protective caps or similar accessories are used, it is important to remember that the maximum permissible front plate thickness must be reduced by the wall thickness of the relevant accessory.

---

### 5.3.6 Contact blocks and lampholders

The contact blocks are fitted with a slow-action contact (1 NO contact or 1 NC contact) with double operating contacts. These ensure a high switching reliability even with small voltages and currents, such as 5 V/1 mA. They are suitable for use in electronic systems as well as conventional controls.

The switch contacts of the NC contact are positively driven.

For illuminated elements, lampholders with an integrated LED or with a base for replaceable bulbs can be supplied.

Contact blocks and lampholders feature terminal designations according to EN 50013.

### 5.3.7 Connection methods

Devices with the following connections are available:

- Screw (box) terminals with open terminal points, captive screws, funnel-shaped cable entries and screwdriver guides
- Spring-type terminals for vibration-resistant connection
- Solder pin connection (0.8 mm × 0.8 mm solder pins)

When single-pole blocks are used, command points can be mounted close together.

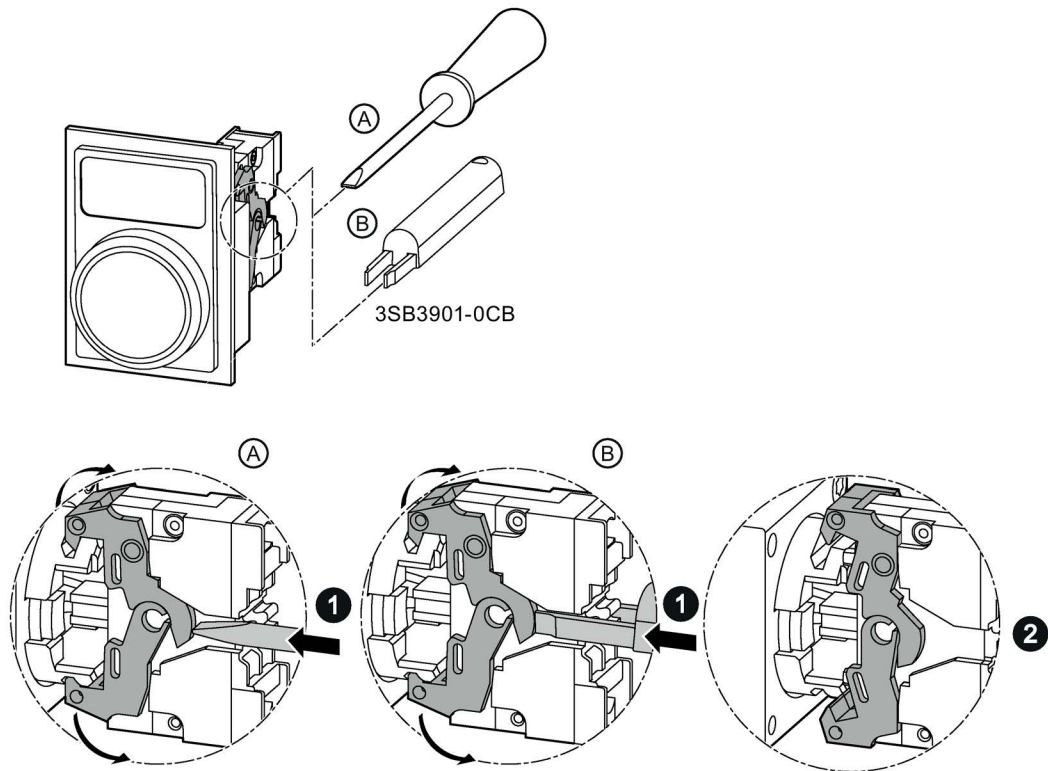
### Marking

Devices can be labeled by direct laser marking of handles and by the use of insert labels or backing plates. The software "Label Designer" with appropriate labels can be supplied for applications with less demanding requirements of label wear resistance. Customers can use this software to create their own labels with texts or symbols.

### Enclosures

Enclosures made of plastic or metal and with 1, 2, 3, 4 or 6 command points are available for round units. Enclosures with more than 6 command points can be supplied on request. These are suitable for both round and square units. See Chapter Enclosure mounting (Page 67).

### 5.3.8 Dismantling the contact block



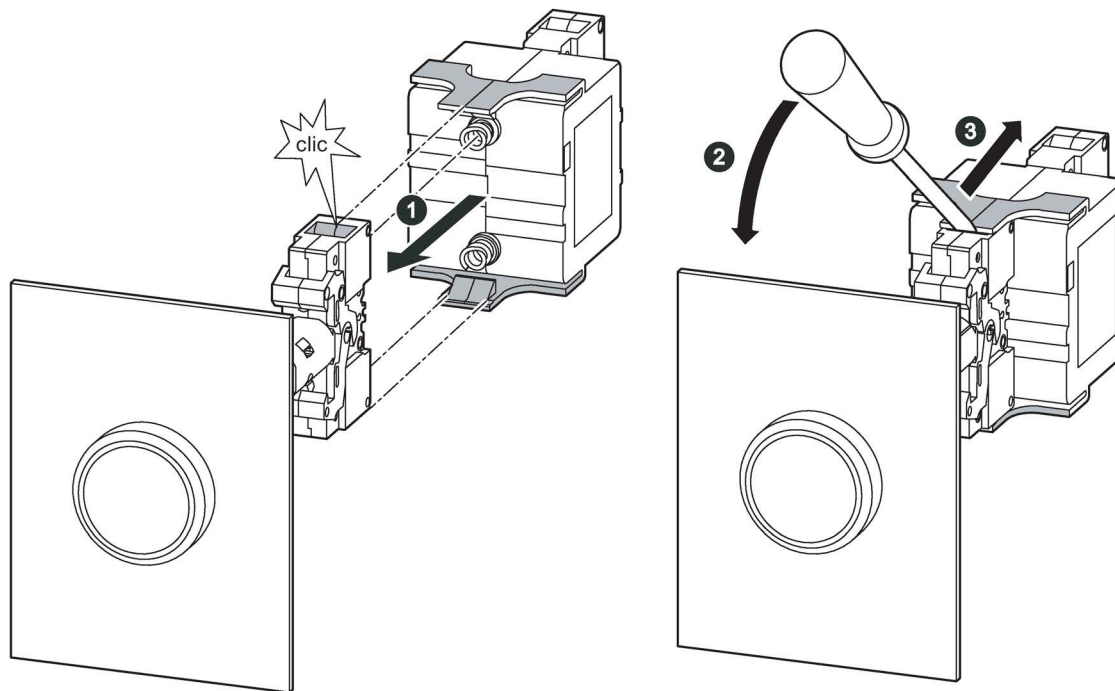
3SB3901-0CB Dismantling tool for contact blocks and lampholders with screw terminals

You can use either a screwdriver (A) or the dismantling tool 3SB3901-0CB (B) to detach the contact block from the holder.

1. Press the screwdriver or the dismantling tool into the small recesses in the contact block.
2. The snap-in hooks of the contact block are opened and the contact block can be removed.



### 5.3.9 Mounting and dismantling the transformer for a lamp element



#### Mounting

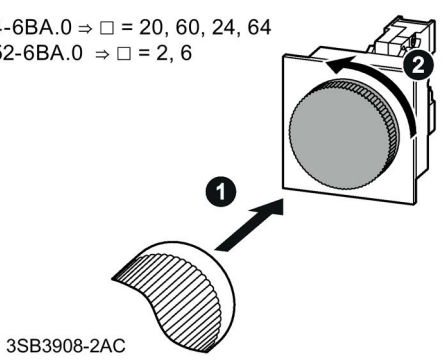
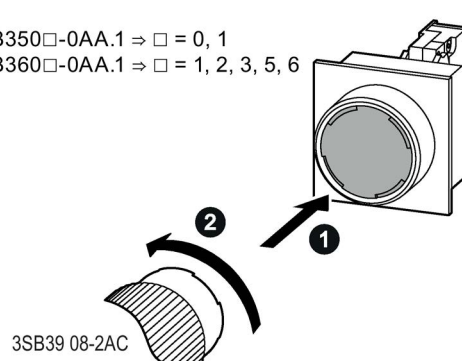
1. Mount the transformer in the specified direction on the lampholder.

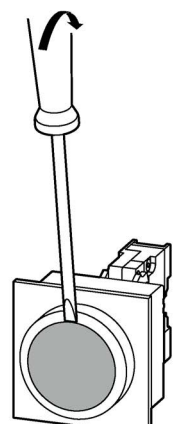
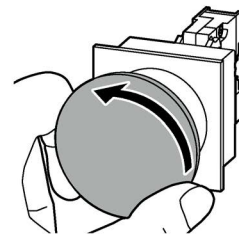
#### Dismantling

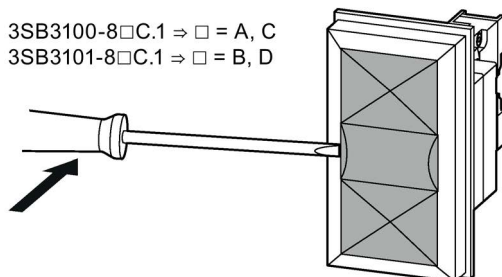
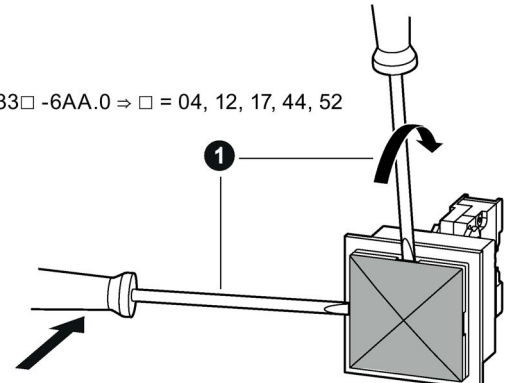
Use a screwdriver to detach the transformer from the lampholder.

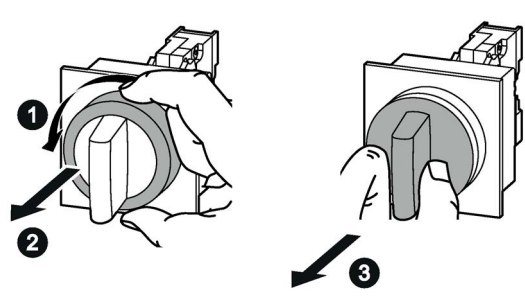
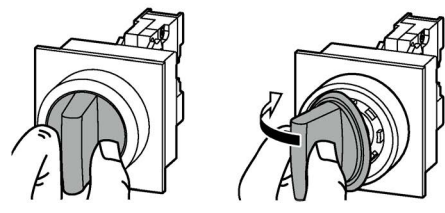
1. Push the screwdriver into the small recess in the lampholder and use it to release the snap-in hook.
2. Keep the snap-in hook for the transformer open and withdraw the transformer in the specified direction.

5.3.10 Dismantling lenses and buttons

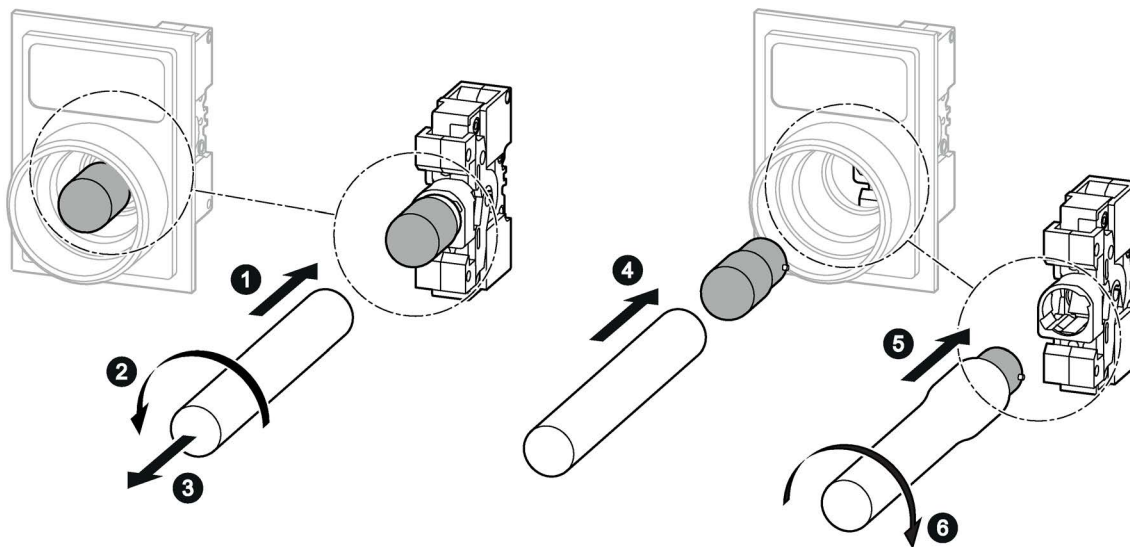
Indicator light with concentric rings, plastic or metal	Pushbutton and illuminated pushbutton, flat, metal
<p>3SB3□4-6BA.0 ⇒ □ = 20, 60, 24, 64                  3SB3□52-6BA.0 ⇒ □ = 2, 6</p>  <p>3SB3908-2AC</p>	<p>3SB350□-0AA.1 ⇒ □ = 0, 1                  3SB360□-0AA.1 ⇒ □ = 1, 2, 3, 5, 6</p>  <p>3SB39 08-2AC</p>

Pushbutton and illuminated pushbutton, flat, plastic	Push-pull button or illuminated mushroom pushbutton, plastic or metal
<p>3SB3001-0AA.1                  3SB320□ -0AA.1 ⇒ □ = 1, 2, 3, 5, 6, 7                  3SB321□ -0.AA.1 ⇒ □ = 3, 4, 6, 8                  3SB32□. -0.AA.1 ⇒ □ = 2, 3, 4, 5</p> 	 <p>3SB3001-1□A.1 ⇒ = C, D, E, G, R                  3SB3201-1□A.1 ⇒ = C, E, R                  3SB3501-1□A.1 ⇒ = C, E, R                  3SB3601-1□A.1 ⇒ = C, E, R</p>

<p>Twin pushbutton, flat or raised, plastic</p> <p>3SB3100-8□C.1 ⇒ □ = A, C          3SB3101-8□C.1 ⇒ □ = B, D</p> 	<p>Indicator light, square with holder, plastic</p> <p>3SB33□-6AA.0 ⇒ □ = 04, 12, 17, 44, 52</p> 
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<p>Selector switch, metal</p> <p>3SB350□-2.A.1 ⇒ □ = 0, 1</p> 	<p>Selector switch, plastic</p> <p>3SB3□1-2.A.1 ⇒ = 00, 11, 50          3SB3□0-2.A.1 ⇒ = 00, 11          3SB32□-2.A.1 ⇒ = 01, 02, 08, 10, 25, 50, 36</p> 
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### 5.3.11 Lamp replacement



1. Place the 3SB2908-2AB assembly tool over the lamp.
2. Turn the tool in a counter-clockwise direction in order to release the bayonet lock of the lamp.
3. Use the tool to remove the lamp from its socket.
4. To insert a lamp, place the lamp in the assembly tool.
5. Push the assembly tool with attached lamp onto the contact block.
6. Turn the assembly tool clockwise in order to lock the bayonet lock of the lamp.

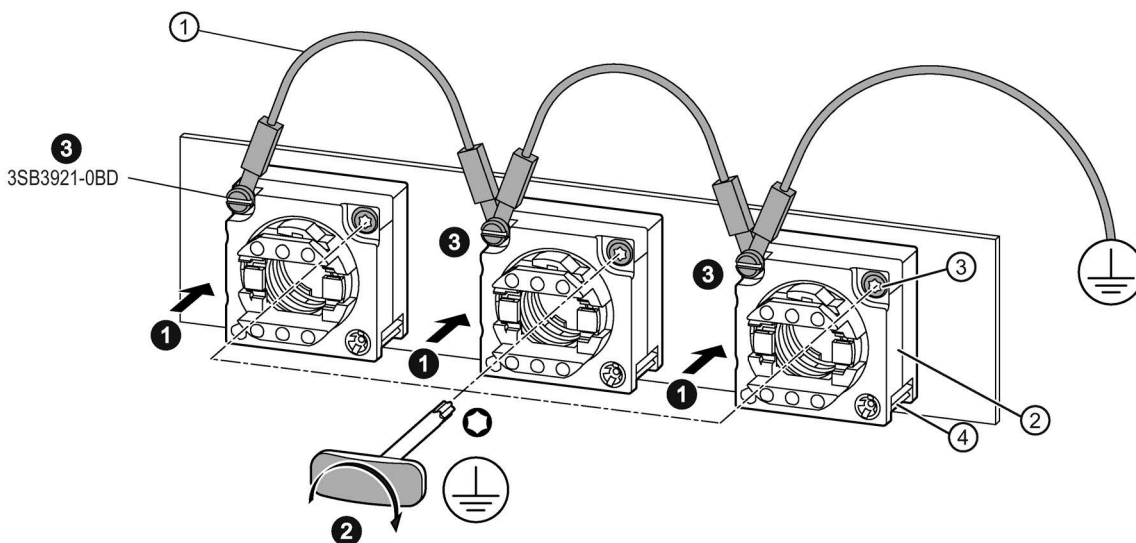
## 5.3.12 Grounding of the front plate

**NOTICE****For installation in front plates / enclosures made of electrically non-conductive material**

If you use an enclosure made of plastic, you must loop a grounding cable ① through any metal actuating elements and lens assemblies and connect it to ground by means of a grounding screw.

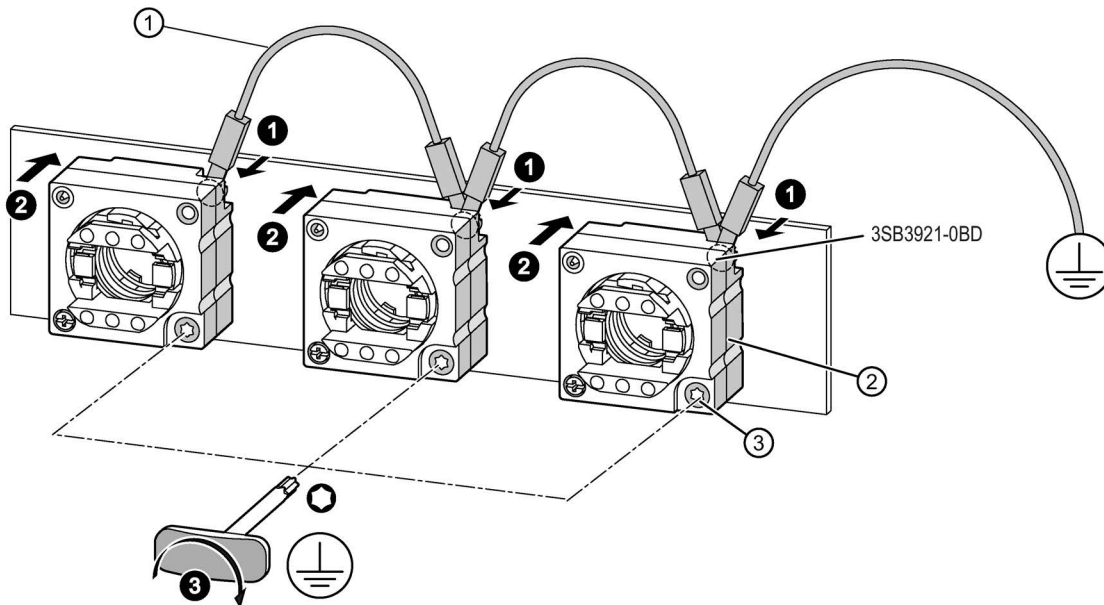
**⚠ CAUTION****Risk of injury**

In order to ensure secure connection of the grounding cable, the 3SB3921-0BD grounding screws must be fastened with ring cable lugs.

**Grounding with a front plate thickness of 1 - 4 mm**

1. Place the holder ② from behind onto the actuating element and tighten the locking wheel ④.
2. Tighten the countersunk retaining screw ③.
3. Attach the grounding cable ① with ring cable lugs to the 3SB3921-0BD grounding screw.

Grounding with a front plate thickness of 3 - 6 mm



With a front plate thickness of 3 - 6 mm, the holder must be rotated which means that the grounding screw is positioned between the holder and the front plate.

1. Provisionally attach the grounding cable ① with ring cable lugs and the 3SB3921-0BD grounding screw to the holder.
2. Place the holder ② from behind onto the actuating element and tighten the locking wheel.
3. Tighten the countersunk retaining screw ③.

**NOTICE**

**Metal front plate**

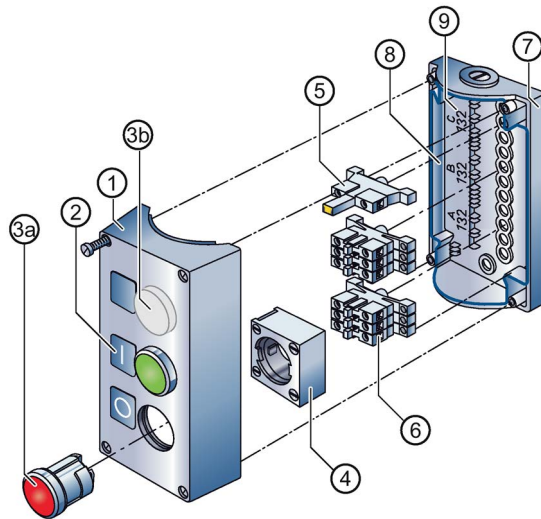
For installation in front plates made of electrically conductive material

With its projecting tip, the countersunk retaining screw ③ (Torx T10) provides both twist protection as well as secure contact with the front plate.

With thickly painted surfaces, the screw can be screwed in further to enhance the twist protection.

The operator is responsible for checking that the protective measure (grounding) is effective.

## 5.3.13 Enclosure mounting



- ① Enclosure top
- ② Labeling plates
- ③a Pushbutton
- ③b Indicator light
- ④ Holder
- ⑤ Contact assignment marking
- ⑥ Contact blocks, lampholders for base mounting
- ⑦ Enclosure lower part
- ⑧ Identification letters for the command points
- ⑨ Sequence numbers

### 5.3.13.1 Enclosures

Plastic enclosures and metal enclosures with 1, 2, 3, 4 or 6 command points are available. The mounting holes are located outside the wiring space.

The cable routing for a metric screw connection M20 or M25 is on the narrow edges at the top and bottom of the enclosure.

The plastic enclosures conform to the "Total insulation" protective measure.

### 5.3.13.2 Actuating elements

Round actuating elements and lens assemblies with nominal diameter 22 mm can be used.

Plastic enclosures are equipped as standard with actuators and indicators made of plastic. Metal enclosures are equipped with metal actuators and indicators.

### 5.3.13.3 Contact blocks and lampholders

Contact blocks and lampholders for base mounting are snap-mounted in the enclosure lower part. The following can be fitted per command point:

- 3 contact blocks or
- 2 contact blocks + 1 lampholder or lampholder with integrated voltage reducer.

The contact blocks have movable double-break contacts and thus offer high contact stability, i.e. they are also suitable for use in electronic controllers. Function numbers are printed on the contact blocks.

Single-pole contact blocks and lampholders can be used for front plate mounting.



### 5.3.13.4 Mounting the enclosure on a fixing plate

#### 3SB380.-0... plastic enclosures

Fixing plates are pre-assembled in plastic enclosures. Contact blocks, lampholders or AS-i slaves can be snap-mounted directly on these plates.

If contact blocks are mounted from the front in the enclosure cover, the fixing plate must be removed first (for space reasons).

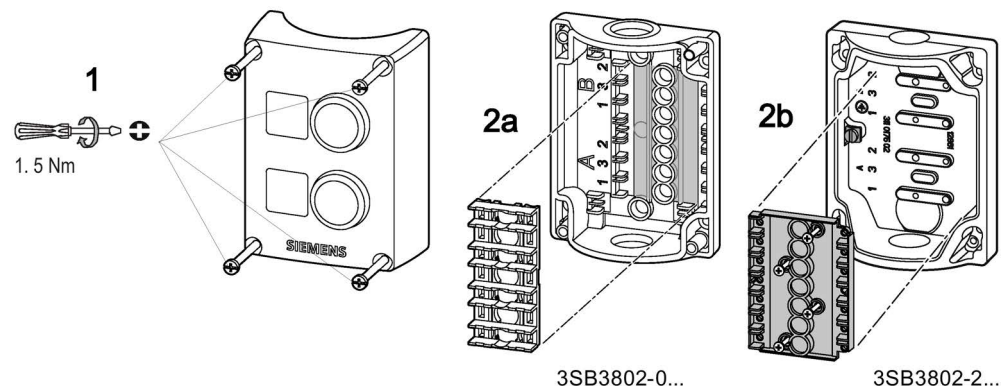
When the fixing plate has been removed from a plastic enclosure, contact blocks can be mounted from the front or in the enclosure base. When the fixing plate has been removed, contact blocks can be mounted directly on the enclosure base but are then held less securely in position.

#### 3SB380.-2... metal enclosures

Fixing plates are pre-assembled in metal enclosures. Contact blocks, lampholders or AS-i slaves can be snap-mounted directly on these plates.

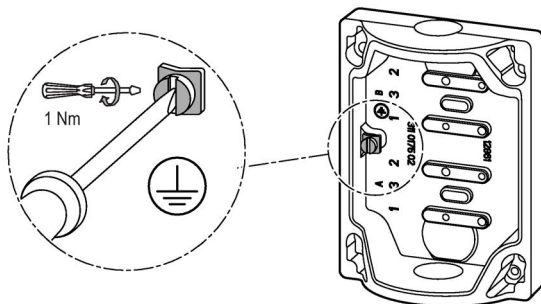
If contact blocks (e.g. pushbuttons or indicator lights) are mounted from the front in the enclosure cover, it will be necessary to unscrew and remove the fixing plate (for space reasons) and it will then be impossible to use contact blocks on the enclosure base.

The diagram below illustrates by way of an example the removal of pre-assembled fixing plates from the enclosure base on an enclosure with two command points.



1. Remove the screws from the enclosure top.
2. 3SB3802-0... (2a) plastic enclosure: Use a flathead screwdriver to lever out the fixing plate.  
3SB3802-2... (2b) metal enclosures: Remove the screws from the fixing plate and remove it.

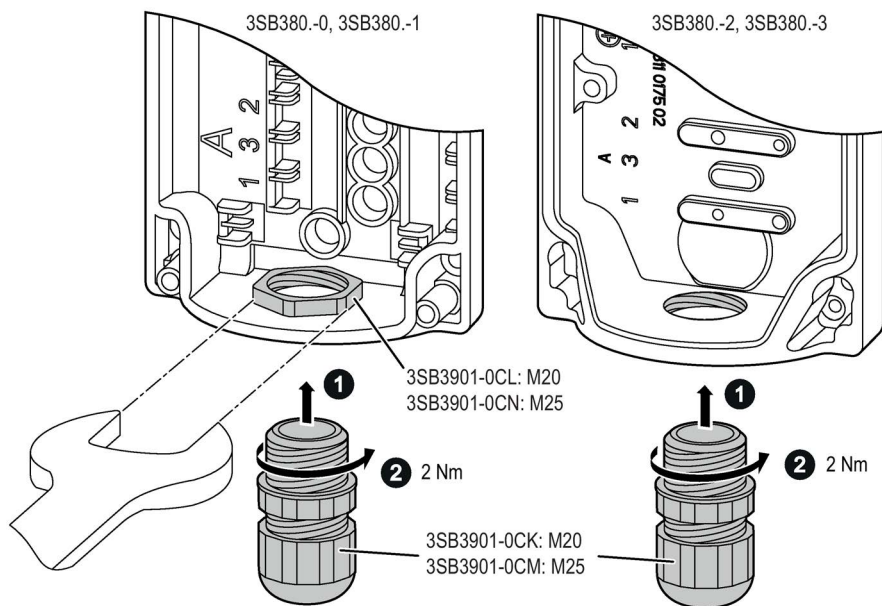
### 5.3.13.5 Grounding in metal enclosures



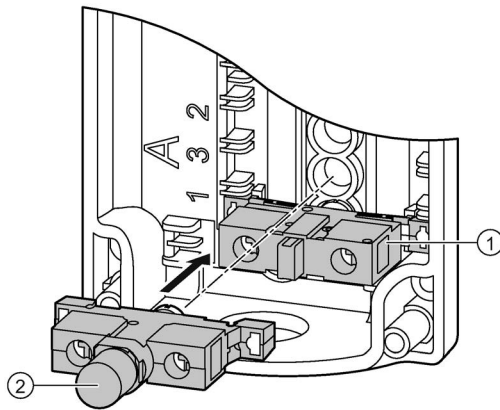
<p><b>⚠ WARNING</b></p> <p><b>Danger of electric shock.</b></p> <p>Metal enclosures must be grounded.</p> <p>The grounding screw is located in the lower part of the enclosure.</p>
---

### 5.3.13.6 Assembly of the cable gland

The diagram below illustrates the procedure for assembling the cable gland on plastic enclosures (3SB380.-0... / 3SB380.-1...) and on metal enclosures (3SB380.-2... / 3SB380.-3...)



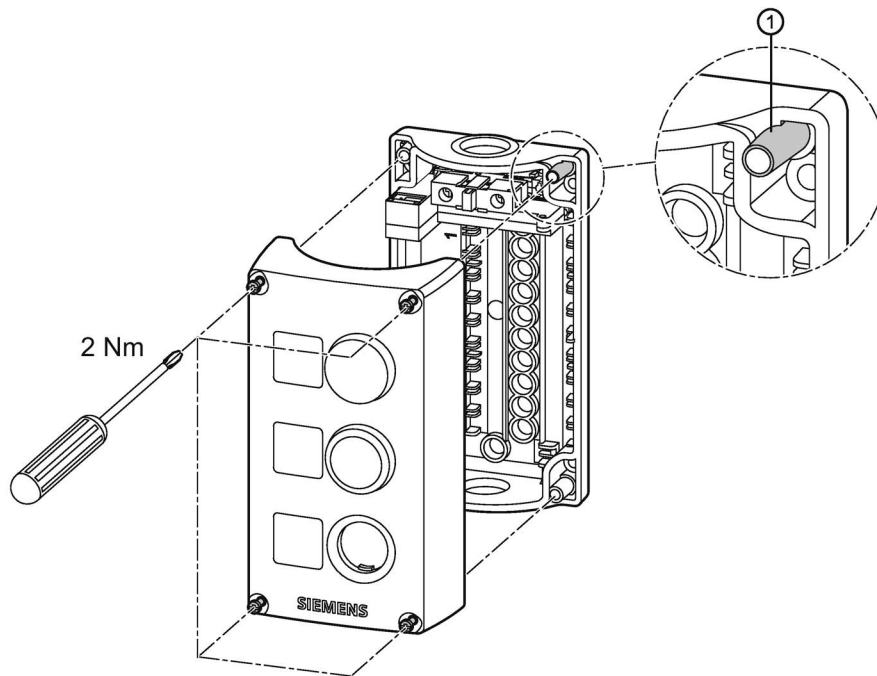
### 5.3.13.7 Equipping with contact block and light



The contact blocks and lampholders are mounted in the lower part of the enclosure. Follow the steps below to equip an enclosure with contact blocks and a lampholder:

1. Snap the contact block ① onto the slot in the enclosure marked with "1" or "2".
2. Place the lampholder ② on the slot marked with "3".

5.3.13.8 Mounting of the enclosure top

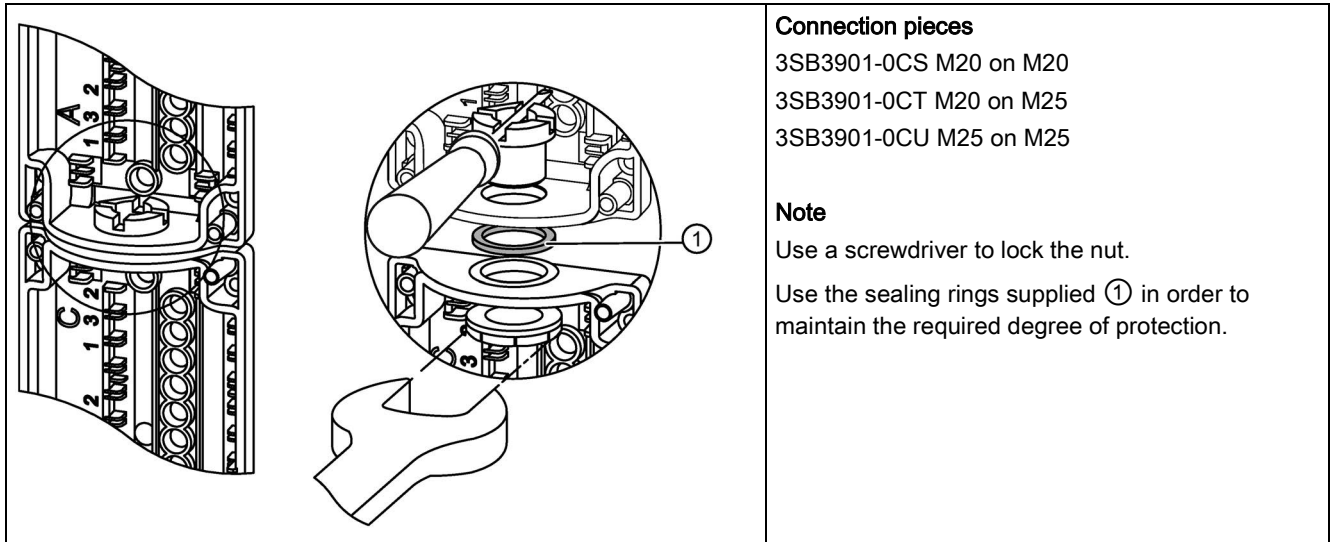


**Note**

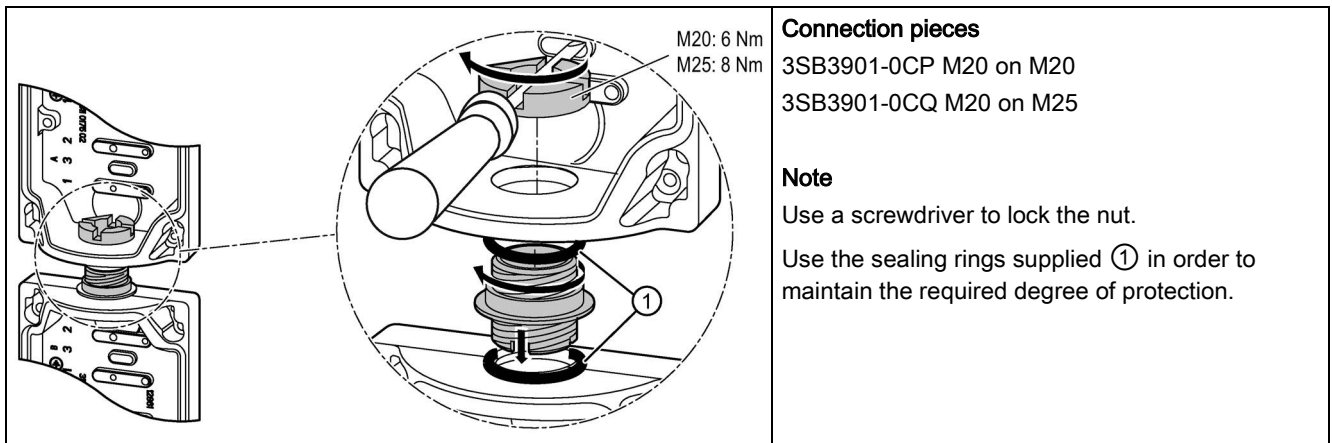
Pay attention to the proper position when mounting the enclosure top. Only one correct position is possible, recognizable by the slightly raised screw guide at the top right in the enclosure ①.

### 5.3.13.9 Connection pieces for connecting two enclosures

#### Connection between two enclosures without clearance



#### Connection between two enclosures with clearance



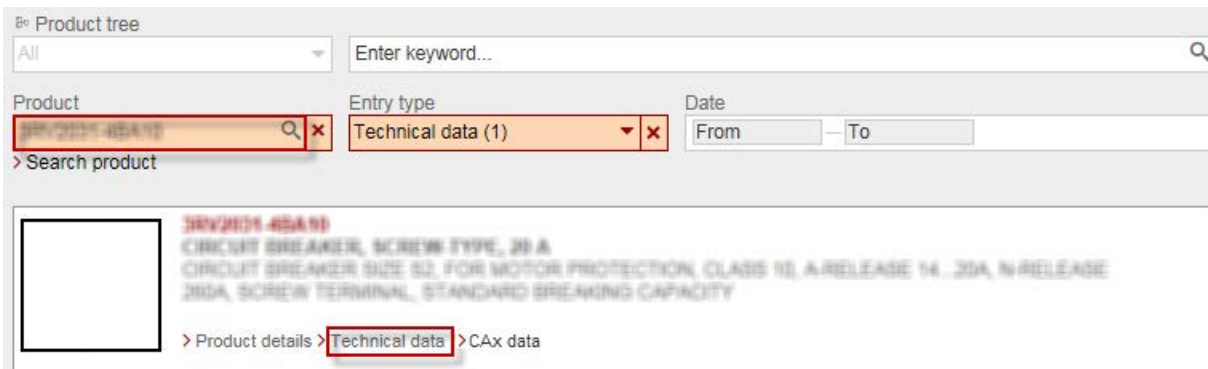
## 5.4 Technical specifications

### 5.4.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.



## 5.4.2 Contact blocks and lampholder - screw terminals

Type		3SB3400-0	3SB1400-0J	3SB3400-1
		3SB3420-0		3SB3420-1
<b>Contact blocks and lampholders</b>				
<b>Standards</b>		IEC 60947-5-1, IEC 60947-5-5, EN 60947-5-1, EN 60947-5-5		
<b>Type of connection</b>		⊕ Screw terminals		
Rated insulation voltage $U_i$	V	400		250
For pollution degree according to IEC 60947-1		Category 3		Category 3
Rated impulse withstand voltage $U_{imp}$	kV	4		4
Conventional thermal current $I_{th}$	A	10		—
<b>Rated operational currents <math>I_e</math> at rated operational voltage <math>U_e</math></b>				
Alternating current AC-12				
• At $U_e = 24$ V	A	10		—
• At $U_e = 48$ V	A	10		—
• At $U_e = 110$ V	A	10		—
• At $U_e = 230$ V	A	10		—
• At $U_e = 400$ V	A	10		—
Alternating current AC-15				
• At $U_e = 24$ V	A	6		—
• At $U_e = 48$ V	A	6		—
• At $U_e = 110$ V	A	6		—
• At $U_e = 230$ V	A	6		—
• At $U_e = 400$ V	A	3	4	—
Direct current DC-12				
• At $U_e = 24$ V	A	10	10	—
• At $U_e = 48$ V	A	5	—	—
• At $U_e = 110$ V	A	2,5	2	—
• At $U_e = 230$ V	A	1	0,5	—
Direct current DC-13				
• At $U_e = 24$ V	A	3	5	—
• At $U_e = 48$ V	A	1,5	—	—
• At $U_e = 110$ V	A	0,7	0,5	—
• At $U_e = 230$ V	A	0,3	0,2	—
<b>Contact stability</b>				
• Test voltage	V	5		—
• Test current	mA	1		—



5.4 Technical specifications

Type	3SB3400-0 3SB3420-0	3SB1400-0J	3SB3400-1 3SB3420-1
<b>Lamps</b>	—		Incandescent lamps, glow lamps and LED lamps
• Lampholder	—		BA9s
<b>Short-circuit protection</b> , weld-free, acc. to IEC 60947-5-1			
• DIAZED fuse links, utilization category gG according to IEC 60269-3-1 (DIN VDE 0636-301)		Dz 10 A	
• DIAZED fuse links, quick according to DIN VDE 0635		Dz 16 A	
• Miniature circuit breaker with C characteristic in accordance with IEC 60898 (VDE 0641)	A	10	
<b>Mechanical endurance</b>		10 × 10 <sup>6</sup> operating cycles	
<b>Electrical endurance</b>			
• With utilization categories AC-15 with contactors 3RT1015 to 3RT1026		10 × 10 <sup>6</sup> operating cycles	
• With utilization category DC-12, DC-13		With direct current, the service life of the contact pieces depends not only on the breaking current but also on the operational voltage, the inductance of the circuit and the operating speed.	
Switching frequency	1/h	1000 operating cycles	
<b>Degree of protection</b> acc. to IEC 60529			
• Connections		IP20	
• Contact chambers		IP40	—
<b>Touch protection</b> according to EN 50274 and BGV A2 (VBG 4)		Finger-safe	
<b>Conductor cross-sections</b> <sup>1)</sup>			
• Finely stranded, without end sleeves	mm <sup>2</sup>	—	
• Finely stranded, with end sleeves according to DIN 46228	mm <sup>2</sup>	2 × (0,5 ... 1,5)	
• Solid	mm <sup>2</sup>	2 × (1 ... 1,5)	
• Solid, with end sleeves according to DIN 46228	mm <sup>2</sup>	2 × (0,5 ... 0,75)	
• AWG cables, solid or stranded		2 × AWG 18 ... 14	
Tightening torque, connection screw	Nm	0,8	

1) For standard screwdriver size 2 or Pozidriv 2



## 5.4.3 Contact blocks and lampholder - spring-type terminals/solder pins

Type		3SB3403-0	3SB3403-1	3SB3411-0	3SB3411-1
		3SB3423-0	3SB3423-1		
<b>Contact blocks and lampholders</b>					
<b>Standards</b>		IEC 60947-5-1, IEC 60947-5-5, EN 60947-5-1, EN 60947-5-5			
<b>Type of connection</b>		 Spring-type terminals		 Solder pins	
Rated insulation voltage $U_i$	V	400		250	60
For pollution degree according to IEC 60947-1		Category 3		Category 3	Category 3
Rated impulse withstand voltage $U_{imp}$	kV	4	4	4	1,5
Conventional thermal current $I_{th}$	A	10	—	10	—
<b>Rated operational currents <math>I_e</math> at rated operational voltage <math>U_e</math></b>					
Alternating current AC-12					
• At $U_e = 24$ V	A	10	—	10	—
• At $U_e = 48$ V	A	10	—	10	—
• At $U_e = 110$ V	A	10	—	10	—
• At $U_e = 230$ V	A	10	—	10	—
• At $U_e = 400$ V	A	10	—	—	—
• Alternating current AC-15					
• At $U_e = 24$ V	A	6	—	4	—
• At $U_e = 48$ V	A	6	—	4	—
• At $U_e = 110$ V	A	6	—	4	—
• At $U_e = 230$ V	A	6	—	4	—
• At $U_e = 400$ V	A	3	—	—	—
• Direct current DC-12					
• At $U_e = 24$ V	A	10	—	10	—
• At $U_e = 48$ V	A	5	—	5	—
• At $U_e = 110$ V	A	2,5	—	2,5	—
• At $U_e = 230$ V	A	1	—	1	—
• Direct current DC-13					
• At $U_e = 24$ V	A	3	—	3	—
• At $U_e = 48$ V	A	1,5	—	1,5	—
• At $U_e = 110$ V	A	0,7	—	0,7	—
• At $U_e = 230$ V	A	0,3	—	0,3	—
<b>Contact stability</b>					
• Test voltage	V	5	—	5	—
• Test current	mA	1	—	1	—

Type	3SB3403-0 3SB3423-0	3SB3403-1 3SB3423-1	3SB3411-0	3SB3411-1
<b>Lamps</b>	—	Incandescent lamps, glow lamps and LED lamps	—	Incandescent lamps and LED lamps
• Lampholder	—	BA9s	—	Wedge bases
<b>Short-circuit protection</b> , weld-free, acc. to IEC 60947-5-1				
• DIAZED fuse links, utilization category gG according to IEC 60269-3-1 (DIN VDE 0636-301)	Dz 10 A			
• DIAZED fuse links, quick according to DIN VDE 0635	Dz 16 A			
• Miniature circuit breaker with C characteristic in accordance with IEC 60898 (VDE 0641)	A	10		
<b>Mechanical endurance</b>	10 × 10 <sup>6</sup> operating cycles			
<b>Electrical endurance</b>				
• With utilization categories AC-15 with contactors 3RT1015 to 3RT1026	10 × 10 <sup>6</sup> operating cycles			
• With utilization category DC-12, DC-13	With direct current, the service life of the contact pieces depends not only on the breaking current but also on the operational voltage, the inductance of the circuit and the operating speed.			
Switching frequency	1/h	1000 operating cycles		
<b>Degree of protection</b> acc. to IEC 60529				
• Connections	IP20			
• Contact chambers	IP40	—	IP40	—
<b>Touch protection</b> according to EN 50274 and BGV A2 (VBG 4)	Finger-safe		—	
<b>Conductor cross-sections</b> <sup>1)</sup>				
• Finely stranded, without end sleeves	mm <sup>2</sup>	2 × (0,25 ... 1,5)		—
• Finely stranded, with end sleeves according to DIN 46228	mm <sup>2</sup>	2 × (0,25 ... 0,75)		—
• Solid	mm <sup>2</sup>	2 × (0,25 ... 1,5)		—
• Solid, with end sleeves according to DIN 46228	mm <sup>2</sup>	—		—
• AWG cables, solid or stranded	2 × AWG 24 ... 16		—	
Tightening torque, connection screw	Nm	—		—
Solder pins	mm <sup>2</sup>	—		0,8 × 0,8

1) For standard screwdriver size 2 or Pozidriv 2

## 5.4.4 Data according to UL and CSA

Type		3SB3400-0	3SB3400-1	3SB3403-0	3SB3403-1	3SB3411-0	3SB3411-1
		3SB3420-0	3SB3420-1	3SB3423-0	3SB3423-1		
<b>Data according to UL and CSA</b>							
Rated operational voltage	V	AC300	—	AC300	—	AC300	—
Conventional thermal current (uninterrupted current)	A	10	—	10	—	10	—
Switching capacity		A 300, R 300, A 600 same polarity					
Rated voltage (lamps)							
• Lamp with BA 9s base	V	—	AC 125	—	AC 125	—	—
• Lamp with wedge base	V	—	AC 60	—	AC 60	—	AC 60
• Lampholder with integrated LED	V	—	24 AC/DC, 110 AC, 230 AC	—	24 AC/DC, 110 AC, 230 AC	—	—
Rated power (lamps)	W	—	2,5	—	2,5	—	1

## 5.4.5 Actuators and indicators

Type	3SB30	3SB31	3SB35
	3SB32	3SB33	3SB36
<b>Actuators and indicators</b>			
Enclosure material	Plastic		Metal
Design	Round	Square	Round
<b>Tightening torques</b>			
• Screw on holder	Nm max. 1		
<b>Mechanical endurance</b>			
• Pushbuttons	10 × 10 <sup>6</sup> operating cycles		
• Illuminated pushbuttons	3 × 10 <sup>6</sup> operating cycles		
• Actuators, rotary or latching	3 × 10 <sup>5</sup> operating cycles		
• Key-operated switches with key monitoring	1 × 10 <sup>5</sup> operating cycles		
Switching frequency	1/h	1000 operating cycles	
Climatic withstand capability according to EN ISO 6270-2	Climate-proof KTW24; suitable for marine applications		
<b>Ambient temperature</b>			
• During operation, non-illuminated devices and with LED	°C	-25 ... +70	
• During operation, devices with incandescent lamp	°C	-25 ... +60	
• During storage, transport	°C	-40 ... +80	
<b>Degree of protection acc. to IEC 60529</b>			
• Actuators and indicators, standard	IP66	IP65	IP67 and NEMA Type 4
- With protective caps	IP67	IP67	—
• Key-operated switch with key monitoring	IP54	—	—
• Twin pushbuttons (3SB31)	IP65	—	—
<b>Shock resistance</b> acc. to IEC 60068-2-27 for half-sine shock type, 11 ms shock duration			
• Devices without incandescent lamp	≤ 50 g		
• Devices with incandescent lamp	≤ 30 g		
<b>Vibration resistance</b> acc. to IEC 60068-2-6			
• Acceleration at frequency 20 ... 200 Hz	5 g		

### 5.4.6 Enclosures for command elements

	3SB380.-0, 3SB380.-1	3SB380.-2, 3SB380.-3
Enclosure material	Plastic	Metal
Actuators and indicators	Plastic, round	Metal, round
Standards	IEC 60947-5-1 (VDE 0660 Part 200)	
Degree of protection according to IEC 60529 (VDE 0470-1)	IP65	IP67 + Nema Type 4
Resistance to extreme climates in acc. with DIN 50017	KTW24	
Rated insulation voltage $U_i$	V	400
Rated impulse withstand voltage $U_{imp}$	kV	6
Rated operational current $I_e$ @	A	$\leq 10$
Rated operational current $I_e$ @ 1 ... 3 x	A	$\leq 8$
$P_{vmax}$ per command point	W	2,5

### 5.4.7 Accessories

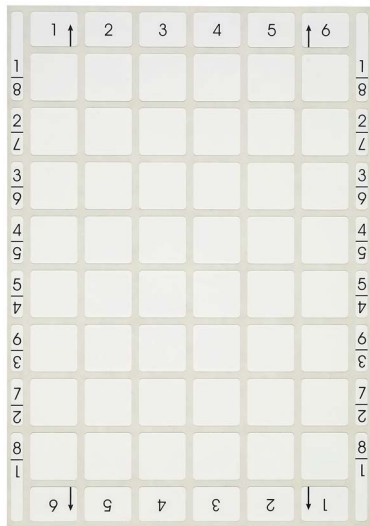
	Article No.
<b>Holder</b>	
• Plastic round	3SB3931-0AA
• Plastic square	3SB3951-0AA
• Metal round	3SB3931-0AC
<b>Contact block</b> for front plate mounting, spring-type terminals	3SB3403-0..
<b>Lampholder</b>	3SB3403-1..
<b>Support element</b> (for snapping on 3 contact blocks)	3SB3901-0AB
<b>Blanking tool</b> (26 mm × 26 mm, for square version)	3SB3941-0AF
<b>Printed circuit board holder</b>	3SB3901-0AA
<b>Lampholder</b>	3SB3411-1A
<b>Contact block</b> for use on printed circuit boards, solder connection	
• With one contact, 1 NO, mounting depth 44 mm	3SB3411-0B
• With one contact, 1 NC, mounting depth 44 mm	3SB3411-0C
<b>Connection pieces</b>	
For connecting two enclosures without clearance	
• M20 on M20	3SB3901-0CS
• M20 on M25	3SB3901-0CT
• M25 on M25	3SB3901-0CU
For connecting two enclosures with clearance	
• M20 on M20	3SB3901-0CP
• M20 on M25	3SB3901-0CQ

### 5.4.8 SIRIUS Label Designer

#### Software/Tool SIRIUS Label Designer

With this software and the self-inscription labels supplied with it, it is possible to customers to create their own labeling plate using a standard laser printer. The adhesive labels can be stuck to our label holders. The latching labels can be snapped onto the label holders. The round labels are inserted in the caps of the illuminated pushbuttons and switches. Three-line texts or symbols can be printed. We recommend our plastic plates for laser inscription for more exacting requirements.

More information is available at: (<http://www.siemens.com/sirius-label-designer>)



3SB390.-2A. Labels for printing

## 5.5 Dimensional drawings

### 5.5.1 Mounting dimensions

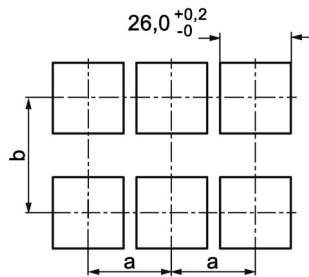
---

#### Note

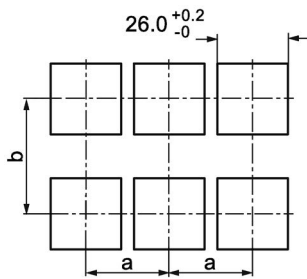
All dimensions specified in mm.

---

#### Round version



Square version



Minimum spacing	a	b
For contact blocks (1 contact) and lampholder		
• For front plate mounting, with screw terminals	30 <sup>1)</sup>	45
• For front plate mounting, with spring-type terminals	30 <sup>1)</sup>	30 <sup>1)</sup>
• For use on PCB, with solder pin connections	30 <sup>1)</sup>	30 <sup>1)</sup>
Contact blocks with 2 contacts		
• For front plate mounting	30 <sup>1)</sup>	50
When using label holders for labeling plates		
• 12.5 mm x 27 mm	30 <sup>1)</sup>	45 <sup>2)</sup>
• 27.0 mm x 27 mm	30 <sup>1)</sup>	60

1) For mushroom pushbutton, EMERGENCY STOP and push-pull button:

Note mushroom diameter d = 40 mm or 60 mm.

2) 60 mm with contact blocks having two contacts.

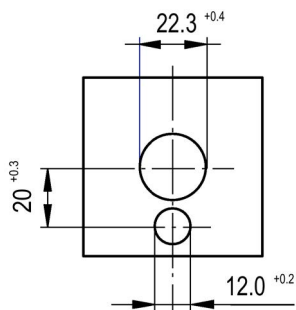


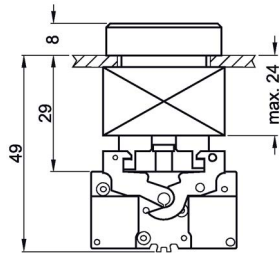
Figure 5-1 Drilling pattern



## 5.5.2 Plastic version, round

Pushbutton, pushbutton switch, illuminated pushbutton or illuminated pushbutton switch with single-pole contact block (and lampholder)

With flat button



Pushbutton or illuminated pushbutton

With raised button

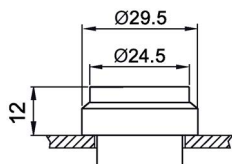


Figure 5-2 3SB3000-0BA.1

Pushbutton

With raised front ring

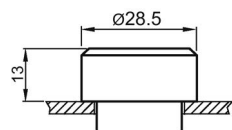


Figure 5-3 3SB3000-0AA.2

Pushbutton

With raised front ring castellated

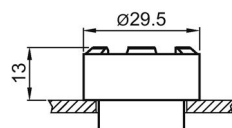


Figure 5-4 3SB3001-0BA.1

**Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable, diameter 30 mm**

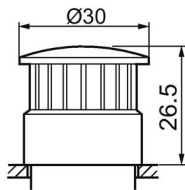


Figure 5-5 3SB3000-1DA.1

**Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable, diameter 40 mm**

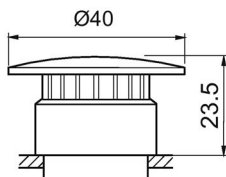


Figure 5-6 3SB3000-1GA.1

**Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable, diameter 60 mm**

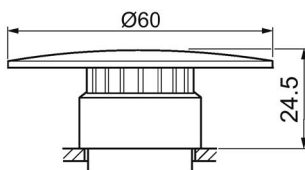


Figure 5-7 3SB3000-1QA.1

**Selector switch or illuminated selector switch**

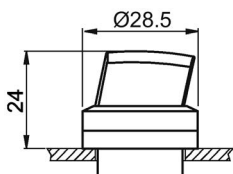


Figure 5-8 3SB300.-2.A.1

### RONIS key-operated switch

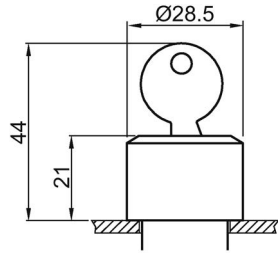


Figure 5-9 3SB3000-4HD.1

### BKS, CES, O.M.R. key-operated switch

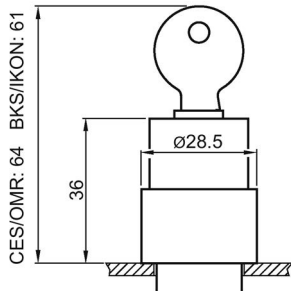
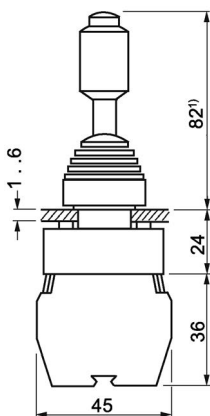


Figure 5-10 3SB3000-4LD.1 (CES),  
3SB3000-4LD05 (CES with key monitoring),  
3SB3000-5AD.1 (BKS),  
3SB3000-3AG.1 (O.M.R.)

### Coordinate switch



1) 82 mm with mechanical lock, 77 mm without mechanical lock

Figure 5-11 3SB120.-7.V01,  
3SB1201-7.W20

### Pushbutton

With raised button, latching

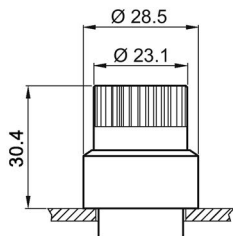


Figure 5-12 3SB3000-0CA.1

### Actuator for potentiometers

With shaft diameter 6 mm, 30 ... 32 mm long

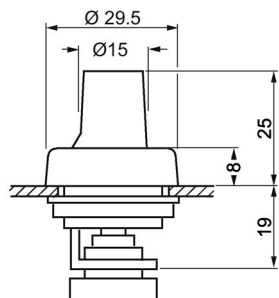


Figure 5-13 3SB1000-7CH07

### Pushbutton with extended stroke

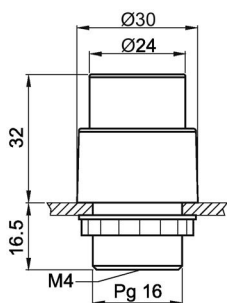


Figure 5-14 3SB3000-0EA11

### EMERGENCY STOP mushroom pushbutton

Diameter 32 mm, with rotate-to-unlatch mechanism

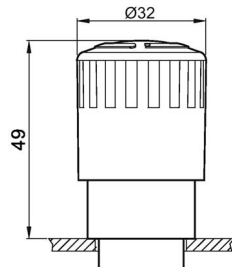


Figure 5-15 3SB3000-1FA20

### EMERGENCY STOP mushroom pushbutton

Diameter 40 mm, with pull-to-unlatch mechanism

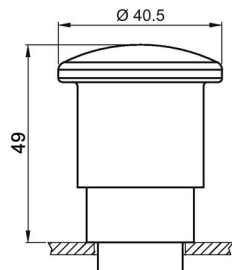


Figure 5-16 3SB3000-1TA20

### EMERGENCY STOP mushroom pushbutton

Diameter 40 mm, with rotate-to-unlatch mechanism

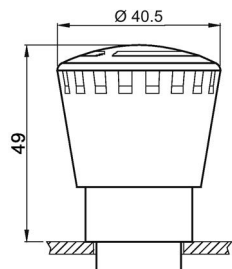


Figure 5-17 3SB3000-1HA2.

**EMERGENCY STOP mushroom pushbutton**

Diameter 60 mm, with rotate-to-unlatch mechanism

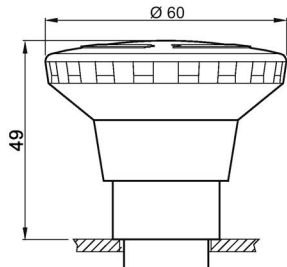


Figure 5-18 3SB3000-1AA20

**EMERGENCY STOP mushroom pushbutton**

With RONIS key-operated switch

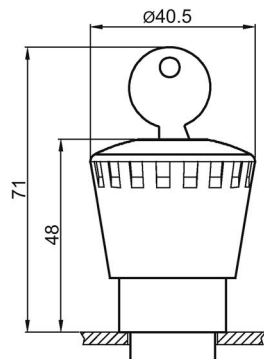


Figure 5-19 3SB3000-1BA20

## EMERGENCY STOP mushroom pushbutton

With CES, BKS, O.M.R. key-operated switch

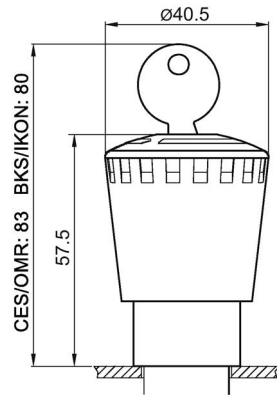


Figure 5-20 3SB3000-1KA20 (CES),  
3SB3000-1LA20 (BKS),  
3SB3000-1MA20 (O.M.R.)

## Indicator light

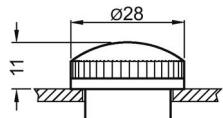


Figure 5-21 3SB3001-6AA.0

## Acoustic signaling device

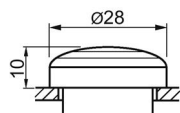


Figure 5-22 3SB3000-7AA10

### 5.5.3 Twin pushbutton (round feed-through opening)

#### Twin pushbutton

With flat buttons

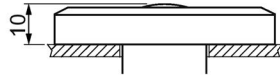


Figure 5-23 3SB3100-8AC.1, 3SB3101-8BC.1

#### Twin pushbutton

With raised buttons

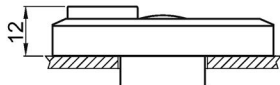
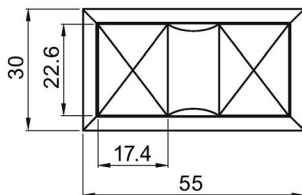


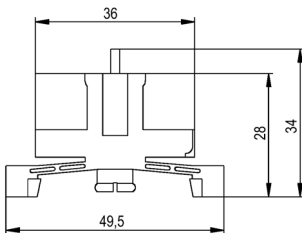
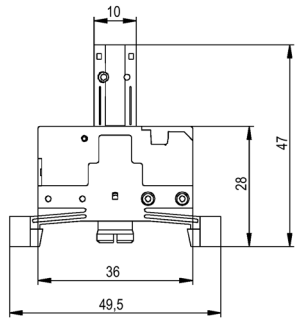
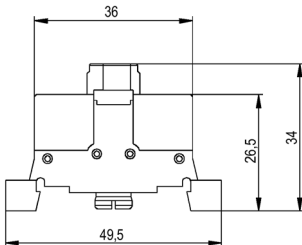
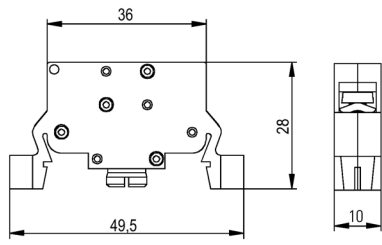
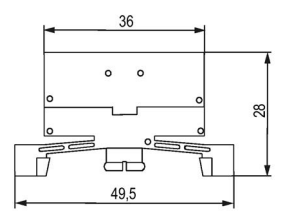
Figure 5-24 Twin pushbutton with indicator light, with flat and raised square button, incl. holder for 3 elements 3SB3101-8DC31

With or without indicator light, top view





### 5.5.4 Contact blocks for base mounting

 <p>Contact block with 1 contact, screw terminals 3SB3420-0B(A) Contact block with 1 contact, spring-type terminals 3SB3423-0B(A)</p>	 <p>Lampholder with integrated LED, screw terminals 3SB342.-1xy (x = P, Q, R) (y = A, B, C, D, E)</p>
 <p>Lampholder BA 9S, screw terminals, 3SB3420-1A, 3SB3420-1C</p>	 <p>Support terminal, screw terminals, 3SB3901-0AG, 3SB3901-0AH, 3SB3901-0AJ</p>
 <p>Support terminal, spring-type terminals 3SB3423-2F, 3SB3423-2G, 3SB3423-2H</p>	

### 5.5.5 Accessories for plastic version, round

#### Holder

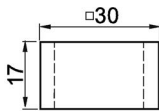


Figure 5-25 3SB3931-0AA

#### Blanking plug

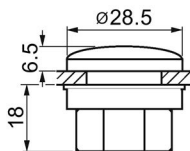


Figure 5-26 3SB3921-0AA

### 5.5.6 Plastic version, square 26 mm x 26 mm

#### Pushbutton, pushbutton switch, illuminated pushbutton or illuminated pushbutton switch

With flat button

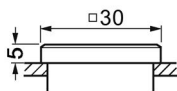


Figure 5-27 3SB3110-0AA.1

#### Pushbutton

With raised front ring

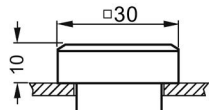


Figure 5-28 3SB3110-0AA.2

## Pushbutton

With raised front ring castellated

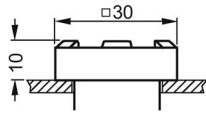
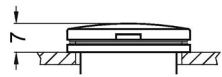


Figure 5-29 3SB3110-0AA.3

## Indicator light



## Selector switch or illuminated selector switch

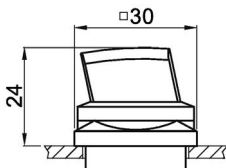


Figure 5-30 3SB3110-2.A.1

## RONIS key-operated switch

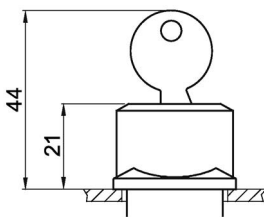
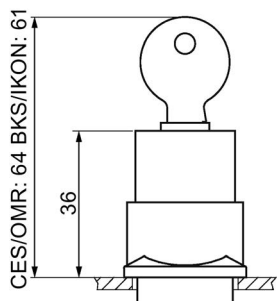


Figure 5-31 3SB3110-4AD.1

**CES, BKS, O.M.R key-operated switch**



**EMERGENCY STOP mushroom pushbutton**

With rotate-to-unlatch mechanism

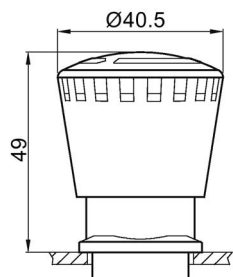


Figure 5-32 3SB3110-1HA20

**EMERGENCY STOP mushroom pushbutton**

With RONIS key-operated switch

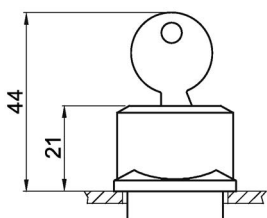


Figure 5-33 3SB3110-1BA20

## EMERGENCY STOP mushroom pushbutton

With CES, BKS, O.M.R. key-operated switch

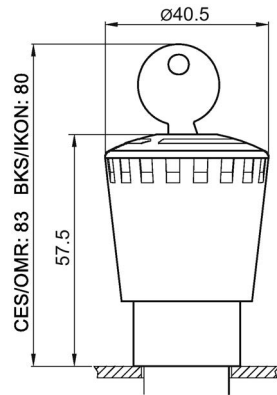


Figure 5-34 3SB3110-1KA20 (CES),  
3SB3110-1LA20 (BKS),  
3SB3110-1MA20 (OMR)

## 5.5.7 Accessories for plastic version, square

### Holder

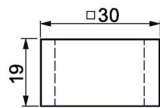


Figure 5-35 3SB3951-0AA

### Blanking plug

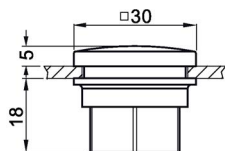
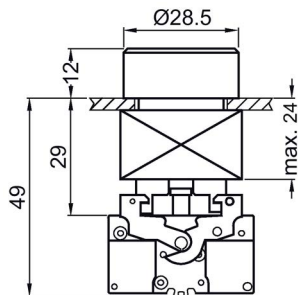


Figure 5-36 3SB3941-0AA

### 5.5.8 Metal version, round

#### Pushbutton or illuminated pushbutton

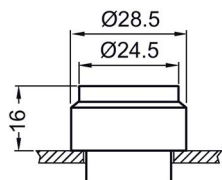
With flat button



With single-pole contact block (and lampholder)

#### Pushbutton or illuminated pushbutton

With raised button



#### Pushbutton or illuminated pushbutton switch, latching

With flat button

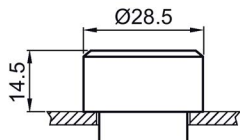


Figure 5-37 3SB3500-0DA.1,  
3SB3501-0DA.1

## Pushbutton

With raised front ring

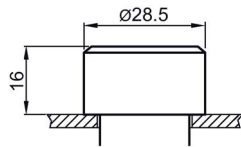


Figure 5-38 3SB3500-0AA.2

## Selector switch or illuminated selector switch

Default

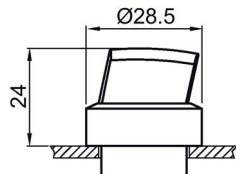


Figure 5-39 3SB350.-2.A.1

## Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable

Diameter 30 mm

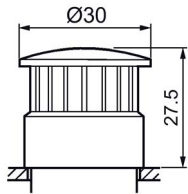


Figure 5-40 3SB3500-1DA.1 mushroom pushbutton,  
3SB3501-1DA.1 illuminated mushroom pushbutton,  
3SB3500-1EA.1 push-pull button

**Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable**

Diameter 40 mm

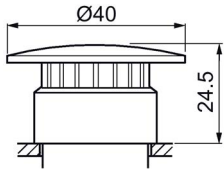


Figure 5-41 3SB3500-1GA.1 mushroom pushbutton,  
3SB3501-1GA.1 illuminated mushroom pushbutton,  
3SB3501-1CA.1 push-pull button

**Mushroom pushbutton, illuminated mushroom pushbutton, push-pull button or push-pull button illuminable**

Diameter 60 mm

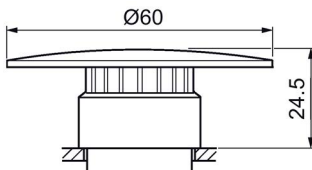


Figure 5-42 3SB3500-1QA.1 mushroom pushbutton,  
3SB3501-1QA.1 illuminated mushroom pushbutton,  
3SB3500-1RA.1 push-pull button

**Selector switch or illuminated selector switch**

Heavy Duty

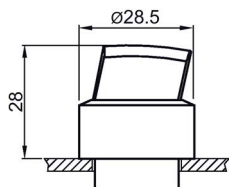


Figure 5-43 3SB350.-2PA.1



### Selector switch or illuminated selector switch

With long handle

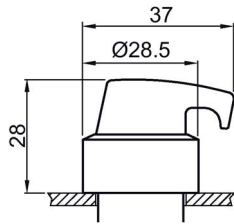


Figure 5-44 3SB3500-3PA.1

### RONIS key-operated switch

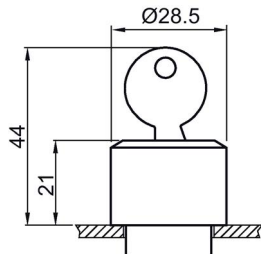


Figure 5-45 3SB3500-4AD.1

### CES, BKS, O.M.R. key-operated switch

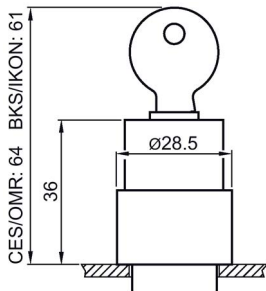


Figure 5-46 3SB3500-4LD.1 (CES),  
3SB3500-5AD.1 (BKS),  
3SB3500-3AG.1 (O.M.R)

**EMERGENCY STOP mushroom pushbutton**

Diameter 32 mm, with rotate-to-unlatch mechanism

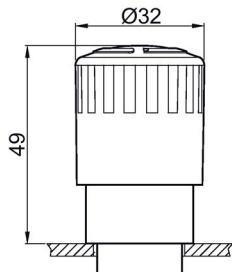


Figure 5-47 3SB3500-1FA20

**EMERGENCY STOP mushroom pushbutton**

Diameter 40 mm, with pull-to-unlatch mechanism

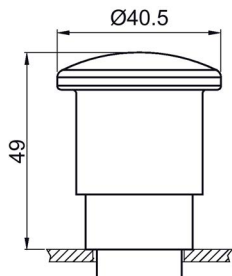


Figure 5-48 3SB3500-1TA20

**EMERGENCY STOP mushroom pushbutton**

Diameter 40 mm, with rotate-to-unlatch mechanism

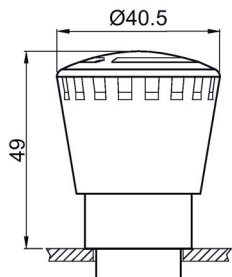


Figure 5-49 3SB3500-1HA2.

### EMERGENCY STOP mushroom pushbutton

Diameter 60 mm, with rotate-to-unlatch mechanism

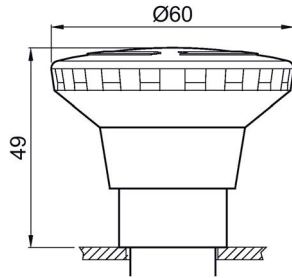


Figure 5-50 3SB3500-1AA20

### EMERGENCY STOP mushroom pushbutton

With RONIS key-operated switch

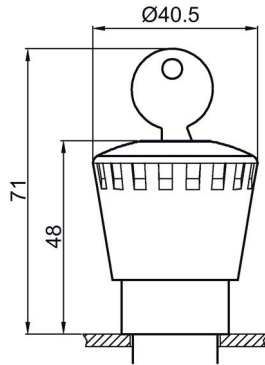


Figure 5-51 3SB3500-1BA20

### EMERGENCY STOP mushroom pushbutton

With CES, BKS, O.M.R. key-operated switch

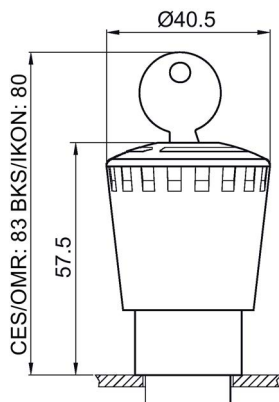


Figure 5-52 3SB3500-1KA20 (CES),  
3SB3500-1LA20 (BKS),  
3SB3500-1MA20 (O.M.R.)

Indicator light

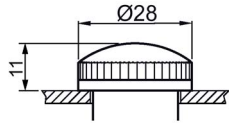


Figure 5-53 3SB3501-6.A.0

5.5.9 Accessories for metal version, round

Holder

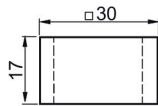


Figure 5-54 3SB3931-0AC

Blanking plug

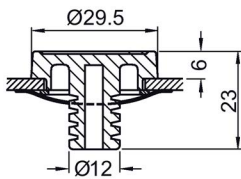
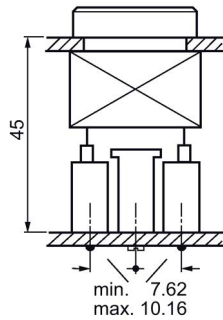


Figure 5-55 3SB1902-0AQ

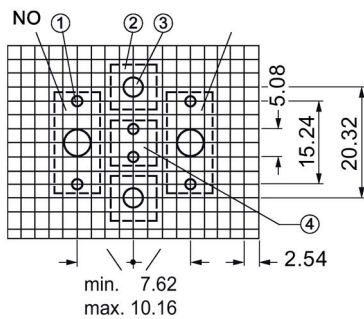
## 5.5.10 Contact blocks and lampholders

### 5.5.10.1 Contact blocks/lampholders with solder pins, for mounting on printed circuit boards

#### Pushbutton with contact blocks with 1 contact and printed circuit board holder

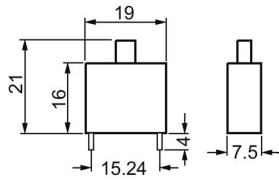


#### Solder pin spacing

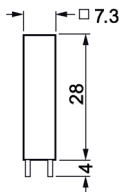


- ① Solder connection diameter  $1.3^{+0.1}$
- ② Printed circuit board holder
- ③ Centering hole diameter  $4.2^{+0.1}$
- ④ Lampholder

Contact block with 1 contact for solder connection

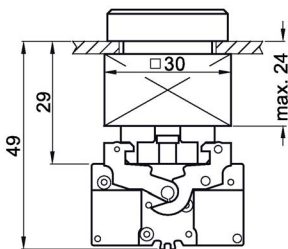


Wedge base lampholder W2 x 4.6 d

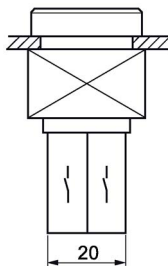


5.5.10.2 Contact blocks with screw terminals, for front plate mounting

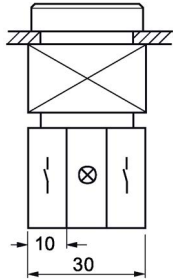
Pushbutton or illuminated pushbutton with contact blocks with one contact



Pushbutton with contact blocks with one contact



**Illuminated pushbutton with contact blocks with one contact and lampholder**



**Contact block with one contact**

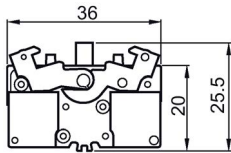
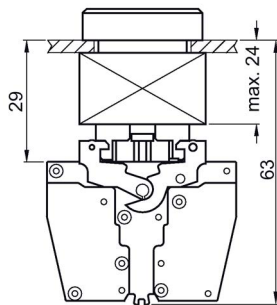
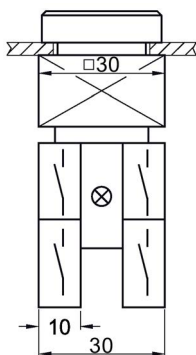


Figure 5-56 3SB3400-0B, 3SB3400-0C

**Pushbutton or illuminated pushbutton with contact blocks with two contacts**



**Illuminated pushbutton with contact blocks with two contacts and lampholder**



Contact block with two contacts, diode element

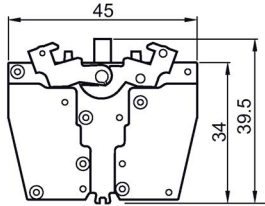


Figure 5-57 3SB3400-0A

Contact block with one contact and installation monitoring contact

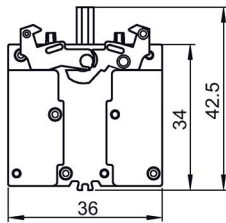


Figure 5-58 3SB3400-0M

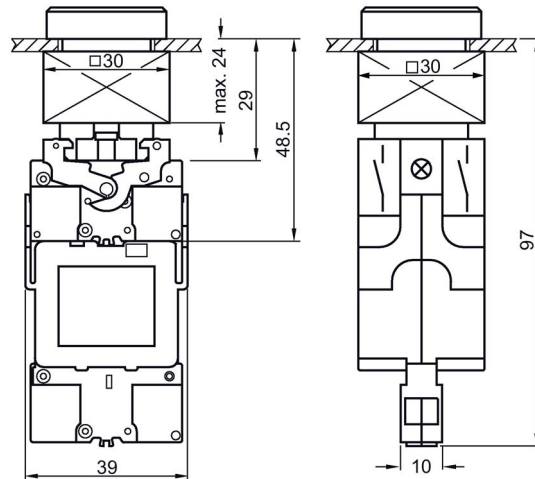
**NOTICE**

**Monitored contact block**

The monitored contact blocks of type 3SB3400-0M (screw terminal) and 3SB3403-0M (spring-type terminal) are NC contact blocks with positive opening operation. The NC contact opens automatically when the contact block drops out from the actuator. On delivery, the contact is open (= safe state). Activation (= NC contacts on the non-actuated control device are closed) takes place upon first-time actuation after the contact block is snapped on.



**Illuminated pushbutton with contact blocks with one contact and lampholder with snap-mounted transformer**



**Lampholder with integrated LED**

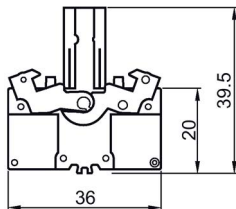


Figure 5-59 3SB3400-1P., 3SB3400-1Q, 3SB3400-1R

**Lampholder BA 9s with or without integrated voltage reducer**

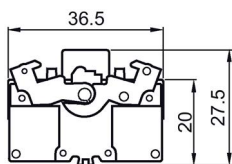


Figure 5-60 3SB3400-1A, 3SB3400-1D, 3SB3400-1C, 3SB3400-1B

**Lampholder BA 9s with separate lamp test function**

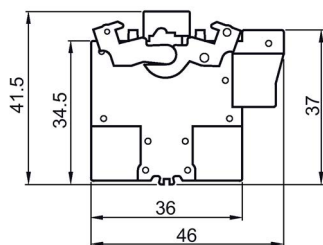


Figure 5-61 3SB3400-1F, 3SB3400-1G, 3SB3400-1L, 3SB3400-1H

### 5.5.10.3 Contact blocks with spring-type terminals, for front plate mounting

#### Contact block with one contact

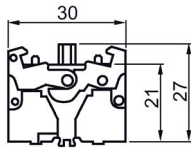


Figure 5-62 3SB3403-0B, 3SB3403-0C

#### Contact block with two contacts

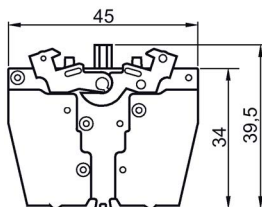


Figure 5-63 3SB3403-0A, 3SB3403-0H, 3SB3403-0D, 3SB3403-0E

#### Contact block with one contact and installation monitoring contact

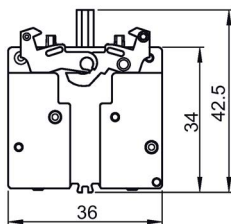


Figure 5-64 3SB3403-0M

#### Lampholder BA 9s

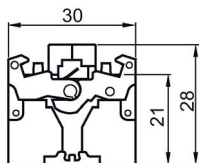


Figure 5-65 3SB3403-1A, 3SB3403--1C

### Lampholder with integrated LED

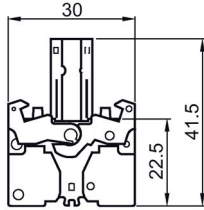
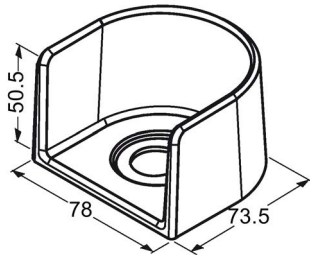


Figure 5-66 3SB3403-1P., 3SB3403-1Q., 3SB3403-1R.

## 5.5.11 Accessories for front plates

### Protective collar 3SB3921-0AK, -0AP

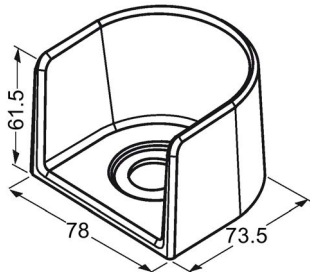
- For EMERGENCY STOP mushroom pushbutton
- Without lock
- For front plate mounting <sup>1)</sup>



- 1) Can be used for a maximum front plate thickness of 4 mm

### Protective collar 3SB3921-0AX

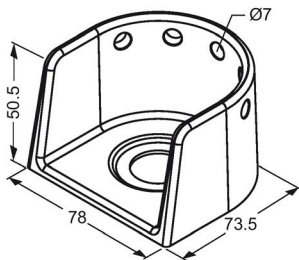
- For EMERGENCY STOP mushroom pushbutton
- With lock
- For front plate mounting <sup>1)</sup>



- 1) Can be used for a maximum front plate thickness of 4 mm

**Protective collar 3SB3921-0CG**

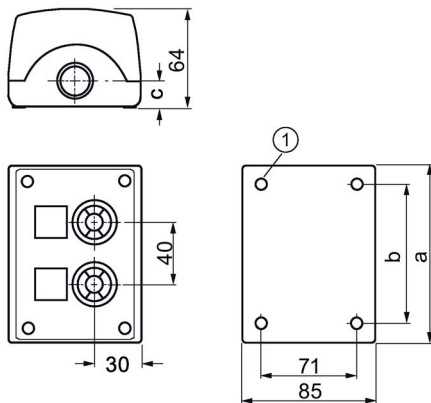
- For mushroom pushbutton
- For 5 padlocks
- For front plate mounting <sup>1)</sup>



1) Can be used for a maximum front plate thickness of 4 mm

**5.5.12 Enclosures**

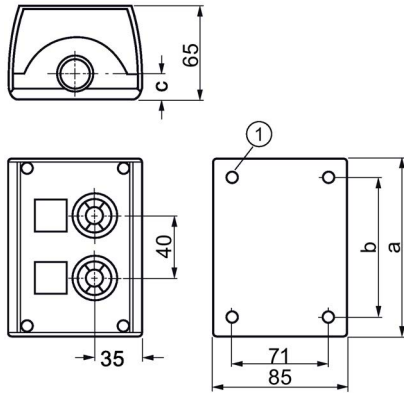
**Enclosure without protective collar (plastic)**



① Rear view for screw M4  
With cutouts at top and bottom for one screw connection in each case

No. of command points	Length a	Clearance b	Clearance c
1	85	54	17,5
2	114	83	17,5
3	154	123	17,5
4	194	163	17,5
6	280	249	20,5

**Enclosure without protective collar (metal)**

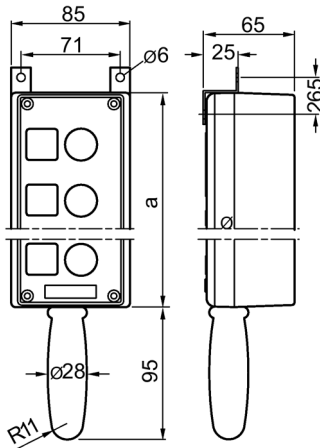


① Rear view for screw M4

With opening at top and bottom for one screw connection in each case

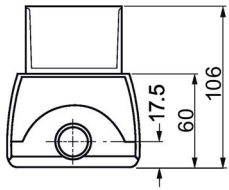
No. of command points	Length a	Clearance b	Clearance c
1	85	54	21
2	114	83	21
3	154	123	21
4	194	163	21
6	280	249	21

**Enclosure with handle, metal**



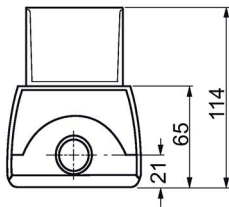
No. of command points	Length a
1	84
2	113
3	154
4	193
6	280

**Enclosure with protective collar (plastic)**



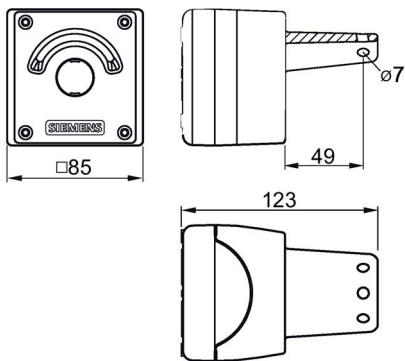
With cutouts at top and bottom for one screw connection in each case

**Enclosure with protective collar (metal)**



With cutouts at top and bottom for one screw connection in each case

**Enclosure with protective collar for three padlocks, metal**



### 5.5.12.1 Contact blocks with screw terminals, for base mounting

#### Contact block with one contact

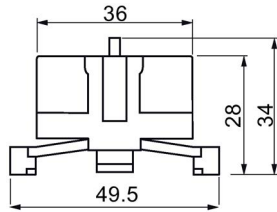


Figure 5-67 3SB3420-0B, 3SB3420-0C

#### Lampholder BA 9s with or without integrated voltage reducer

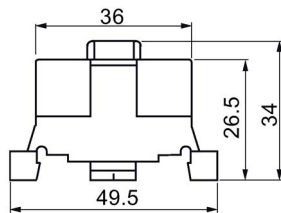


Figure 5-68 3SB3420-1A, 3SB3420-1C

#### Lampholder with integrated LED

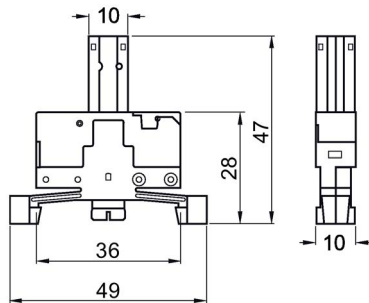


Figure 5-69 3SB3420-1P., 3SB3420-1Q., 3SB3420-1R.

5.5.12.2 Contact blocks with spring-type terminals, for base mounting

Contact block with one contact

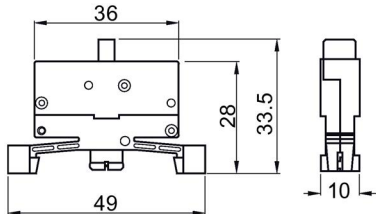


Figure 5-70 3SB3423-0B, 3SB3423-0C

Lampholder with integrated LED

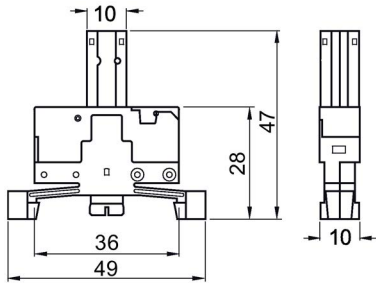


Figure 5-71 3SB3423-1P, 3SB3423-1Q, 3SB3423-1R

Support terminal

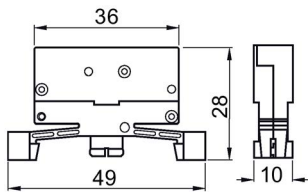


Figure 5-72 3SB3423-2F, 3SB3423-2G, 3SB3423-2H



## 5.6 Application examples

### 5.6.1 Application examples of test circuits

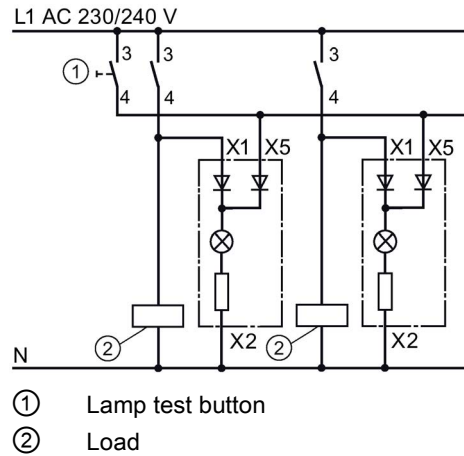


Figure 5-73 Lampholder 3SB3400-1F incl. incandescent lamp 130 V

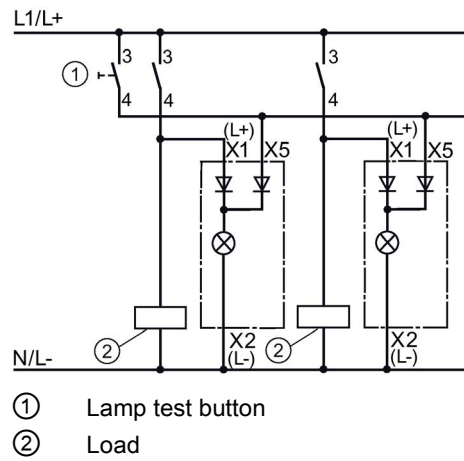
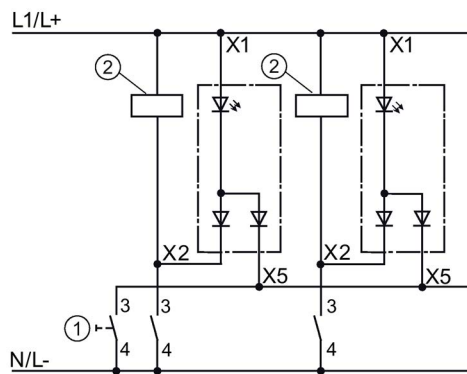


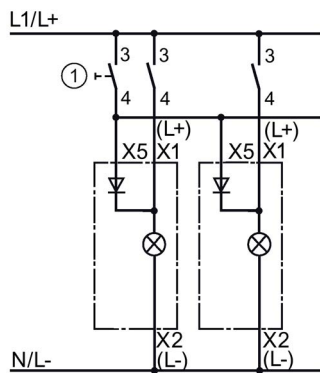
Figure 5-74 Lampholder 3SB3400-1G for incandescent lamps, maximum 2.6 W or LED lamps, AC/DC

5.6 Application examples



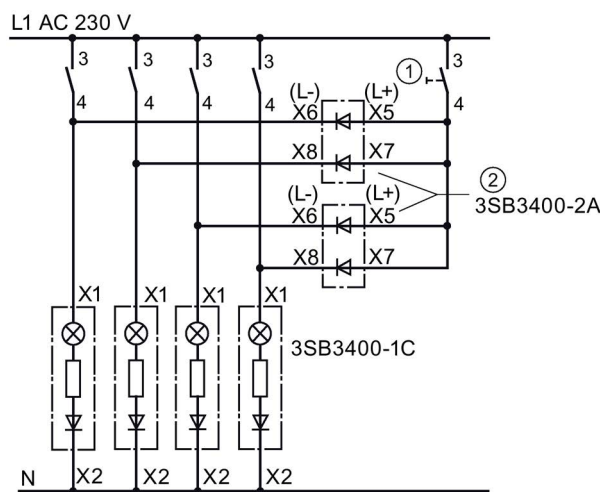
- ① Lamp test button
- ② Load

Figure 5-75 Lampholder 3SB3400-1L for incandescent lamps, maximum 2.6 W or LED lamps, AC or DC



- ① Lamp test button

Figure 5-76 Lampholder 3SB3400-1H for incandescent lamps, maximum 2.6 W or glow lamps, AC



- ① Lamp test button
- ② 2 contact blocks

Figure 5-77 Example of a lamp test circuit with contact block 3SB3400-2A

### 5.6.2 Application examples of 3SB3400-2A diode elements

- Lamp test circuit
- Interference suppression
- Limitation of voltage peaks
- Limitation of DC coils
- Diode gates
- Rectifier circuits

The diode element contains 2 1N 4007 diodes. The element can be snap-mounted on the holder as required.

### 5.6.3 Information about use of lampholders with a separate lamp test function

**Note**

Overvoltage damping equipment must be provided for parallel connections of inductive loads (e.g. contactors).

The element 3SB3400-1H is not suitable for operation with a parallel load.

### 5.6.4 Contact assignment

	For a contact block with 2 contacts, e.g. 1 NO + 1 NC	For 2 contact blocks, each with 1 contact, e.g. 1 NO, 1 NC	For 2 contact blocks, each with 2 contacts, e.g. 1 NO + 1 NC, 1 NO + 1 NC	For a contact block with 2 contacts, e.g. 1 NO + 1 NC and a lampholder
Holder				
• Mounting depth				
• Level for contact blocks with 1 contact				
• Level for contact blocks with 2 contacts				
Holder for 3 elements				
Contact blocks, lampholders				



# AS-Interface for 3SF5 pushbuttons and indicator lights

# 6

## 6.1 Application areas

With AS-Interface enclosures, distributed command devices of the 3SB3 series can be connected to the AS-Interface communication system. Using suitable components you can assemble your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.

Pushbuttons and indicator lights with AS-Interface connections are used as the basis for networked systems within a plant. The individual AS-Interface components are fully compatible with one another and can be operated jointly on the yellow AS-Interface cable.

The following solutions are available:

- EMERGENCY STOP mushroom pushbuttons ASIsafe
- AS-Interface enclosures with 1 to 6 command points
- AS-Interface front plate module for 4 command points

## 6.1.1 Application area of the AS-Interface modules

### AS-Interface safety module (F slave)

Installed in a 3SB3 enclosure, the AS-Interface safety module is used for detecting safety-related switching states of single-channel or two-channel EMERGENCY STOP actuators with isolated contacts. For this purpose, a code table with 8x4 bits is transferred via the AS-Interface bus and evaluated by the safety monitor. When operated properly, the system fulfills safety category 4 according to EN 13849-1. If an EMERGENCY STOP actuator is queried on just one channel (terminals for F-IN2 jumpered by means of wire), the system fulfills a maximum of safety category 2.

In accordance with IEC 61508, the module can be used in loops up to SIL 3. The PFD value of the entire loop must be calculated by the user.

### AS-Interface standard modules (slave 4I/4O and A/B slave 4I/3O)

Mounted in a 3SB3 enclosure, the AS-Interface modules 4I/4O and 4I/3O can query 4 mechanical contacts. The AS-Interface module 4I/4O also enables control of 4 indicator lights, while the module 4I/3O enables control of 3 indicator lights. The power required is supplied by the AS-Interface system. In conjunction with an A/B-compatible AS-Interface master, up to 62 x 4I/3O modules can be operated in one AS-Interface network.

## 6.1.2 Application areas of AS-Interface F adapter

The AS-Interface F adapter is used to connect an EMERGENCY STOP command device according to ISO 13850 from the 3SB3 series to the AS-Interface bus system. The F adapter is suitable for control devices with mounting on front plates.

The F adapter has a safe AS-Interface 2I slave and is snapped from behind onto the EMERGENCY-STOP mushroom pushbutton.

The expanded version 2I/1O includes an output for controlling an indicator light with LED.

Depending on the version, the connection to the AS-Interface bus cable is by means of screw terminals, spring-type terminals or insulation piercing method. Addressing is performed using the AS-Interface connection or the integrated addressing socket.

With the F adapter, the device fulfills safety category 4 (SIL 3).

## **6.2 Overview**

### **6.2.1 Equipment**

The enclosures with integrated AS-Interface are equipped with contact blocks and LED lampholders with spring-type terminals from the 3SB3 series as well as the slaves required for connecting the contact blocks and lampholders to AS-Interface.

In addition, AS-Interface modules, cable sets and a connection element are needed to connect the contact blocks and LED lampholders.

### **6.2.2 Overview of standard enclosures**

Enclosures with standard equipment are available in the following versions:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosure with plastic actuators and indicators
- Metal enclosure with metal actuators and indicators




The enclosures without EMERGENCY STOP each have one A/B slave 4I/3O; the enclosures with EMERGENCY STOP mushroom pushbuttons have a safe AS-Interface F slave integrated in the enclosure.

On enclosures with EMERGENCY STOP mushroom pushbuttons, two NC contact blocks are mounted inside the enclosure and wired to the safe F slave. The contact blocks and lampholders (with spring-type terminals) of the command devices and the AS-Interface slaves are mounted in the base of the enclosure and connected using cables.

The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is routed along the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure.

6.2 Overview

The enclosures with EMERGENCY STOP mushroom pushbuttons are also available with an M12 connector.

		
<p>EMERGENCY STOP mushroom pushbutton with rotate-to-unlatch mechanism, yellow enclosure top</p>	<p>Enclosures with 2 command points</p>	<p>Enclosures with 3 command points</p>
<p>With M12 top connector, 1 NC, 1 NC</p> <ul style="list-style-type: none"> <li>Without protective collar, plastic (3SF5811-0AA10)</li> <li>Without protective collar, metal (3SF5811-2AA10)</li> <li>With protective collar, metal (3SF5811-2AB10)</li> </ul>	<p>B = Pushbutton green, label "I" A = Pushbutton red, label "0"</p> <ul style="list-style-type: none"> <li>Plastic (3SF5812-0DA00)</li> <li>Metal (3SF5812-2DA00)</li> </ul>	<p>C = Indicator light, clear, label without inscription: B = Pushbutton green, label "I"; A = Pushbutton red, label "0"</p> <ul style="list-style-type: none"> <li>Plastic (3SF5813-0DA00)</li> <li>Metal (3SF5813-2DA00)</li> </ul>
<p>With terminal for insulation piercing method at top, 1 NC, 1 NC</p> <ul style="list-style-type: none"> <li>Without protective collar, plastic (3SF5811-0AA08)</li> <li>With protective collar, plastic (3SF5811-0AB08)</li> </ul>	<p>B = Pushbutton white, label "I" A = Pushbutton black, label "0"</p> <ul style="list-style-type: none"> <li>Plastic (3SF5812-0DB00)</li> <li>Metal (3SF5812-2DB00)</li> </ul>	<p>C = Pushbutton black, label "II" B = Pushbutton black, label "I"; A = Pushbutton red, label "0"</p> <ul style="list-style-type: none"> <li>Plastic (3SF5813-0DB00)</li> <li>Metal (3SF5813-2DB00)</li> </ul>
<p>With cable gland at top, 1 NC, 1 NC</p> <ul style="list-style-type: none"> <li>Without protective collar, metal (3SF5811-2AA08)</li> <li>With protective collar, metal (3SF5811-2AB08)</li> </ul>		<p>C = Indicator light, clear, label without inscription: B = Pushbutton white, label "I"; A = Pushbutton black, label "0"</p> <ul style="list-style-type: none"> <li>Plastic (3SF5813-0DC00)</li> <li>Metal (3SF5813-2DC00)</li> </ul>

**Note**

**Mounting positions**

The mounting positions (A, B, C) are marked by labels in the lower part of the enclosure (see Chapter Application examples (Page 147)).



### 6.2.3 Customized enclosures with ASi F slave

The ASi F slave must always be fitted in mounting position A3. At the customer's request, the ASi F slave can also be mounted at the highest mounting position of the actuator. The following mounting positions are possible:

- Enclosure with 3 command points → C3
- Enclosure with 4 command points → D3
- Enclosure with 6 command points → F3

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#### Note

##### Enclosures with 2 command points

Enclosures with 2 command points cannot be equipped with an ASi F slave.

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On request enclosures with more than 6 command points can also be supplied with AS-Interface connection.

#### Customized enclosures (selection by configurator)

To order customized 3SF58 AS-Interface enclosures with 3SB3 control devices, use the 3SB3/3SF5 configurator to select the blocks for equipping (see Online configurator (<http://www.siemens.com/sirius/configurators>)).

An electronic order form will be generated for the additional options.

### 6.2.4 Equipping with AS-Interface slaves

#### Self-equipping of enclosures

The following slave types are available for connecting the command points:




- AS-Interface A/B slave with 4 inputs and 3 outputs
- AS-Interface slave with 4 inputs and 4 outputs (4I/4O)
- AS-Interface F slave with 2 safe inputs for EMERGENCY STOP

The following table shows the maximum number of slaves possible:

Enclosure for	Number of AS-i slaves for enclosures without EMERGENCY STOP	Number of AS-i slaves for enclosures with EMERGENCY STOP
1 command point	Not available	1 x F slave
2 command points	1 x slave 4I/4O or 4I/3O	Not available
3 command points	1 x slave 4I/4O or 4I/3O	1 x slave 4I/4O or A/B slave 4I/3O + 1 x F slave
4 command points	2 x slave 4I/4O or 4I/3O <sup>1)</sup>	2 x slave 4I/4O or A/B slave 4I/3O + 1 x F slave <sup>1)</sup>
6 command points	2 x slave 4I/4O or 4I/3O	2 x slave 4I/4O or A/B slave 4I/3O + 1 x F slave

<sup>1)</sup> For metal enclosures with 4 command points, only 1 x slave 4I/4O or A/B 4I/3O is possible.

### 6.2.5 Overview of AS-Interface F adapter

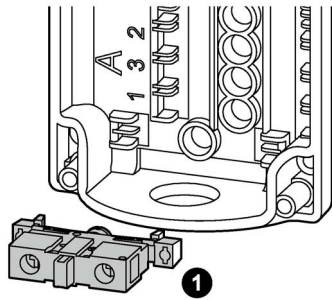
AS-Interface F adapter for EMERGENCY STOP mushroom pushbuttons, front plate mounting, 2 inputs		
		
3SF5402-1AA05	3SF5402-1AA04	3SF5402-1AB03
Insulation piercing method	Spring-type terminals	Screw terminals

## 6.3 Mounting

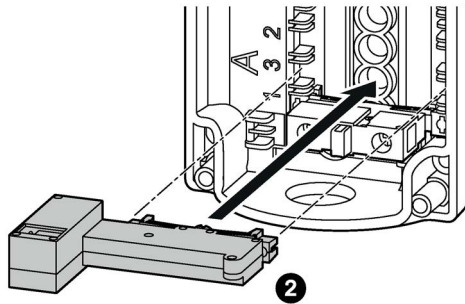
### 6.3.1 Mounting of contact blocks and AS-Interface slaves

Like contact blocks and lampholders, the AS-Interface slaves are mounted in the enclosure lower part. To equip an enclosure with contact blocks and an AS-i F slave, follow these steps:

1. Snap the contact block onto the slot in the enclosure marked with "1" or "2".



2. Insert the AS-i F slave onto the slot marked with "A3".




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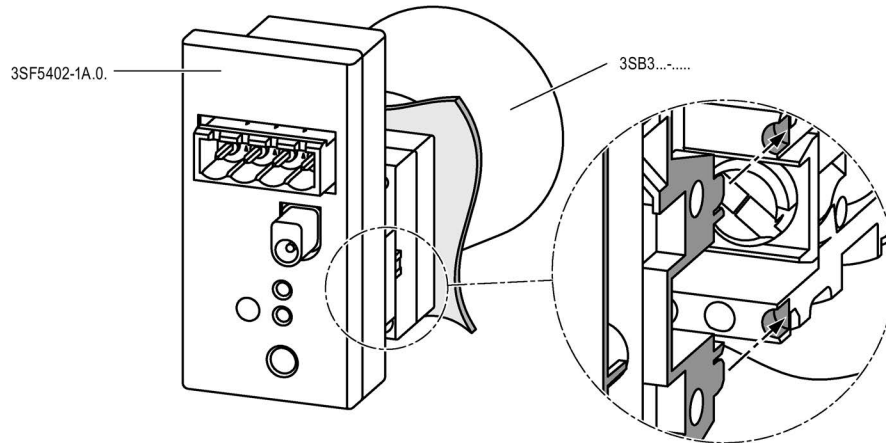
#### Note

#### Mounting position of the AS-Interface F slave

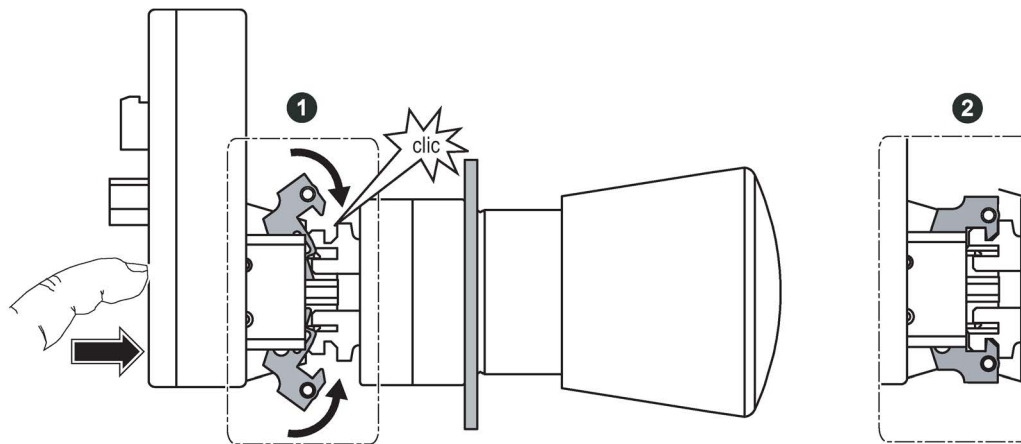
The AS-i F slave may only be mounted in the enclosure at the outer slots marked with "3".

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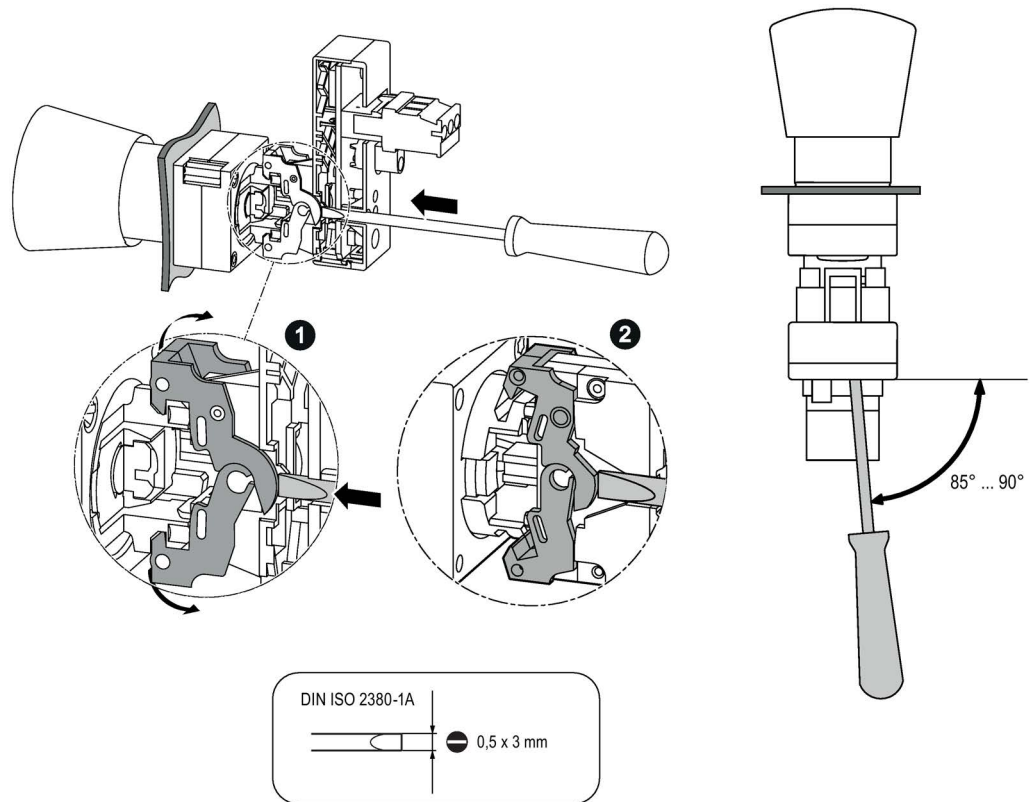
### 6.3.2 Mounting and removing the F adapter



1. Insert the EMERGENCY STOP mushroom pushbutton from the front through the opening in the front plate.
2. Place the holder from behind on the EMERGENCY STOP mushroom pushbutton. Refer also to the installation instructions in Chapter Mounting on front plate (Page 54).
3. Push the F adapter from behind onto the EMERGENCY STOP mushroom pushbutton until it latches in position.



### 6.3.2.1 Dismantling



Follow the steps below to dismantle the AS-Interface F adapter:

1. Press a suitable flathead screwdriver at an inclined angle into the opening marked "REMOVE" on the F adapter.
2. The snap-in hooks will then be released so that you can remove the F adapter.

## 6.4 Connection

One set of links is required in each case to connect a slave to contact blocks, to lampholders and to the connection element.

The connection elements are mounted in the front-end cable glands and are used for connection of the AS-Interface or for bringing unused inputs or outputs out of the enclosure.

The following methods can be selected to make the connection to the AS-Interface bus:

- Terminal for shaped AS-Interface cable. The cable is contacted by the insulation piercing method and routed past the enclosure on the outside (possible only with plastic enclosure).
- Cable gland for the shaped AS-Interface cable or round cable. The cable is routed into the enclosure (preferable for metal enclosure).
- Connection using M12 plug.

If less than all inputs/outputs of the installed slave in an enclosure are used for connecting the command devices, free inputs and outputs can be routed on request to the outside through an M12 socket at the top or bottom of the enclosure.

To supply inputs with power, the S+ connection of the slave (and the connection OUT- for outputs) must always be assigned to the socket.

Addressing is performed using the AS-Interface connections or the integrated addressing socket. An external power supply is not required.



6.4 Connection

Connection elements	Material of the enclosure	Number of command points	Metric ISO thread	Article number
Connection element for the AS-i shaped cable, for bringing the ribbon cable into the enclosure	Plastic and metal	1 to 3	M20	3SF5900-0CG
		4 to 6	M25	3SF5900-0CH
Connection element for round cable, for bringing the round cable into the enclosure	Plastic and metal	1 to 3	M20	3SF5900-0CJ
		4 to 6	M25	3SF5900-0CK
Connection element for the AS-i shaped cable, with insulation piercing method	Plastic	1 to 3	M20	3SF5900-0CA
		4 to 6	M25	3SF5900-0CB
Connection element for the AS-i M12 connector	Plastic	1 to 3	M20	3SF5900-0CC
		4 to 6	M25	3SF5900-0CD
Connection element for the AS-i M12 connector, for bringing out the unused inputs and outputs, via M12 socket	Plastic	1 to 3	M20	3SF5900-0CE
		4 to 6	M25	3SF5900-0CF

6.4.2 Connection with AS-Interface F adapter

Connection options

- Conventional connection with AS-Interface
- Safe connection using ASIsafe
- With 3TK28 safety relay
- To ET200S distributed I/Os

Safe communication via ASIsafe

With ASIsafe, safety-related components can be integrated in AS-Interface – up to Cat. 4 according to (EN 954-1) EN ISO 13849-1 or SIL3 according to IEC 61508. Use the yellow AS-Interface cable for this.

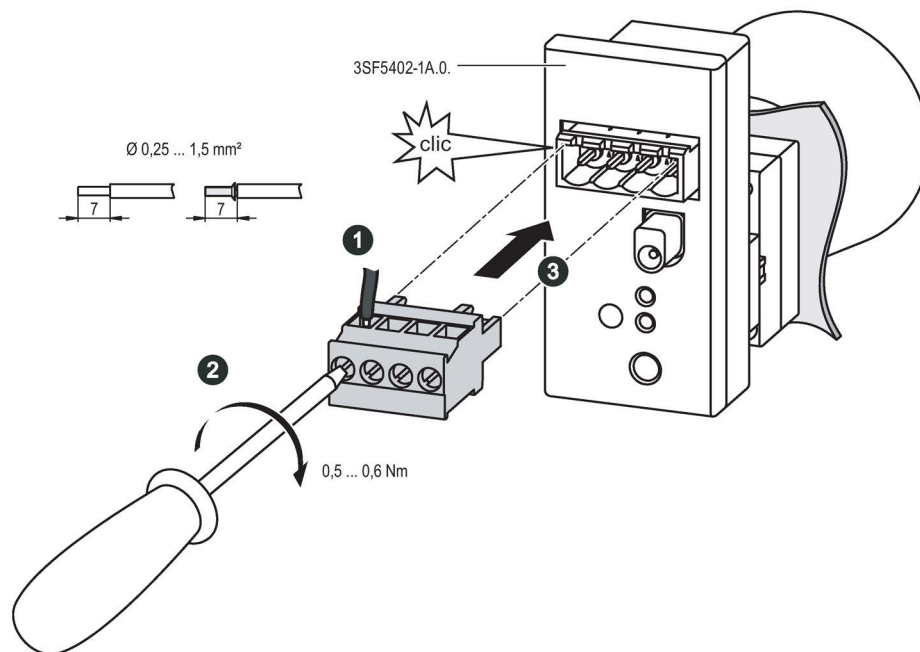
Safe and standard I/O modules are installed and operated together in a single network. Safety-related data is transferred over the existing standard bus.

6.4.2.1 F adapter for EMERGENCY STOP devices

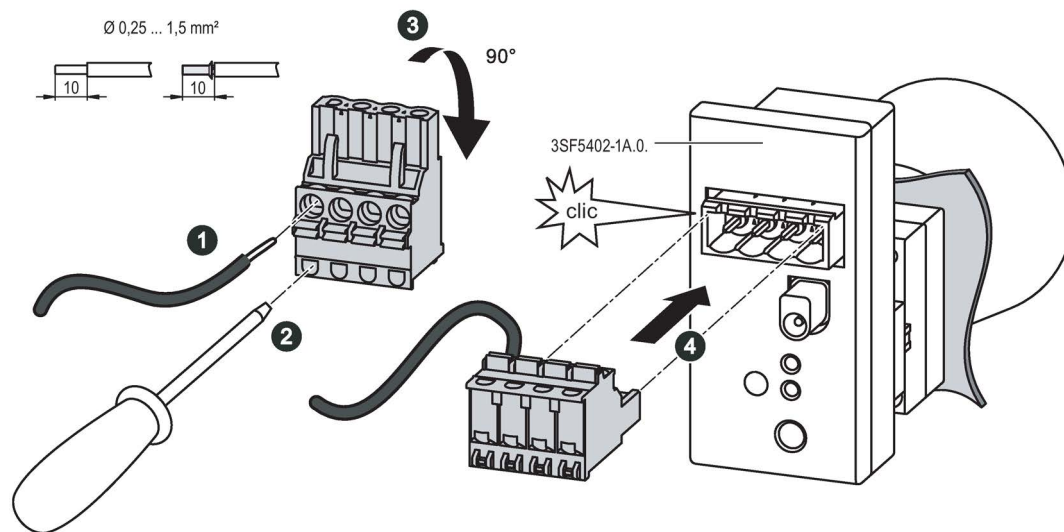
EMERGENCY STOP devices can be connected directly via the standard AS-Interface with safety-related communication. This applies to EMERGENCY STOP devices of the SIRIUS 3SB3 command devices for front plate mounting and mounting in enclosures. A front plate-mounted EMERGENCY STOP can be connected directly to AS-Interface via a fail-safe module (F adapter).



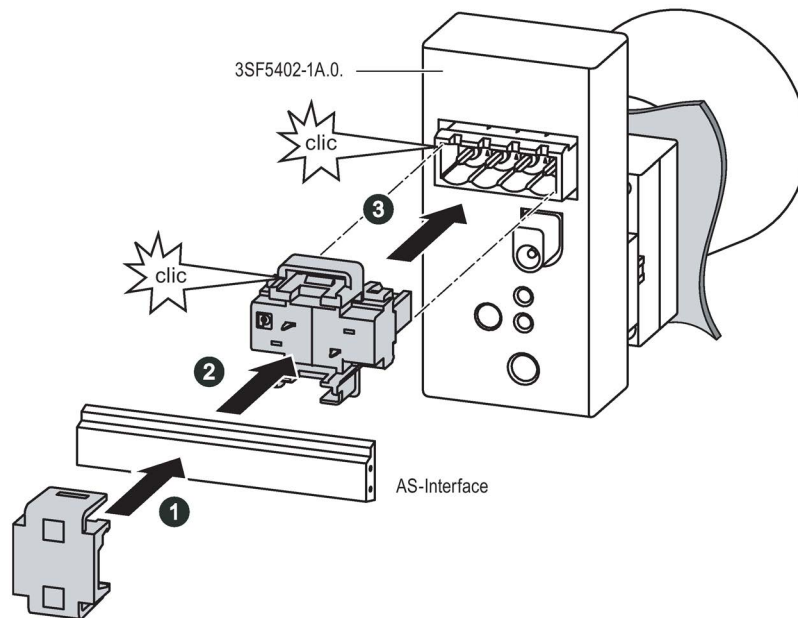
### 6.4.2.2 Connection to AS-i bus with screw terminal



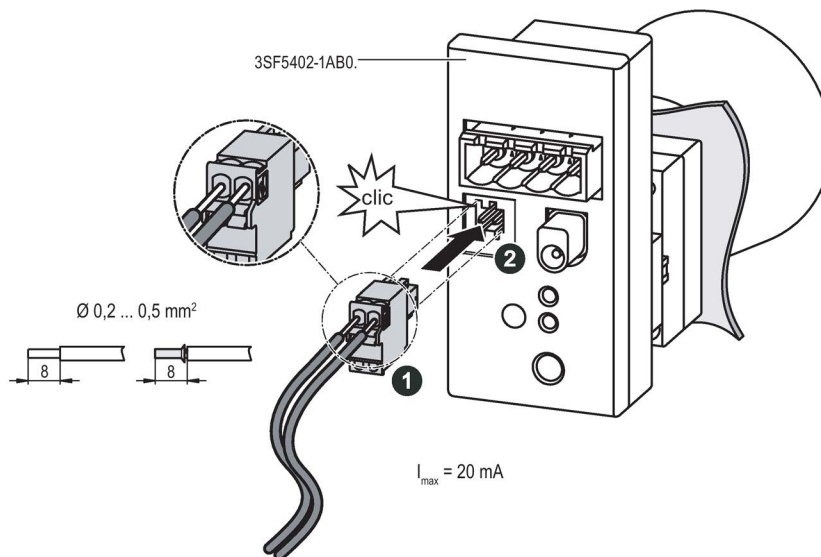
### 6.4.2.3 Connection to AS-i bus with spring-type terminal



### 6.4.2.4 Connection to AS-i bus using insulation piercing method

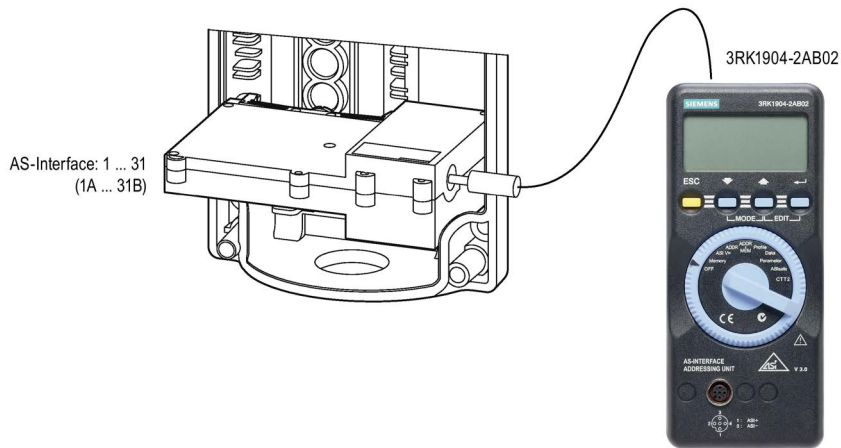


### 6.4.2.5 LED control with 3SF5402-1AB0 only

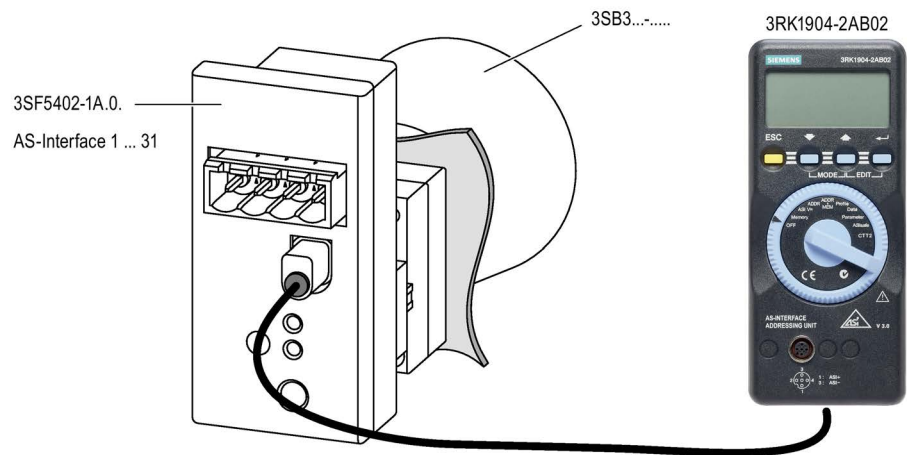


### 6.4.3 Addressing of AS-Interface modules

#### 6.4.3.1 Addressing AS-i slaves



#### 6.4.3.2 Addressing the AS-i F adapter



## 6.5 Technical specifications

### 6.5.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.

The screenshot shows the Siemens Industry Online Support search interface. At the top, there is a search bar with the text "Enter keyword...". Below the search bar, there are three filters: "Product", "Entry type", and "Date". The "Product" filter is set to "3RV2021-4BA10", the "Entry type" filter is set to "Technical data (1)", and the "Date" filter is set to "From" and "To". Below the filters, there is a search button labeled "> Search product". The search results show a product card for "3RV2021-4BA10" with a description: "CIRCUIT BREAKER, SCREW TYPE, 20 A CIRCUIT BREAKER SIZE S2, FOR MOTOR PROTECTION, CLASS 10, A-RELEASE 14...20A, N-RELEASE 20A, SCREW TERMINAL, STANDARD BREAKING CAPACITY". Below the product card, there are three links: "> Product details", "> Technical data", and "> CAX data". The "Technical data" link is highlighted with a red box.

## 6.5.2 Technical specifications of AS-i slaves

AS-Interface slaves	3SF5500-0BC		3SF5500-0BB		3SF5500-0BA	
	3SF5500-0CC		3SF5500-0CB		3SF5500-0DA	
	4I/4O (Slave)		4I/3O (A/B slave)		3SF5500-0CA (F slave)	
Rated operational current $I_e$	A	0,6				
Rated operational voltage $U_e$		24 V DC -15 % / +10 % PELV				
Rated insulation voltage $U_i$	V	32				
Rated impulse withstand voltage $U_{imp}$	V	800				
Performance Level		PLe				
Category		4				
Safety integrity level		SIL 3				
Standard		EN 954-1				
I/O configuration (Hex) / ID code (Hex) ID1 code I (Hex) / ID2 code (Hex) I		7 / 0	7 / A	0 / B	0 / B	0 / B
		0 ... F / F	0 ... 7 / E	0 ... F / F	0 ... F / F	0 ... F / F
Total current consumption I	mA	≤ 280	≤ 280	≤ 280	≤ 60	≤ 60
<b>Sensor supply (short circuit and overload proof)</b>						
Voltage range $U_{out}$	V DC	20 ... 30	20 ... 30	20 ... 30	—	—
Switching current I	mA	Approx. 5 mA	Approx. 5 mA	Approx. 5 mA	—	—
<b>Outputs (supplied from AS-Interface)</b>						
Load voltage <sup>1)</sup> $U_{out}$	V DC	20 ... 30	20 ... 30	20 ... 30	—	—
Current-carrying capacity <sup>2)</sup>	mA	≤ 180	≤ 180	≤ 180	—	—
Switching rate	Hz	100	100	100	—	—
Short-circuit protection $I_{out}$		Integrated	Integrated	Integrated	—	—
Reverse polarity protection I		Integrated	Integrated	Integrated	—	—
<b>Inputs</b>						
Low signal range	$I_{in}$	—	—	—	—	Contact open
High signal range	$I_{in}$	—	—	—	—	Contact closed dynamically ( $I_{peak} \geq 5$ mA)
<b>Immunity to noise (EN 61000, EN 61496-1)</b>						
IEC 61000-4-2	kV	4 / 8 (encapsulated)				
IEC 61000-4-3	V/m	10				
IEC 61000-4-4	kV	1 kV (A) / 2 kV (B)				

6.5 Technical specifications

<b>AS-Interface slaves</b>	<b>3SF5500-0BC</b>	<b>3SF5500-0BB</b>	<b>3SF5500-0BA</b>
	<b>3SF5500-0CC</b>	<b>3SF5500-0CB</b>	<b>3SF5500-0DA</b>
	<b>4I/4O</b>	<b>4I/3O</b>	<b>3SF5500-0CA</b>
	<b>(Slave)</b>	<b>(A/B slave)</b>	<b>(F slave)</b>
<b>Mechanical data</b>			
Degree of protection with metal enclosure	IP20		
Degree of protection with plastic enclosure	IP20		
Shock load (IEC 60068-2-27)	30 g / 11 ms, half-sine		
Vibratory load (IEC 60068-2-6)	10 ... 100 Hz, 5 g		
<b>Temperature range</b>			
Rated temperature T <sub>a</sub>	°C	25	
Ambient temperature T <sub>a</sub>	°C	-25 ... +70	
Storage temperature T <sub>s</sub>	°C	-40 ... +80	

## 6.5.3 Technical specifications of AS-Interface F adapter

AS-Interface F adapter		3SF5402-1AA03	3SF5402-1AB03
		3SF5402-1AA04	3SF5402-1AB04
		3SF5402-1AA05	3SF5402-1AB05
Rated operational current $I_e$	A	0,6	
Rated operational voltage $U_e$		24 V DC -15 % / +10 % PELV	
Rated insulation voltage $U_i$	V	32	
Rated impulse withstand voltage $U_{imp}$	V	800	
Performance Level		PLe	
Category		4	
Safety integrity level		SIL 3	
Standard		EN 954-1	
I/O configuration (Hex) / ID code (Hex) ID1 code	I	0 / B	7 / B
(Hex) / ID2 code (Hex)	I	F / F	F / 0
Total power consumption	I	≤ 60 mA	≤ 60 mA
Reverse polarity protection	I	Integrated	Integrated
<b>Inputs</b>			
Low signal range	$I_{in}$	Contact open	Contact open
High signal range	$I_{in}$	Contact closed dynamically ( $I_{peak} \geq 5 \text{ mA}$ )	Contact closed dynamically ( $I_{peak} \geq 5 \text{ mA}$ )
LED control	$U_{out}$	—	20 V ... 25 V
Maximum current	$I_{max}$	—	20 mA
Maximum cable length		—	100 mm
Immunity to noise (EN 61000, EN 61496-1)			
IEC 61000-4-2	kV	4 / 8 (front plate mounting)	4 / 8 (front plate mounting)
IEC 61000-4-310 V/m	V/m	10	10
IEC 61000-4-4		1 kV (A) / 2 kV (B)	1 kV (A) / 2 kV (B)
<b>Mechanical data</b>			
Degree of protection		IP20	IP20
Shock load (IEC 60068-2-27)		30 g / 11 ms, half-sine	30 g / 11 ms, half-sine
Vibratory load (IEC 60068-2-6)		10 ... 500 Hz, 5 g	10 ... 500 Hz, 5 g
<b>Temperature range</b>			
Rated temperature	$T_u$	25 °C	25 °C
Ambient temperature	$T_a$	-25 °C ... +70 °C	-25 °C ... +70 °C
Storage temperature	$T_s$	-40 °C ... +80 °C	-40 °C ... +80 °C

## 6.6 Dimensional drawings

### 6.6.1 Dimensional drawings of AS-i slaves

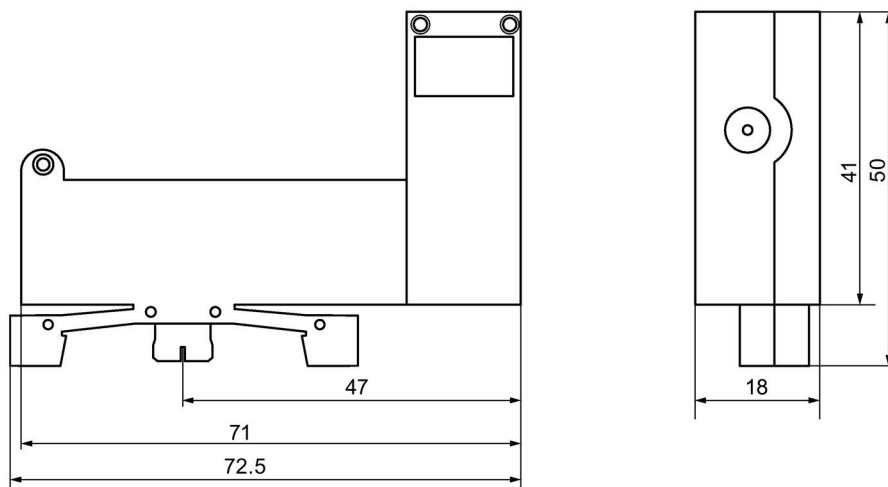
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**Note**

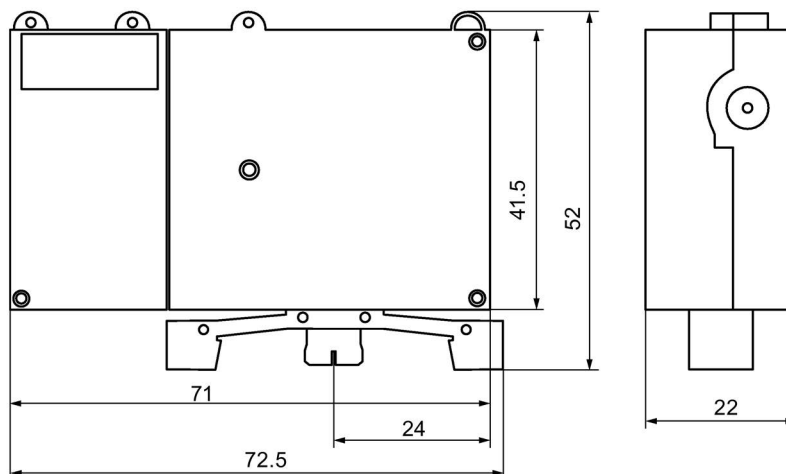
All dimensions specified in mm.

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#### F slave for plastic enclosures (3SF5500-0BA)

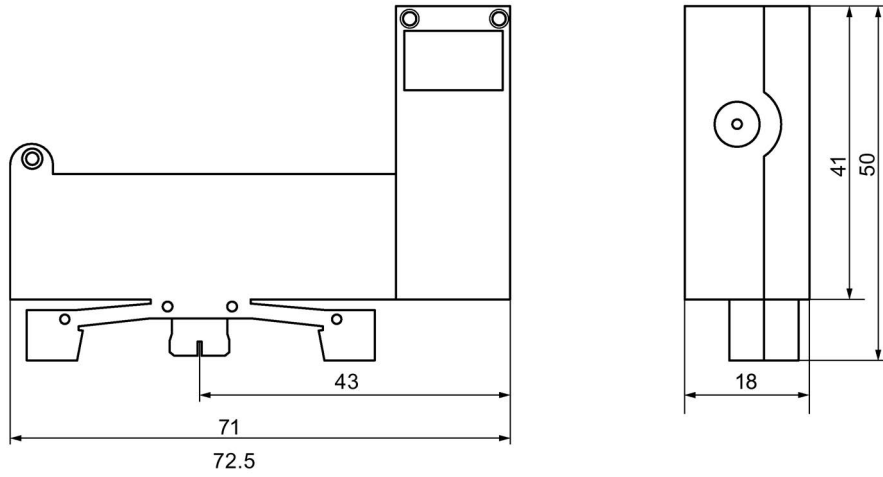


#### A/B slave 4I/30 and slave 4I/40 for plastic enclosures (3SF5500-0BB)

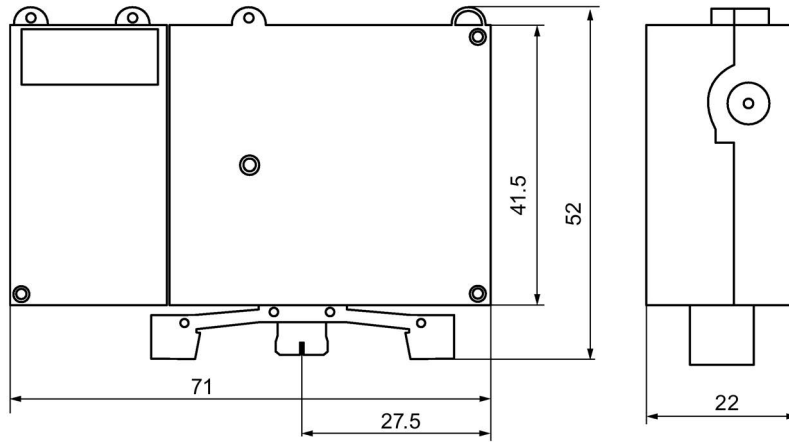




AS-Interface F slave for metal enclosures (3SF5500-0CA)



A/B slave 4I/3O and slave 4I/4O for metal enclosures (3SF5500-0BB)



### 6.6.2 Dimensional drawings of F adapter

#### F adapter for front plate mounting 3SF5402-1AA03

AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons for front plate mounting, screw terminals

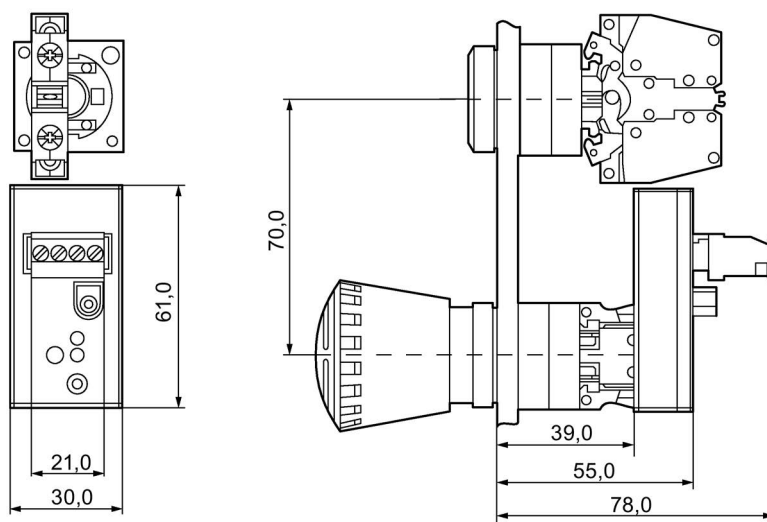


Figure 6-1 3SF5402-1AA03, 3SF5402-1AB03

AS-Interface F adapter for 3SB3 EMERGENCY-STOP mushroom pushbuttons for front plate mounting, spring-type terminals

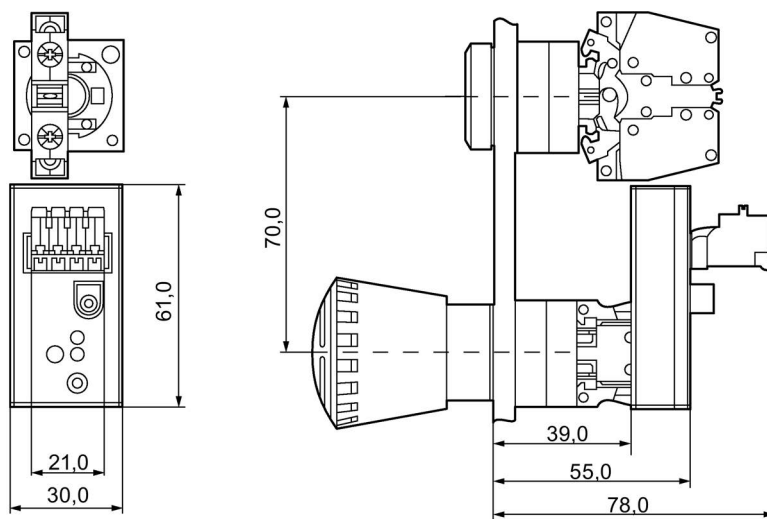


Figure 6-2 3SF5402-1AA04, 3SF5402-1AB04

**AS-Interface F adapter for 3SB3 EMERGENCY STOP mushroom pushbuttons for front plate mounting, insulation piercing method**

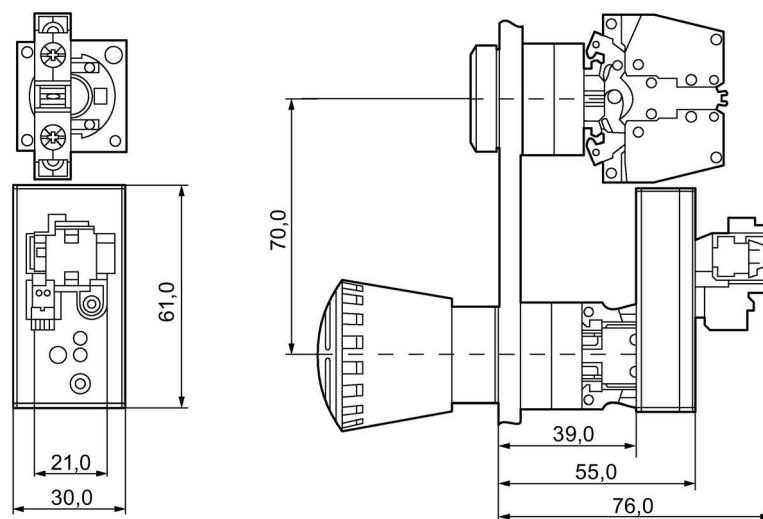
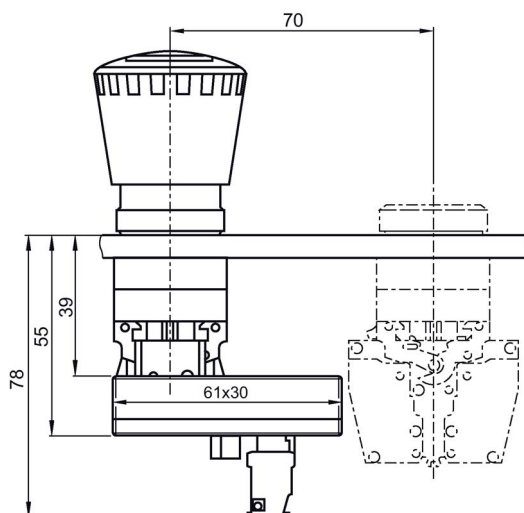


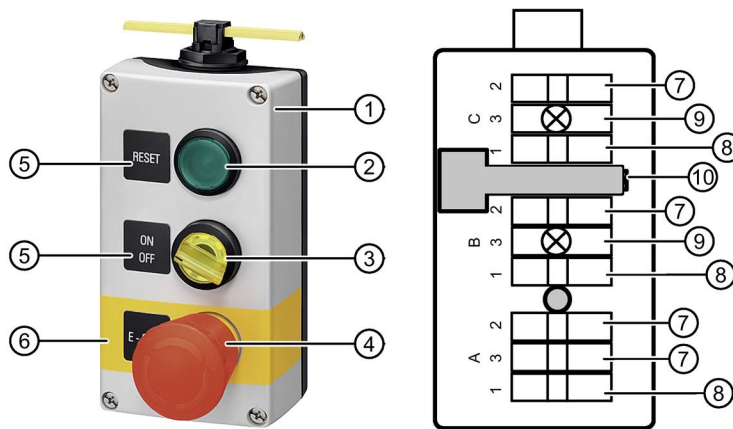
Figure 6-3 3SF5402-1AA05, 3SF5402-1AB05

**6.6.3 AS-Interface F adapter for EMERGENCY STOP mushroom pushbuttons**



## 6.7 Application examples

### 6.7.1 Application example for customized equipment



- ① Enclosures with 3 command points
- ② Pushbutton with raised button
- ③ Selector switch illuminated
- ④ EMERGENCY STOP mushroom pushbutton, diameter 40 mm
- ⑤ Self-adhesive inscription labels
- ⑥ Yellow backing plate as contrasting surface for EMERGENCY STOP, self-adhesive, with recess for labeling plate
- ⑦ Contact block 1 NC
- ⑧ Contact block 1 NO
- ⑨ Lampholder or LED
- ⑩ AS-Interface A/B slave

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#### Note

##### Mounting position of the EMERGENCY STOP mushroom pushbutton

The EMERGENCY STOP mushroom pushbutton may be mounted only at the first or last command point in the enclosure.

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## 6.7.2 Equipment of an EMERGENCY STOP enclosure



### Note

#### Mounting positions

The mounting positions are marked by inscriptions in the lower part of the enclosure.

Actuating element	Mounting position
AS-Interface F slave	A3
Contact block 1 NO	A1
Contact block 1 NC	A2

### 6.7.3 EMERGENCY STOP with signaling contact interrogated via AS-i bus

**NOTICE**  
**Risk of material damage.**  
When installing wiring, make sure that cables are not routed across one another.

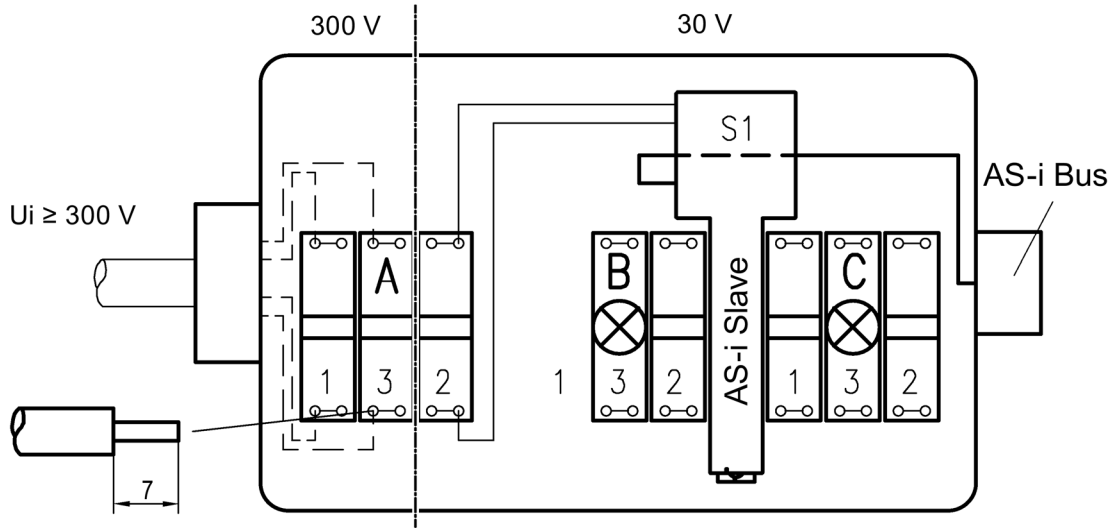


Figure 6-4 Correct wiring

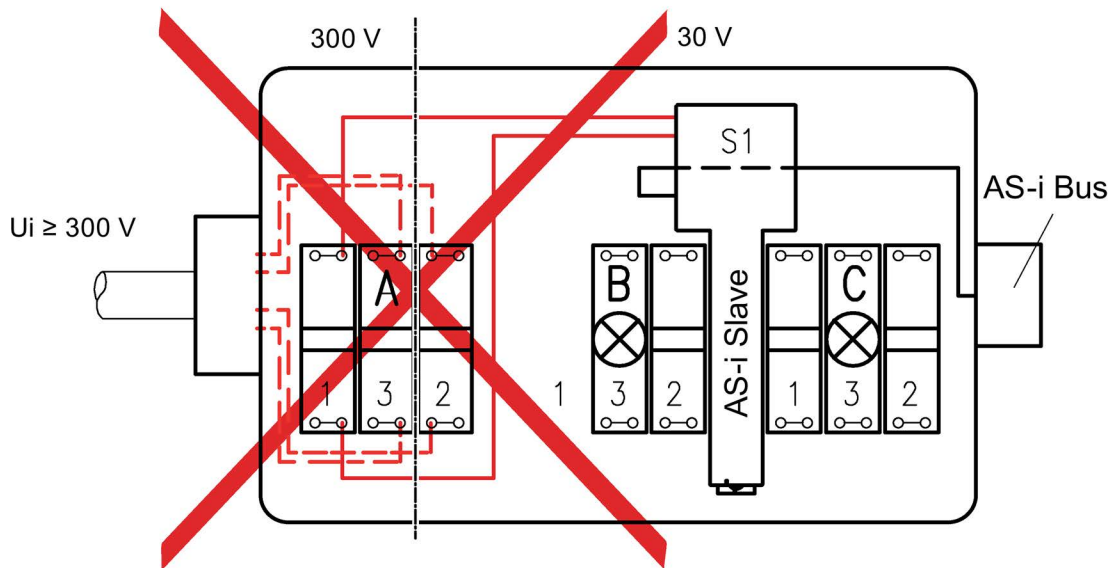


Figure 6-5 Incorrect wiring

## 6.7.4 Mounting positions

The mounting position of the contact blocks and lampholders is specified by the combination of letters and numbers (permissible numbers: 1, 2, 3).

The lowest mounting position of an actuator is always A and the highest possible is F (for enclosures with 6 command points). This yields the following highest possible mounting positions, depending on the number of command points in the enclosure:

- Enclosure with 2 actuators  $\Rightarrow$  B
- Enclosure with 3 actuators  $\Rightarrow$  C
- Enclosure with 4 actuators  $\Rightarrow$  D
- Enclosure with 6 actuators  $\Rightarrow$  F

Contact blocks can be installed at the mounting positions 1 and/or 2, but lampholders only at mounting position 3.

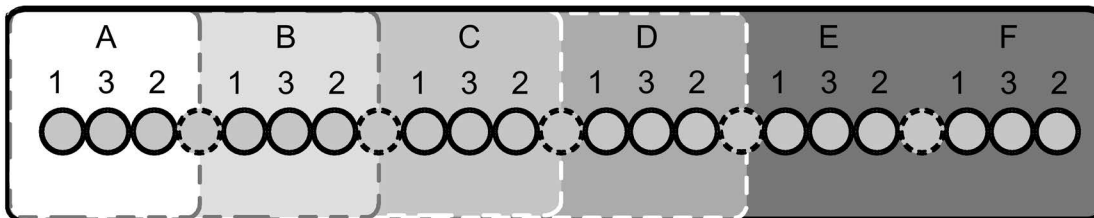


Figure 6-6 Labeling for mounting positions in the enclosure lower part for enclosures with 1 to 6 command points

### Mounting positions of the ASi F slave

#### Note

#### Mounting position of the AS-Interface slave

The AS-i F slave may only be mounted in the enclosure at the slots marked with "3".

The AS-i F slaves are factory-mounted at mounting position A3. At the customer's request, the ASi F slave can also be mounted at the highest mounting position of the actuator. The following mounting positions are possible:

- Enclosure with 3 command points  $\Rightarrow$  C3
- Enclosure with 4 command points  $\Rightarrow$  D3
- Enclosure with 6 command points  $\Rightarrow$  F3

#### Note

#### Enclosures with 2 command points

Enclosures with 2 command points cannot be equipped with an ASi F slave.

### Mounting positions of the ASi standard slaves (A/B slaves)

The ASi standard slaves (3SF5500-0.B, 3SF5500-0.C) are always mounted at the mounting positions for support terminals. These mounting positions are always located between the mounting panels of the actuators and can be recognized by the additional rib of the mounting support.

The following ASi slaves can be mounted:

- Enclosure with 2, 3, 4 and 6 command points ⇒ 1 ASi standard slave (slave 1)
- Enclosure with 4 and 6 command points ⇒ 2 ASi standard slaves (slaves 1 and 2)
- Metal enclosure with 6 command points ⇒ 2 ASi standard slaves (slaves 1 and 2)

---

**Note**

**Metal enclosure with 4 command points**

Metal enclosures with 4 command points can be equipped with a maximum of one AS-i standard slave.

---

**Note**

**Enclosures with one command point**

Enclosures with only one command point cannot be equipped with ASi standard slaves.

---

Mounting position of the AS-Interface standard slave as the first slave

Command points in the enclosure	Mounting position between mounting panels
2	A and B
3	B and C
4	B and C (with plastic enclosure)
4	C and D (with metal enclosure)
6	B and C

Mounting position of the AS-Interface standard slave as the second slave

Command points in the enclosure	Mounting position between mounting panels
4	C and D (with plastic enclosure)
6	D and E

### Example

An enclosure with 6 command points is to be equipped with 2 AS-i standard slaves and 1 ASi F slave.

1. Mount slave 1 between command points B and C.
2. Mount slave 2 between command points D and E.
3. Mount the AS-i F slave at A3.

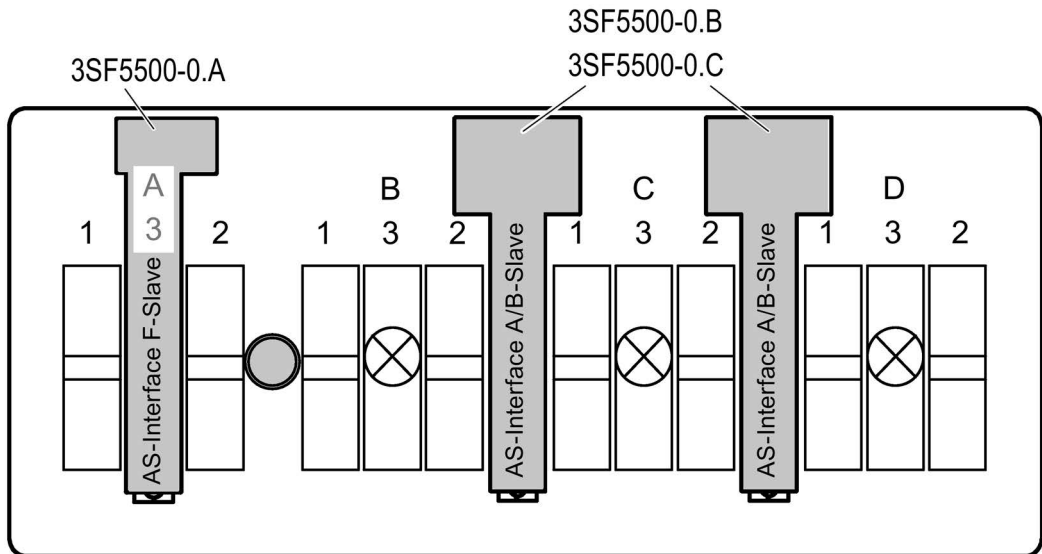


### 6.7.5 Equipping with 1 AS-i F slave and 2 A/B slaves

An enclosure with 4 command points is to be equipped as follows:

- 1 x AS-i F slave
- 2 x A/B slaves
- 3 lampholders

Actuating element	Mounting position
AS-Interface F slave	A3
AS-Interface A/B slave 1	Between mounting panels B and C (with plastic enclosures only)
AS-Interface A/B slave 2	Between mounting panels C and D
Lampholders	3

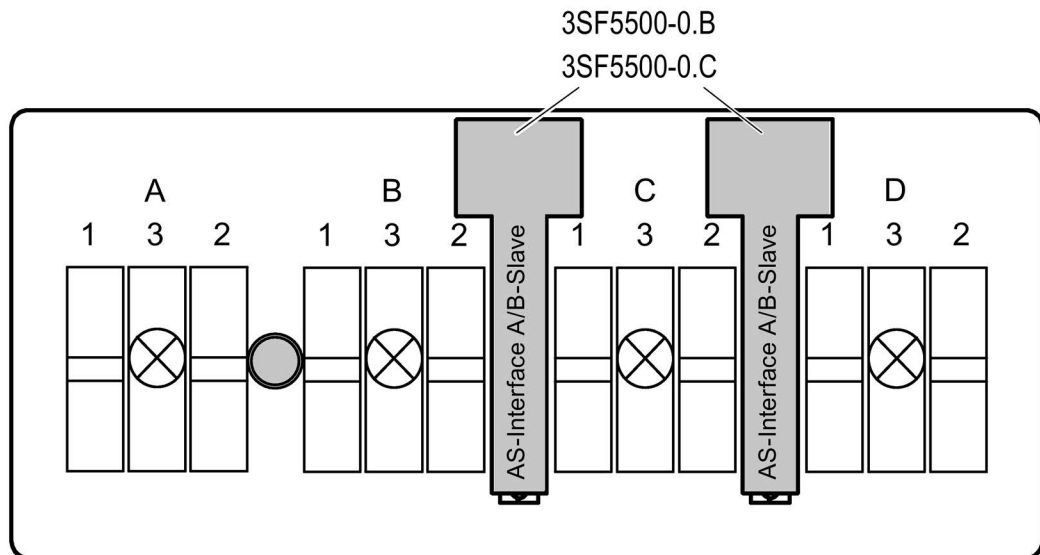


### 6.7.6 Equipping with 2 A/B slaves

An enclosure with 4 command points is to be equipped as follows:

- 2 x A/B slaves
- 4 lampholders

Actuating element	Mounting position
AS-Interface A/B slave	Between mounting panels B and C and between C and D (with plastic enclosures only)
Lampholders	3

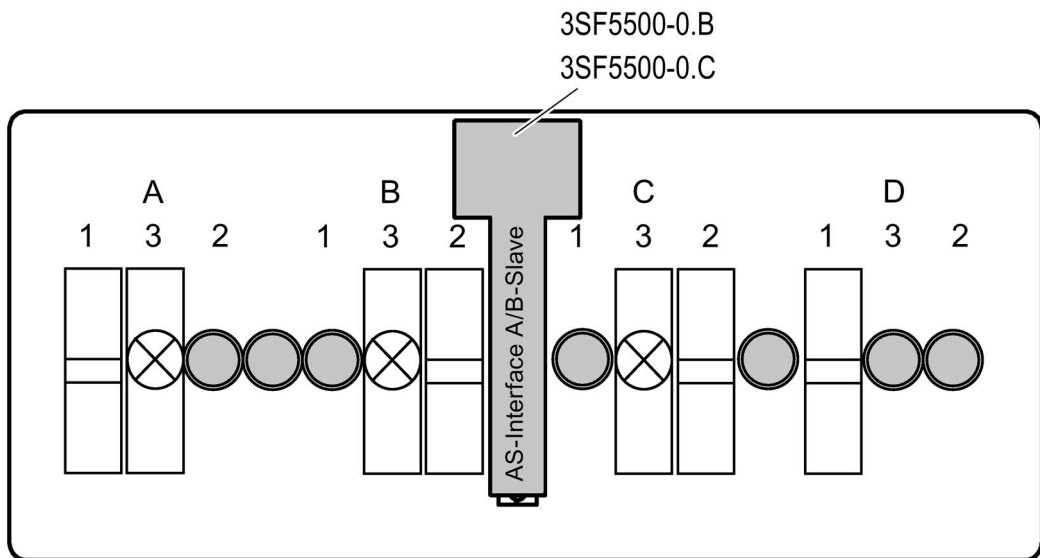


### 6.7.7 Equipping with 1 A/B slave

An enclosure with 4 command points is to be equipped as follows:

- 1 x A/B slave
- 3 lampholders

Actuating element	Mounting position
AS-Interface A/B slave	Between mounting panels B and C (plastic enclosure), between C and D (metal enclosure)
Lampholders	3



### 6.7.8 Wiring examples

Enclosures with AS-Interface are available as prewired units. Examples of circuit arrangements are illustrated in the diagrams below.

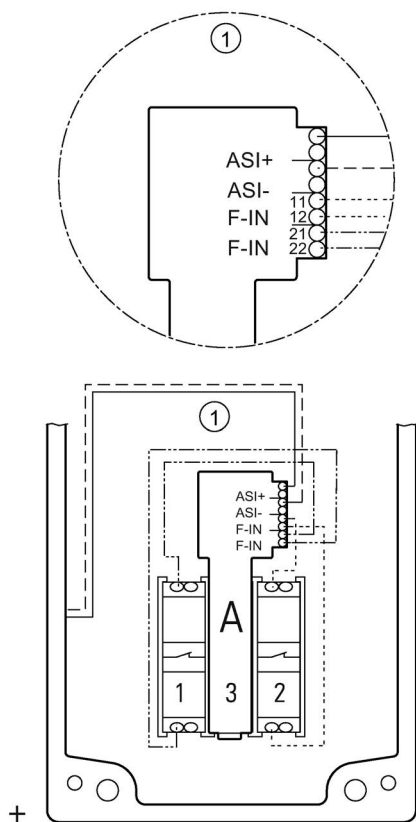
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#### Note

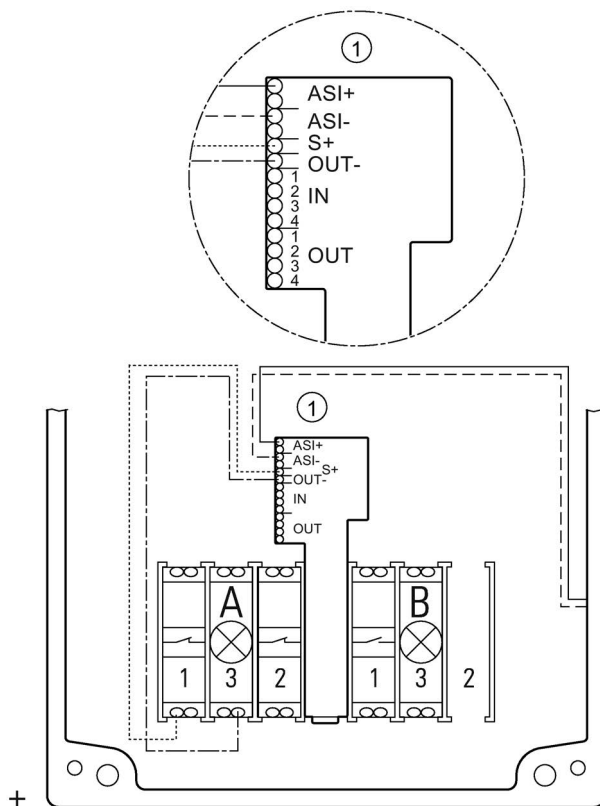
For reasons of clarity, the input and output wiring is not shown in the diagrams.

---

AS-i enclosure with one command point with one AS-i F slave (EMERGENCY STOP), wired to left

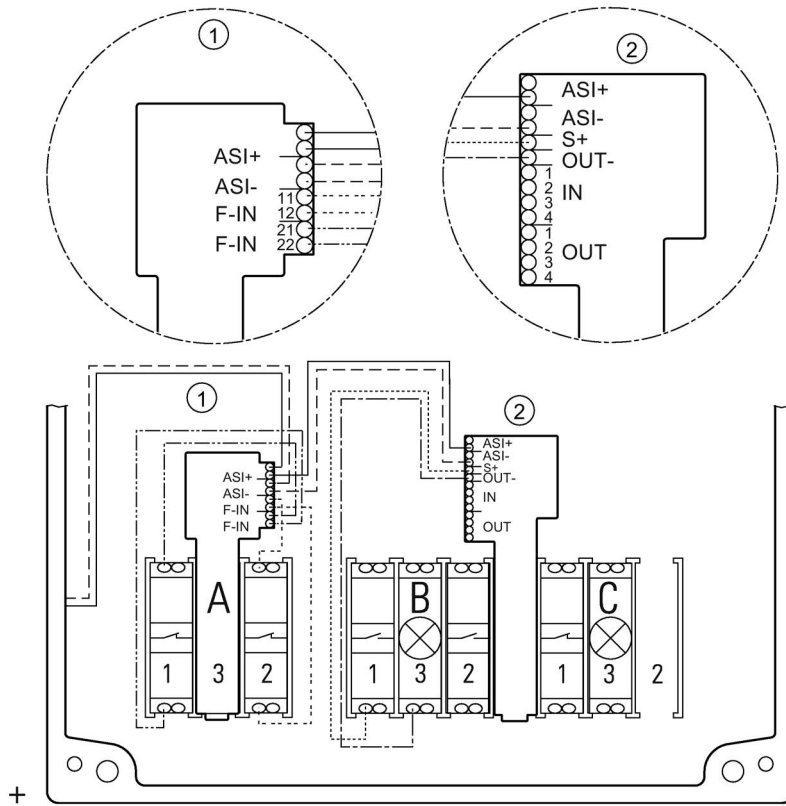


## AS-i enclosure with two command points, wired to right

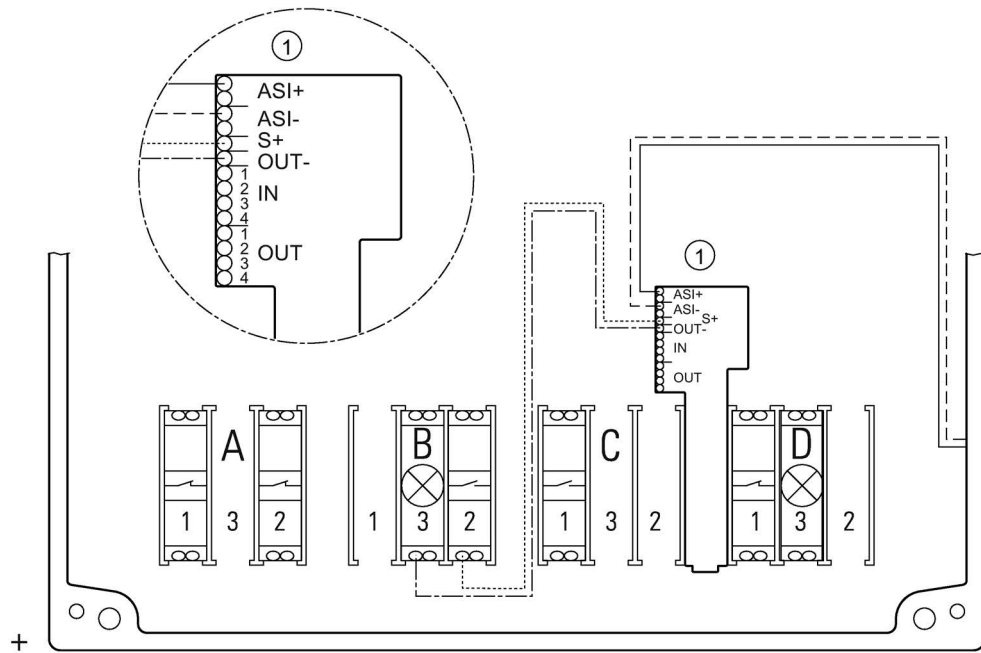
**Note****Enclosures with 2 command points**

Enclosures with 2 command points cannot be equipped with an ASi F slave (EMERGENCY STOP).

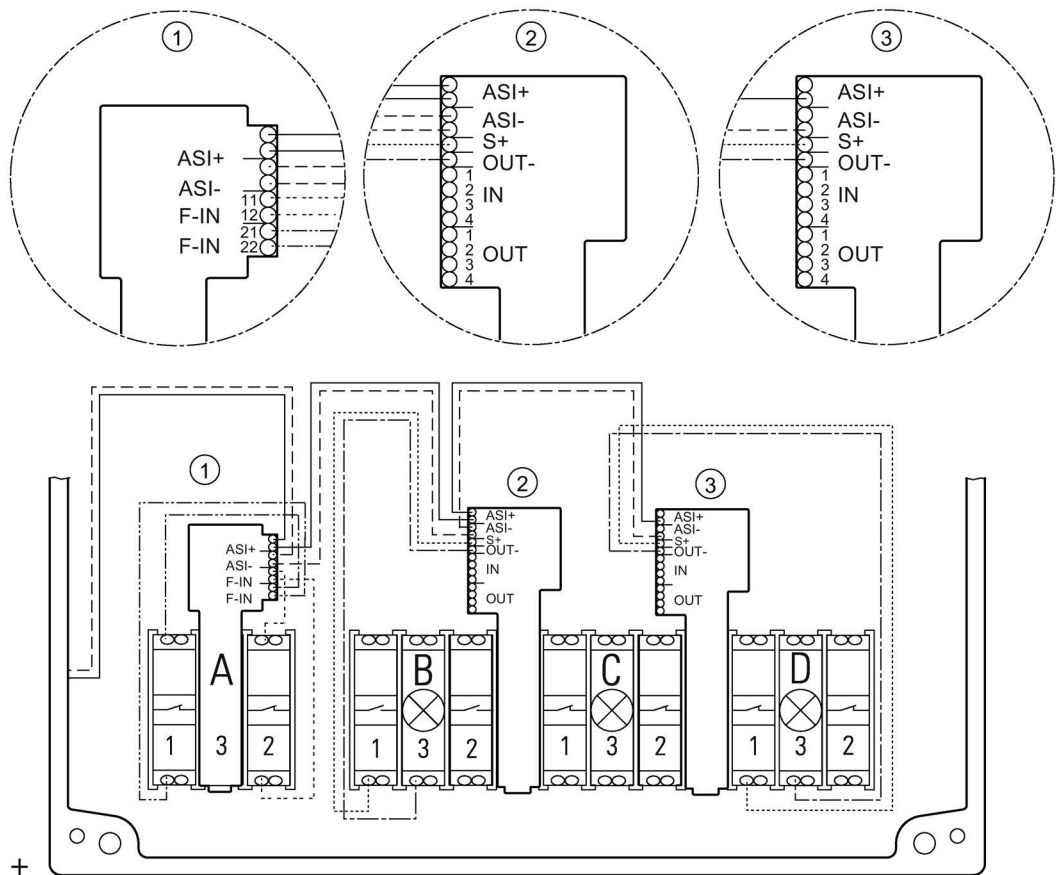
AS-i enclosure with three command points with one AS-i F slave (EMERGENCY STOP) in A3, wired to left



AS-i enclosure with four command points with conventionally wired EMERGENCY STOP in A, wired to right

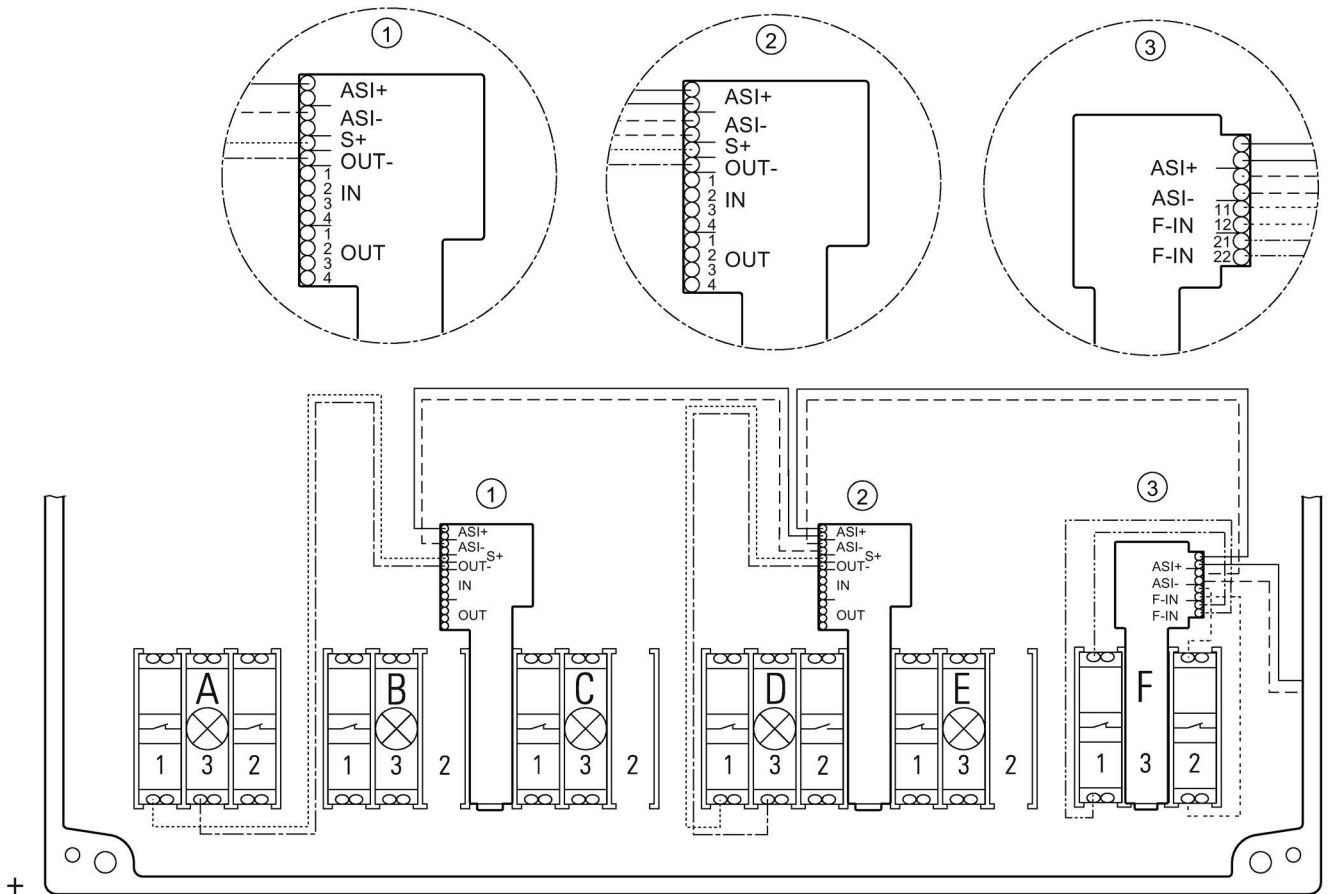


AS-i enclosure with four command points with one AS-i F slave (EMERGENCY STOP) in A3, wired to left



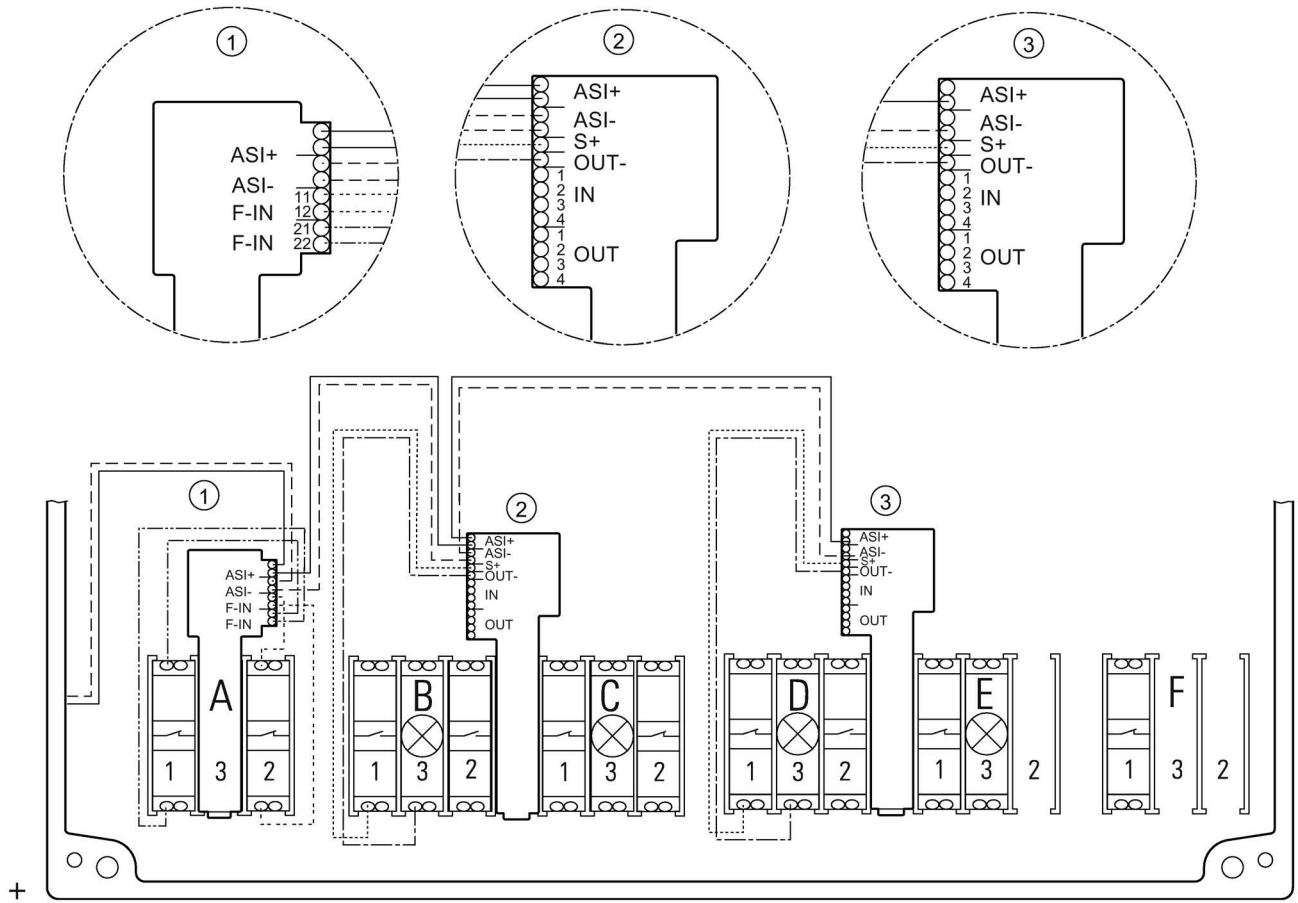


AS-i enclosure with six command points with one AS-i F slave (EMERGENCY STOP) in F3, wired to right



6.7 Application examples

AS-i enclosure with six command points with one AS-i F slave (EMERGENCY STOP) in A3, wired to left



+

## 3SB3 two-hand operation consoles

### 7.1 Application areas

Two-hand operation consoles are used for machines and systems with danger areas for the purpose of controlling the location of both hands of the operator. Through a simultaneous and location-controlled use of both hands, protection from dangerous movement in the danger area of the machine is ensured.

Two-hand operation consoles are used for the following safety requirements:




- Safety at presses and punches
- Safety at printing presses
- Safety at paper processing machines

The synchronous and location-controlled operation using both hands occurs throughout the duration of the danger. Bypassing of the safety mechanism or accidental actuation, e.g., by elbows, arms or knees, is effectively prevented by protective collars over the actuating elements. The sloping shape of the top enables ergonomic operation and working position. Expansion to include additional operator controls is possible.

The control command is given by pressing the two mushroom pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

For evaluation of the control commands, the associated 3TK2834 and 3TK2835 two-hand control units are offered as overtravel test devices in relay technology.

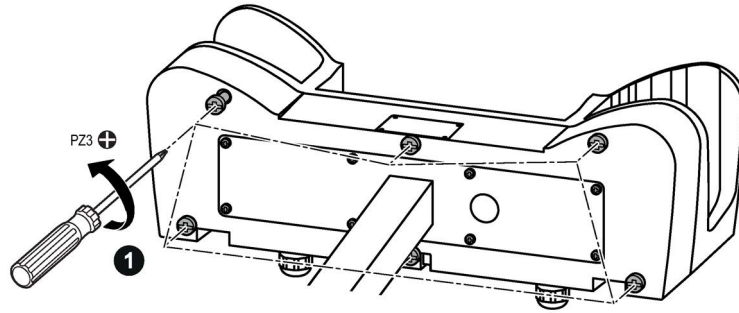
## 7.2 Overview of two-hand operation consoles

Two-hand operation consoles		Article No.
	<b>Two-hand operation console, metal enclosure</b>	
	With standard equipment	3SB3863-4BB
	With standard equipment and 4 additional holes for 22.5 mm command devices	3SB3863-4BA
	Empty enclosure, unequipped	3SB3863-4BC
	<b>Two-hand operation console, plastic enclosure</b>	
	With standard equipment and preset breaking points for 8 additional 22.5 mm command devices, with knock-outs for metric cable glands	3SB3863-1BB3
<b>Accessories for two-hand operation consoles</b>		
	<b>Stand for two-hand operation console</b>	
	With knock-outs for metric cable glands	3SB3901-0AQ3

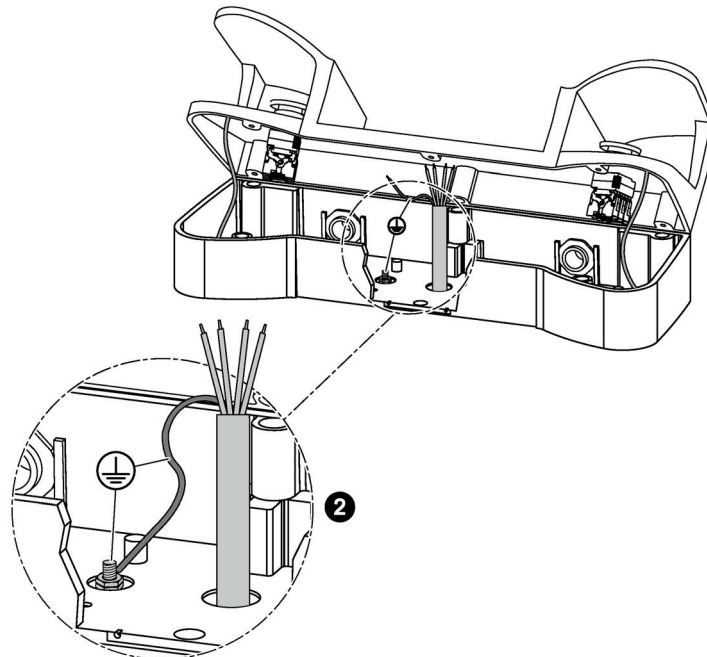
## 7.3 Mounting

The two-hand operation console can be mounted on the associated stand or directly on the machine using the holes in the rear wall.

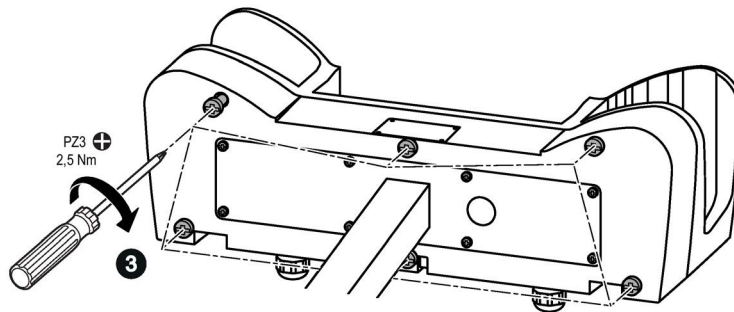
1. Unscrew the cover on the bottom of the two-hand operation console.



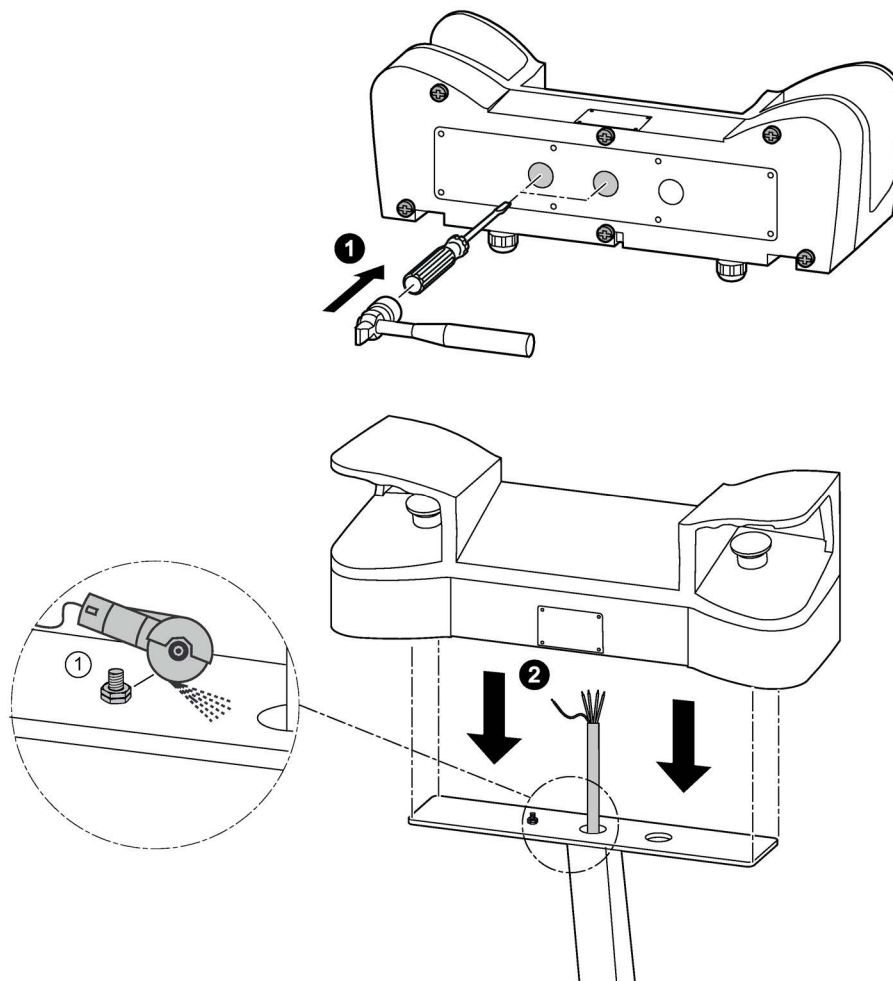
2. Wire and ground the two-hand operation console.



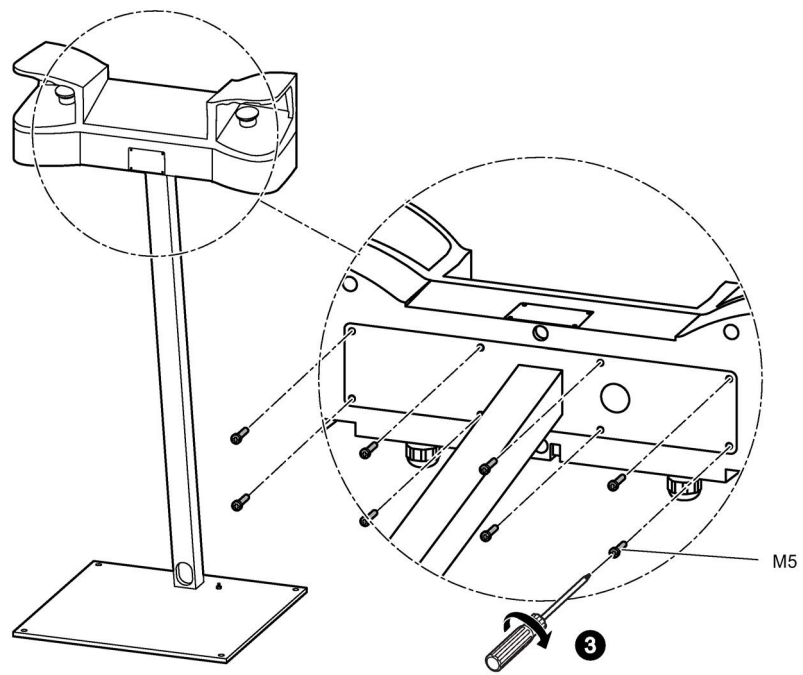
3. Screw on the cover.



### 7.3.1 Mounting on stand



① For the two-hand operation console with plastic enclosure 3SB3863-1BB3, the grounding screw must be removed.



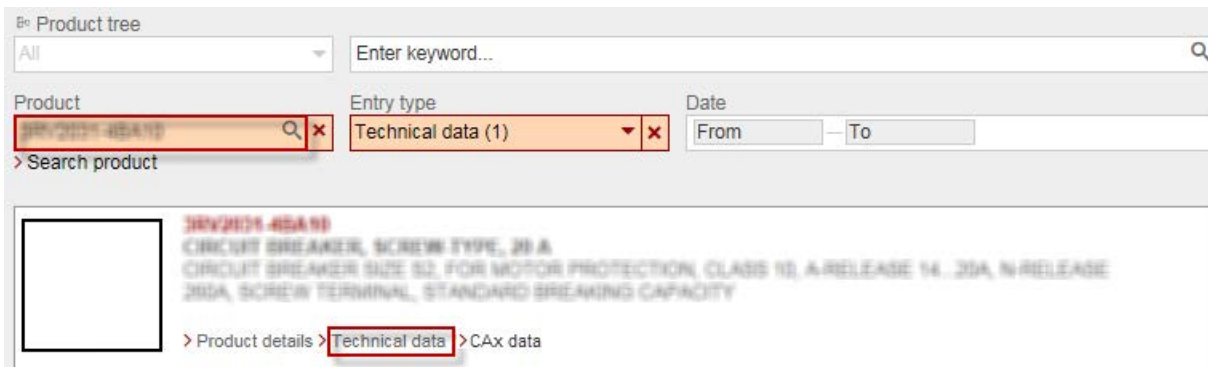
## 7.4 Technical specifications

### 7.4.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.





Type	3SB3863-1B.	3SB3863-4B.
<b>Two-hand operation consoles</b>		
Standards	IEC 60947-5-1 / IEC 60947-5-5, EN ISO 13850, EN 574	
Material of the enclosure	Plastic	Metal
Material of the actuator and indicator	Plastic	Metal
Degree of protection according to IEC 60529 (VDE 0470 Part 1)	IP65	
Climatic test in accordance with EN ISO 6270-2: Saturated atmosphere with variations in air temperature	KTW24	
Rated insulation voltage $U_i$	V	400
Rated impulse withstand voltage $U_{imp}$	kV	6
Power $P_{vmax}$	W	2,5
$I_e @$	A	$\leq 10$
$I_e @ \leq 3 x$	A	$\leq 8$
Ambient temperature	$^{\circ}C$	-25 ... +70
Conductor cross-sections screw terminal <sup>1)</sup>		
• Finely stranded, without end sleeves	mm <sup>2</sup>	—
• Finely stranded, with end sleeves according to DIN 46228	mm <sup>2</sup>	2 × (0,5 ... 1,5)
• Solid	mm <sup>2</sup>	2 × (1 ... 1,5)
• Solid, with end sleeves according to DIN 46228	mm <sup>2</sup>	2 × (0,5 ... 0,75)
• AWG cables, solid or stranded		2 × AWG 18 ... 14
Tightening torque, connection screw	Nm	0,8

1) For standard screwdriver size 2 or Pozidriv 2

## 7.5 Accessories

### 7.5.1 Equipment

The two-hand operation consoles are pre-equipped with 3SB3 command devices. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic, in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard equipment comprises:

- Two black mushroom pushbuttons, diameter 40 mm, 1 NO + 1 NC, Article No. 3SB3000-1GA11 or 3SB3500-1GA11
- One red EMERGENCY STOP mushroom pushbutton according to EN ISO 13850, diameter 40 mm, with positive latching, 2 NC, Article No. 3SB3000-1HA20 or 3SB3500-1HA20

An unequipped empty enclosure is also available in the metal version.

The plastic version can be retrofitted with up to 8 command points on a customer-specific basis. The surface of the console has premachined breaking points for this purpose.

The following components are not integral parts of the product. They can be ordered separately:

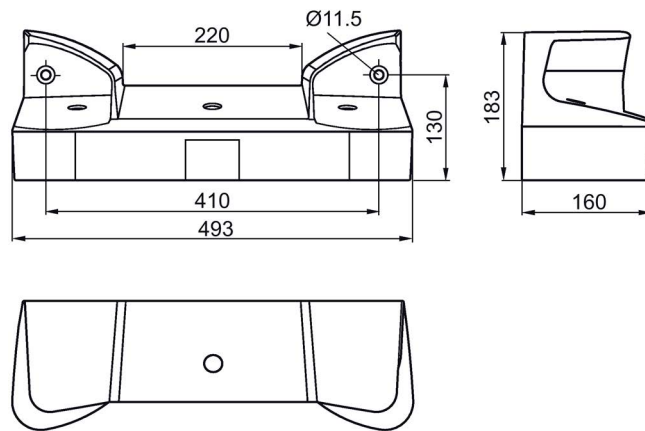
Accessories	Article No.
Labeling plate	3SB3901-0CH
Pushbuttons or indicator lights	3SB2 / 3SB3
Lampholders	3SB2304-2A lampholder W2 x 4.6 d without lamp 3SB2304-2F lampholder W2 x 4.6 d with incandescent lamp 6 V 3SB2304-2H lampholder W2 x 4.6 d with incandescent lamp 24 V
Key-operated switches	3SB3000-4LD05 3SB3000-4PD05
Stands for two-hand operation console	3SB3901-0AQ3

## 7.6 Dimensional drawings

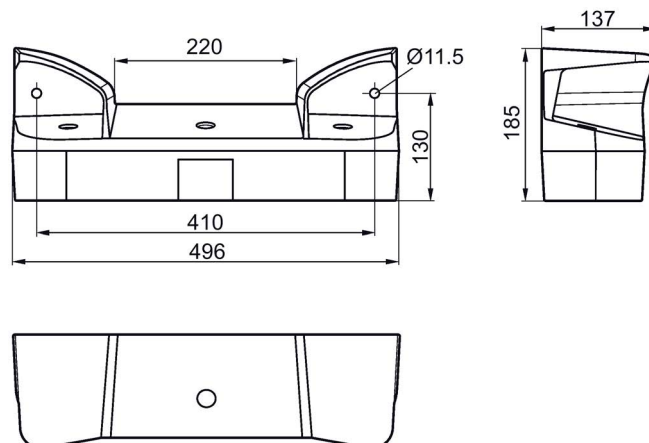
**Note**

All dimensions specified in mm.

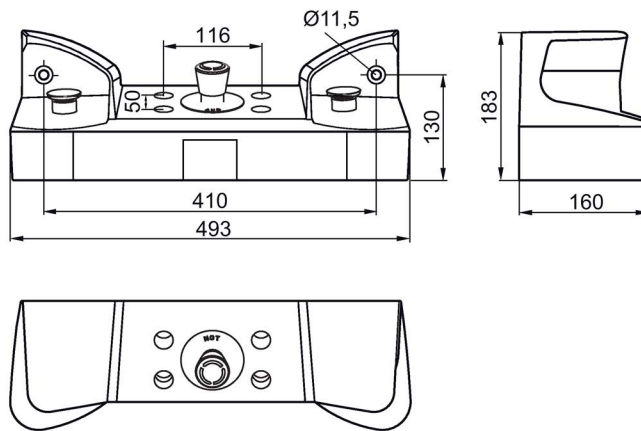
### 3SB3863-1 operation console with plastic enclosure



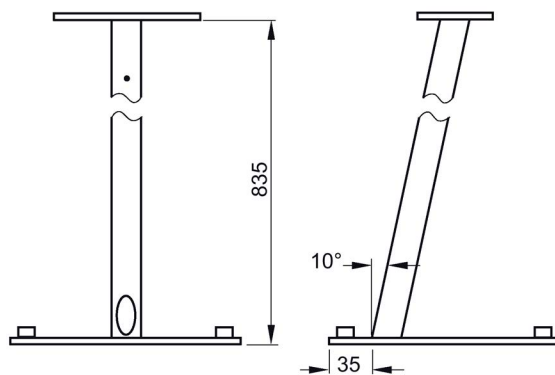
### 3SB3863-4 operation console with metal enclosure



3SB3863-4BA operation console with 4 additional holes

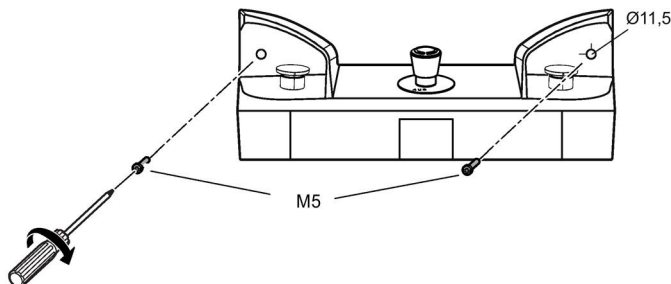


3SB3901-0AQ3 stand



## 7.7 Application examples

Two-hand operation console, wall-mounted



## 3SE7 cable-operated switches

### 8.1 Application areas

Cable-operated switches are used to protect conveyors or other very long machines.

Examples are:

- Conveyor belts in the stone and soil industries
- Paper feeders at printing machines
- Conveyor belts in food production processes
- Material feeders at automated production machines
- Door opening switches on factory doors and gates

SIRIUS 3SE7 cable-operated switches are used for monitoring high-risk areas or as EMERGENCY STOP devices on particularly endangered system components.

They are available as a complete EMERGENCY STOP system according to ISO 13850 (EN 418) or with an integral EMERGENCY STOP button.

The switches are equipped with positive latching and positive NC contacts and are thus suitable for operation in  EMERGENCY STOP devices according to EN ISO 13850.

As the effective range of a cable-operated switch is only limited by the length of the trip-wire, large systems can also be protected. Cable-operated switches (requiring pulling at both ends) and conveyor belt unbalance trackers are used primarily for monitoring very long conveyor systems.




## 8.2 Overview





For long distances of up to 2 x 100 m, complete devices are available with metal enclosure and actuation on both sides or as conveyor belt unbalance trackers for monitoring conveyor systems.

Alternatively, it is also possible to use LED technology or cable-operated switches with integral EMERGENCY STOP button.

The switches for wire lengths up to 50 m are supplied with 1 NO + 1 NC or 2 NC contacts and those up to 75 m with 1 NO + 3 NC contacts. The switches for wire lengths of 2 x 100 m and the conveyor belt unbalance tracker are supplied with 2 NO + 2 NC contacts.

The cable-operated switch and the conveyor belt unbalance tracker can be supplied optionally with a factory-fitted LED (red, 24 V DC). This light in chip-on-board technology makes the operating state of the switch visible at a distance of at least 50 m.

 <p>3SE7120-1BH00</p>	<b>Metal enclosure, IP65, cover made of molded plastic, for wire lengths up to 10 m</b>			
	<ul style="list-style-type: none"> <li>Without latching, only cable pull monitoring</li> </ul>	⊕	1 NO + 1 NC	3SE7120-2DD01
	<ul style="list-style-type: none"> <li>With latching and button reset, with alignment window</li> </ul>	⊕	2 NC	3SE7120-1BF00
<ul style="list-style-type: none"> <li>With latching and button reset with yellow cover, with alignment window</li> </ul>	⊕	1 NO + 2 NC	3SE7120-1BH00	
 <p>3SE7150-2DD00</p>	<b>Metal enclosure, IP65, cover made of molded plastic, for wire lengths up to 25 m</b>			
	<ul style="list-style-type: none"> <li>Without latching</li> </ul>	⊕	1 NO + 1 NC	3SE7150-2DD00
 <p>3SE7150-1BD00</p>	<b>Metal enclosure, IP65, with alignment window, cover made of molded plastic, for wire lengths up to 25 m</b>			
	<ul style="list-style-type: none"> <li>With latching and button reset, with alignment window</li> </ul>	⊕	1 NO + 1 NC	3SE7150-1BD00
	<ul style="list-style-type: none"> <li>With latching and button reset, with alignment window</li> </ul>	⊕	2 NC	3SE7150-1BF00
<ul style="list-style-type: none"> <li>With latching and button reset with yellow cover, with alignment window</li> </ul>	⊕	1 NO + 2 NC	3SE7150-1BH00	
<ul style="list-style-type: none"> <li>With latching and button reset, with LED lamp, with alignment window</li> </ul>	⊕	1 NO + 1 NC	3SE7150-1BD04	
<ul style="list-style-type: none"> <li>With latching and button reset, with yellow cover, with LED lamp, with alignment window</li> </ul>	⊕	1 NO + 2 NC	3SE7150-1BH04	
<ul style="list-style-type: none"> <li>With latching and key-operated release, with alignment window</li> </ul>	⊕	1 NO + 1 NC	3SE7150-1CD00	
<ul style="list-style-type: none"> <li>Without latching, cable-operated function only, with LED lamp, with alignment window</li> </ul>	⊕	1 NO + 1 NC	3SE7150-2DD04	

 3SE7140-1B.00	<b>Metal enclosure, IP65, cover made of molded plastic, for wire lengths up to 50 m</b>			
	• With latching and button reset	⊕	1 NO + 1 NC	3SE7140-1BD00
	• With latching and button reset	⊕	2 NC	3SE7140-1BF00
	• With latching and button reset, with LED lamp	⊕	1 NO + 1 NC	3SE7140-1BD04
	• With latching and key-operated release	⊕	1 NO + 1 NC	3SE7140-1CD00
	• Without latching, cable-operated function only, with LED lamp	⊕	1 NO + 1 NC	3SE7140-2DD00-0AS2
• Without latching, cable-operated function only, with LED lamp	⊕	1 NO + 1 NC	3SE7140-2DD05-0AS3	
 3SE7141-1EG10	<b>Metal enclosure, IP67, cover made of molded plastic, for wire lengths up to 75 m</b>			
	• With EMERGENCY STOP, latching and rotate-to-unlatch mechanism	⊕	1 NO + 3 NC	3SE7141-1EG10
 3SE7160-1AE00	<b>Metal enclosure, IP65, with actuation on both sides, for wire lengths up to 2 x 100 m</b>			
	• With latching and button reset	⊕	2 NO + 2 NC	3SE7160-1AE00
	• With latching and button reset	⊕	1 NO + 1 NC	3SE7160-1BD00
	• In addition with LED, red, 24 V DC	⊕	2 NO + 2 NC	3SE7160-1AE04
<b>Conveyor belt unbalance trackers</b>				
 3SE7310-1AE00	<b>Metal enclosures, IP65</b>			
	• With latching and button reset	⊕	2 NO + 2 NC	3SE7310-1AE00
	• With latching and button reset, with LED lamp, red, 24 V DC	⊕	2 NO + 2 NC	3SE7310-1AE04

⊕ Positive opening according to IEC 60947-5-1, Appendix K

For further variants, please refer to Catalog IC 10 in the Information and Download Center (<http://www.siemens.de/industrial-controls/infomaterial>).

### 8.2.1 Function

The NC contacts of the cable-break or cable-pull signaling are positive opening.

Cable-operated switches with one-sided operation are made ready for use by pre-tensioning the tension lock.

Both switching contacts for the wire break/wire pull signal are available in the 3SE7140 and 3SE7150 cable-operated switches. The NO contact can be used, for example, for signaling purposes.

On switches with interlocking, with a pretensioned cable, the locking must be deactivated beforehand in order to return the cable-operated switch to its original position.

### 8.2.2 Cable-operated switches with EMERGENCY STOP function

The EMERGENCY STOP function of the cable-operated switches can be activated at any point along the wire.

The connection between the NC contacts and the wire is positively driven.

The wire of the cable-operated switch must be pre-tensioned with the correct preload (Page 175) in order to render the switch operational.

When the cable-operated emergency switch is in the operating state, the NC contacts are closed and the NO contacts open.

---

#### Note

Make sure that the cable-operated switch is correctly installed or else it will not be possible to deactivate the lock.

---



### 8.2.3 Resetting the latching mechanism

The latching mechanism can be reset (EMERGENCY STOP switch) by performing the following actions:

- Pressing the pushbutton
- Pulling the wire
- Turning a key

With a cable-operated switch, the operator pulls a plastic-sheathed steel wire.

### 8.2.4 Cable-operated switches with EMERGENCY STOP function and rotate-to-unlatch mechanism

#### 3SE7141-1EG10

If the arrow in the status display is pointing to the center position (= correct wire tension), the blue lever can be turned from "0" to "1", thus activating the switch.

In the current design, the operator can intervene using the EMERGENCY STOP button. This means that the system can be deactivated centrally. The blue lever jumps back to "0".

The cable-operated switch can be reactivated using the blue lever as long as the correct wire pre-tensioning is maintained. The EMERGENCY STOP button need not be unlatched for this purpose.

### 8.2.5 Positive opening ensures safety

The NC contacts are positive opening contacts, i.e. the contacts open and interrupt the circuit as soon as a wire breaks or is pulled. Furthermore, the cable-operated switches can be adjusted to within a millimeter, a process that is made easier by a position indicator on the switch itself.

## 8.3 Mounting

### 8.3.1 Selection criteria

---

<b>Selection criteria for 3SE7 cable-operated switches / conveyor belt unbalance trackers</b>	
Wire lengths	10 m, 25 m, 50 m, 75 m, 2 x 100 m
Switching contacts	Varying number of NO and NC contacts (depending on article number)
Cover	<ul style="list-style-type: none"><li>• Gray</li><li>• Yellow</li></ul>
Latching	<ul style="list-style-type: none"><li>• With</li><li>• Without</li></ul>
Unlatching	<ul style="list-style-type: none"><li>• Push-to-unlatch mechanism</li><li>• Key-operated release</li><li>• Rotate-to-unlatch mechanism (depending on article no.)</li></ul>
Visual signal	<ul style="list-style-type: none"><li>• None</li><li>• With LED red, 24 V DC</li></ul>
Integrated EMERGENCY STOP	Yes / No
Alignment window (position indication of pretensioned wire)	Yes / No
Accessories	Steel wire, wire clamps, wire eyes, eyebolts
Basic equipment	

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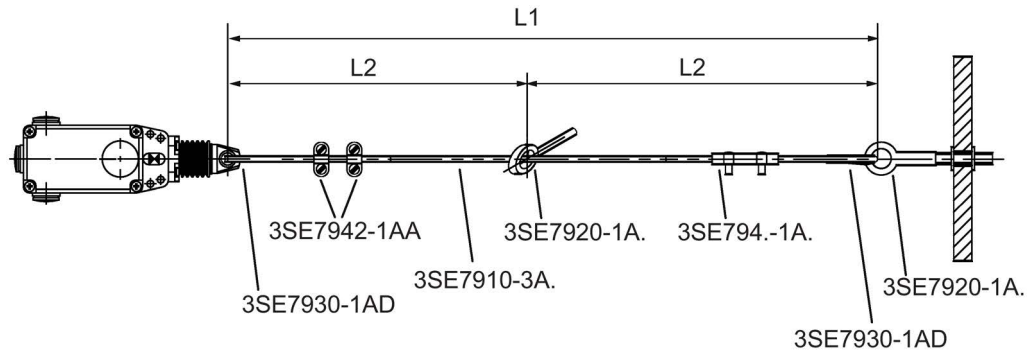
#### **Note**

#### **Wire lengths in excess of 25 m**

Tension springs and wire supports must be used for wire lengths in excess of 25 m.

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

### 8.3.2 Permissible wire lengths and actuating forces



To ensure proper operation of cable-operated switches, they must be installed with specific preloads.

No allowance for elongation of the wire by stretching or deformation of the wire eye is included in the values.

You will find permissible wire lengths and preloads in the table below:

	3SE7120	3SE7150	3SE7140	3SE7140-1BD00 3SE7140-1BD04 3SE7140-1CD00 3SE7140-1BF00	3SE7141	3SE7160
				+ 1 x 		+ 2 x 
L1 wire length (max.)	10 m	25 m	50 m	130 m <sup>2)</sup>	75 m	2 x 100 m <sup>3)</sup>
L2 wire support (max.)	3 m	3 m	5 m	5 m	5 m	4 m
Actuator travel	11 cm	11 cm	13 cm	13 cm	20 ... 22 cm	32 ... 40 cm
Preload	55 N	200 N	295 ... 390 N	295 ... 390 N	100 N	40 N
Actuating force <sup>1)</sup>	38 ... 60 N					

<sup>1)</sup> Since spring forces are subject to tolerances, the specified actuating forces are guide values only.

<sup>2)</sup> When using one tension spring

<sup>3)</sup> When using two tension springs

#### Note

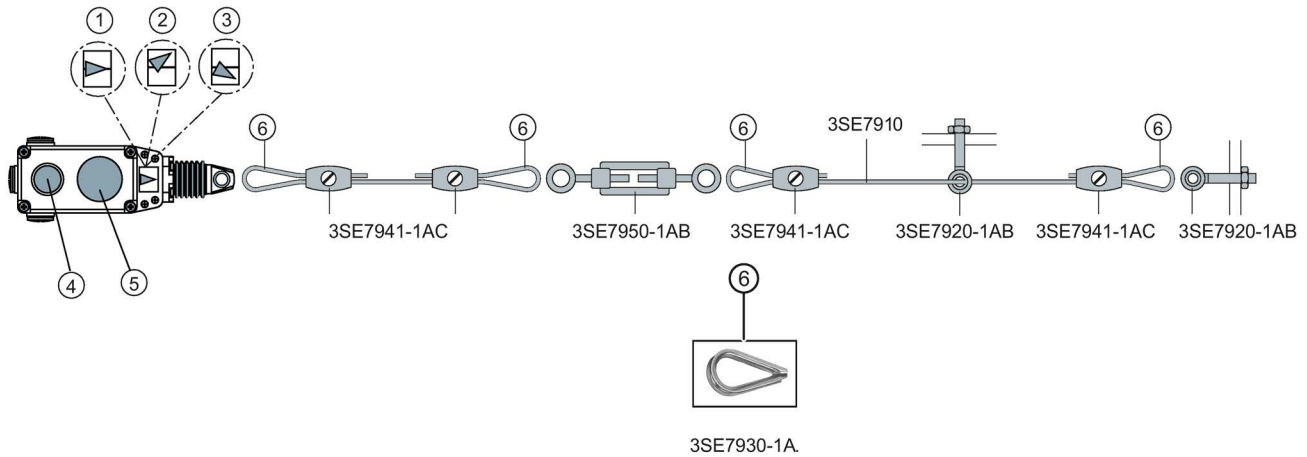
Large temperature fluctuations require corresponding tension springs. The specified values are valid when the switches are installed at an ambient temperature of 20 °C.

For reliable connection the PVC sheath must be removed from the clamping area of the steel Bowden wire. Bowden wire supports must be used at the recommended intervals.

### 8.3.3 Switch position indicator

**Note**

Please study the illustration of the switch position indicator in the diagram below before you assemble the cable-operated switch.



① ② ③ = Position indication window of the pretensioned wire

① Wire is correctly tensioned, cable-operated switch is operational.

② Arrow in the reset position. Wire must be tensioned until the indicator arrow is in position ①.

③ Wire is overtensioned, cable-operated switch is not operational. The LED lamp ④ is illuminated red. If the switch does not move automatically to position ②, press the blue reset button ⑤ in order to release the switch.

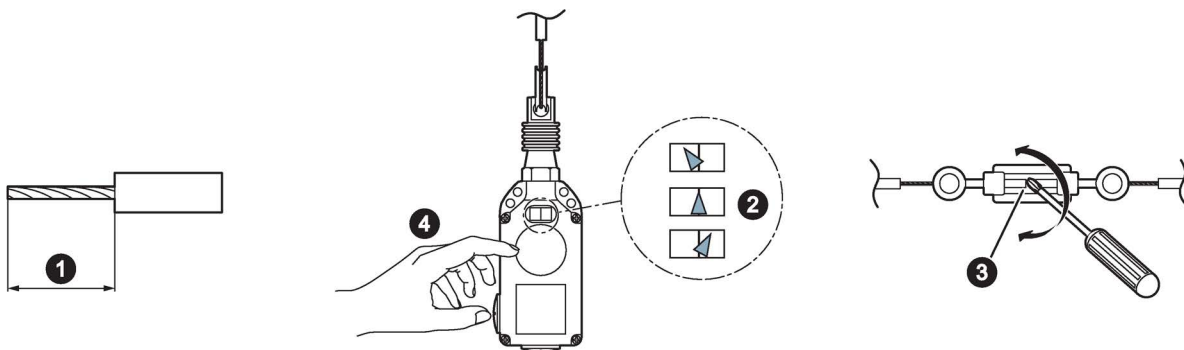
### 8.3.4 Mounting

#### Note

#### General information about mounting cable-operated switches.

The switch may only be actuated by pulling the pull-wire, and never by pushing out the mechanical system inside the enclosure or by using tools to pull the tension ring. The user must regularly check the switch for correct operation.

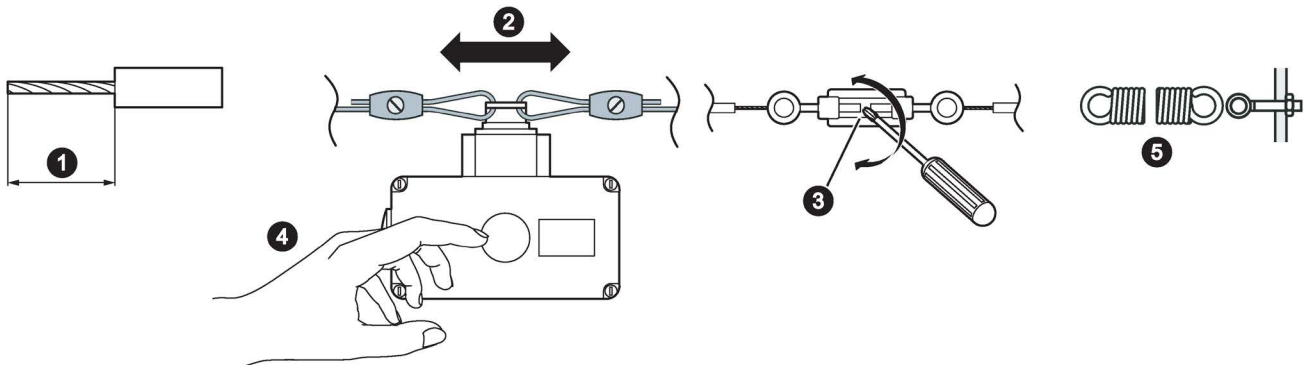
#### 3SE7120-..., 3SE7150-..., 3SE7141-....



1. Remove the plastic sheath from the wire clamping area before you attach the pull-wire. Install the pull-wire as described in the installation instructions.
2. Pretension the wire until the arrow in the position indicator is aligned horizontally (mid-position).
3. After installing the switch, pull the wire forcefully several times as the wire eyes deform when the wire is pulled. Tension the wire using a wire clamp or by means of a turnbuckle.
4. The cable-operated switch must be installed in such a way that it can be safely unlatched by hand.

### 8.3.5 Installing a cable-operated switch with actuation on both sides

3SE7160-1AE...



1. Remove the plastic sheath from the wire clamping area before you attach the pull-wire. Install the pull-wire as described in the installation instructions.
2. Pretension the wire until the operating lever of the cable-operated switch is aligned horizontally (mid-position).
3. After installing the switch, pull the wire forcefully several times as the wire eyes deform when the wire is pulled. Tension the wire using a wire clamp or by means of a turnbuckle.
4. The cable-operated switch must be installed in such a way that it can be safely unlatched by hand.
5. Adjust the tension springs in such a way that the cable-operated switch is tripped at the opposite end if the wire breaks or becomes detached.

**! CAUTION**

**Limitation of travel of tension springs**

Make sure that the tension spring is not under maximum tension. Proper functioning of the cable-operated switch cannot otherwise be guaranteed.

### 8.3.6 Wire breakage and overtensioning

Please note the following with respect to wire breakage and overtensioning:

1. If the wire is pulled too hard and breaks, the signal lamp on cable-operated switches with LED lights up red.
2. The indicator arrow for the operating cam points to the left on all cable-operated switches.
3. If the wire is overtensioned, the indicator arrow points to the right and the switch opens.
4. A reset is triggered and the arrow points to the left.
5. A manual reset can be initiated by actuation of the blue reset button.
6. On cable-operated switches with EMERGENCY STOP function, an emergency stop is initiated when the red button is actuated.

---

#### Note

In the case of cable-operated switches with latching, contacts 21-22 and 41-42 are latched in the open state and contacts 13-14 and 33-34 are latched in the closed state if the wire is pulled or broken. The contacts can be unlatched by means of the button. The contacts can be unlatched only in the mid-position, i.e. in the pretensioned position.

---

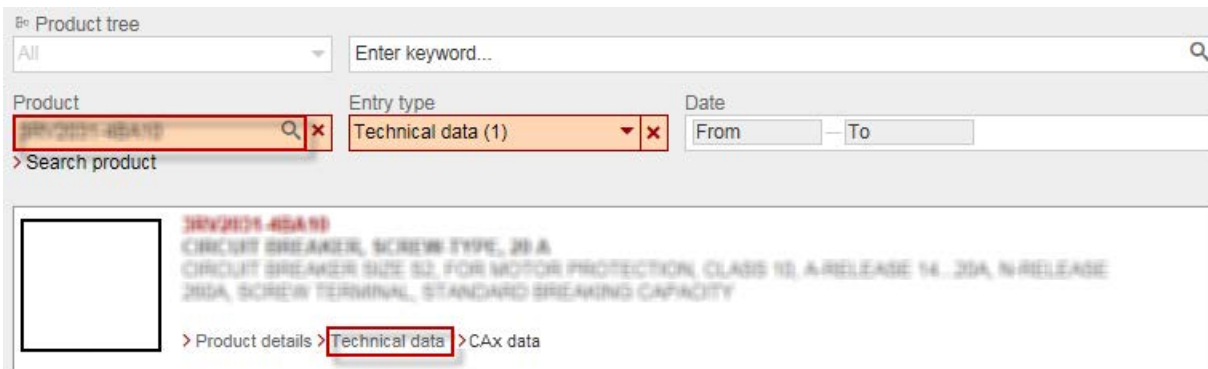
## 8.4 Technical specifications

### 8.4.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.





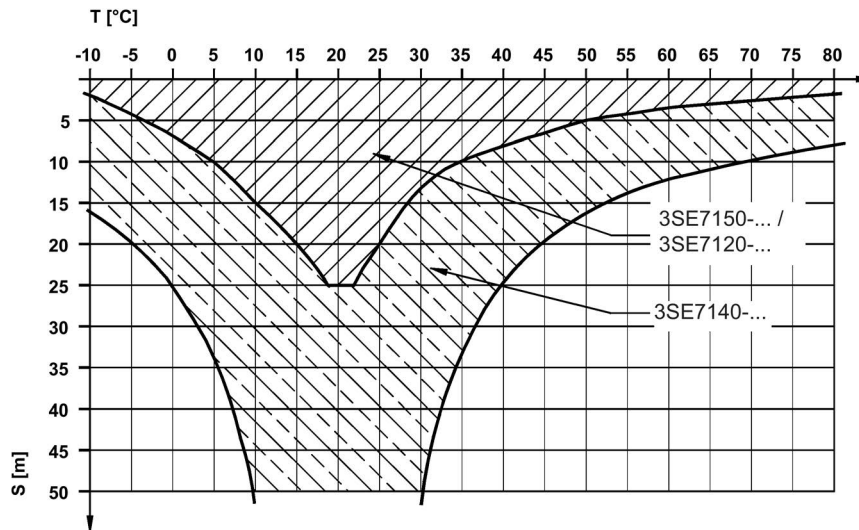
## 8.4.2 Ambient temperature range

### Note

#### Restriction of the ambient temperature range

The thermal expansion behavior of the wire will restrict the ambient temperature range with increasing wire length.

The following diagram shows the ambient temperature range for cable-operated switches of type 3SE7150-.../3SE7120-... and 3SE7140-....






### 8.4.3 Operating travel diagrams

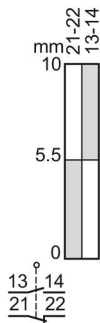
#### Siemens Industry Online Support

You will find the appropriate operating travel diagram for each cable-operated switch on the technical data sheet (see Chapter Technical data in Siemens Industry Online Support (Page 180)).

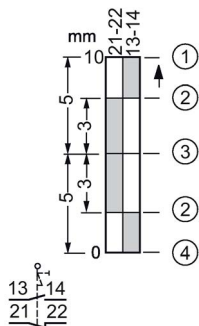
#### Legend

	Contact element closed
	Contact element open
	Direction of actuation

#### 3SE7120-2DD01

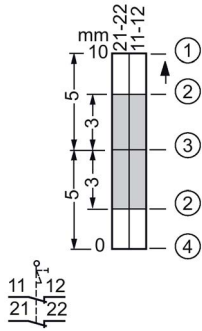


#### 3SE7150-1.D00, 3SE7150-2DD00



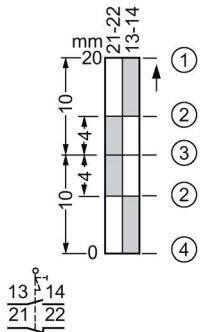
- ① Bowden wire
- ② Lock
- ③ Mid-position
- ④ Wire break

3SE7120-1BF00, 3SE7150-1BF00



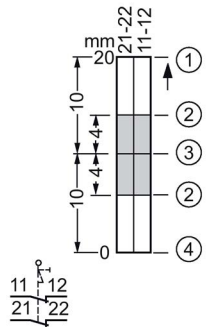
- ① Bowden wire
- ② Lock
- ③ Mid-position
- ④ Wire break

3SE7140-1.D0.



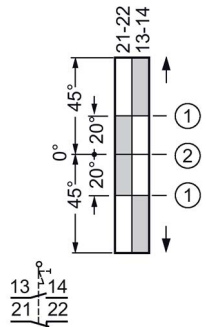
- ① Bowden wire
- ② Lock
- ③ Mid-position
- ④ Wire break

**3SE7140-1BF00**



- ① Bowden wire
- ② Lock
- ③ Mid-position
- ④ Wire break

**3SE7160-1BD00**



- ① Lock
- ② Mid-position

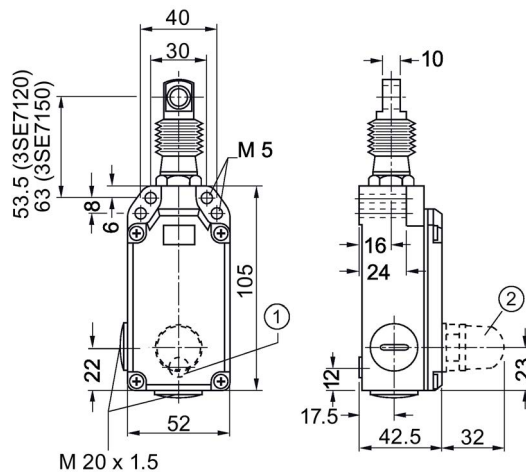
## 8.5 Dimensional drawings

### Note

All dimensions specified in mm.

### 3SE7120-2DD..., 3SE7150-2DD..

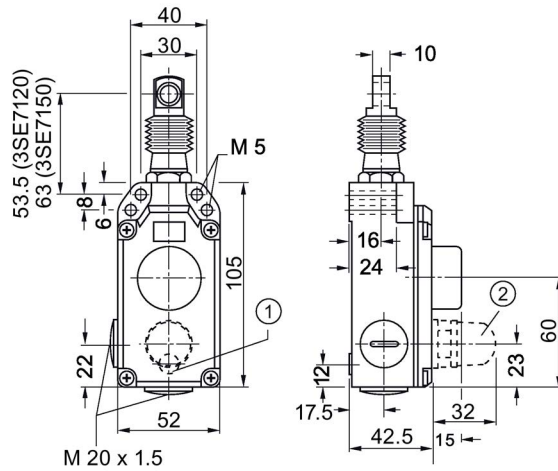
Without latching



- ① Option for additional fixing
- ② Lamp

**3SE7120-1B..., 3SE7150-1B...**

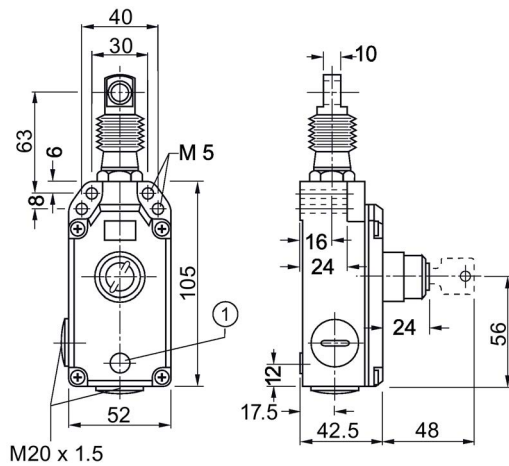
With latching and button reset



- ① Option for additional fixing
- ② Lamp

**3SE7150-1CD..**

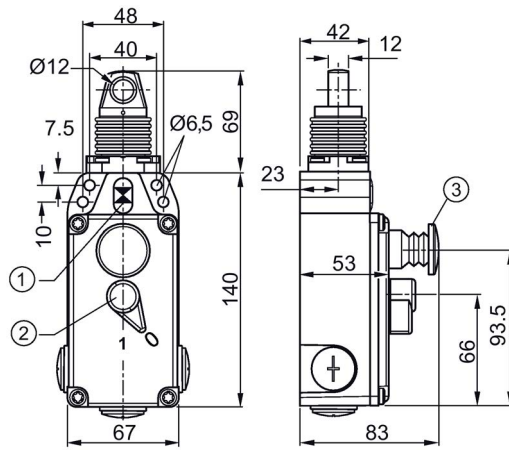
With latching, push-to-unlatch mechanism and key-operated release



- ① Option for additional fixing

### 3SE7141-1EG..

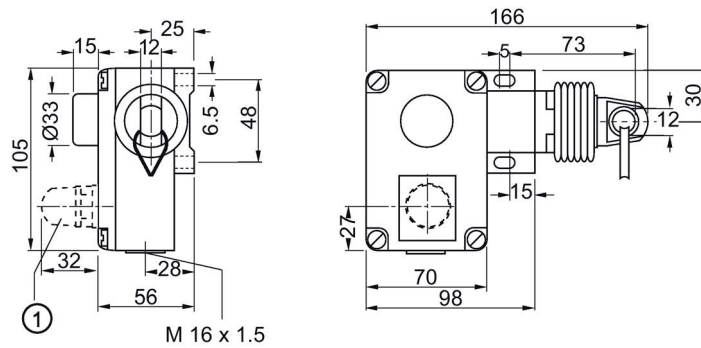
With EMERGENCY STOP and rotate-to-unlatch mechanism



- ① Wire tension indicator
- ② Position indicator / unlatch button
- ③ EMERGENCY STOP button

### 3SE7140-1B...

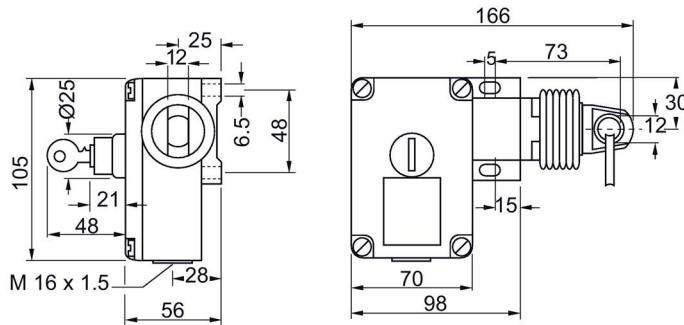
With latching and button reset



- ① Lamp

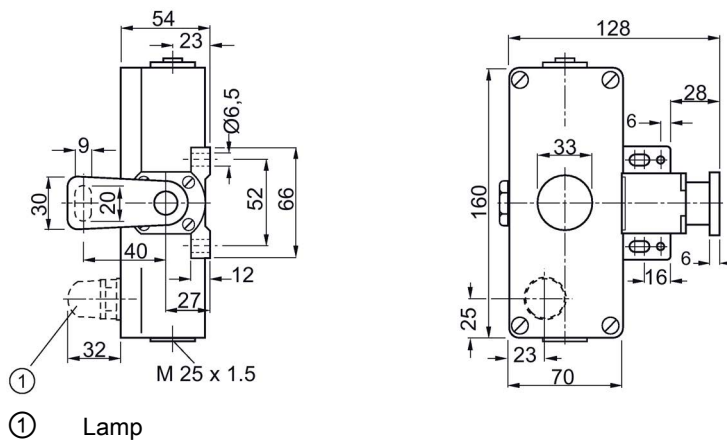
**3SE7140-1CD..**

With latching, push-to-unlatch mechanism and key-operated release



**3SE7160-1AE..**

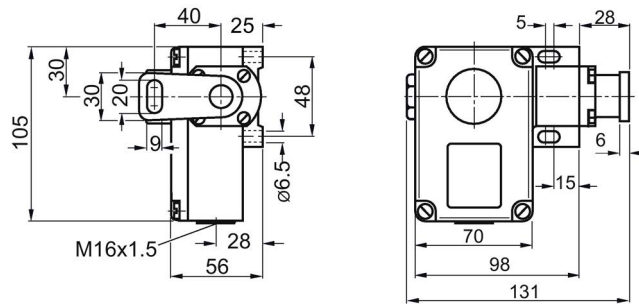
With latching and button reset





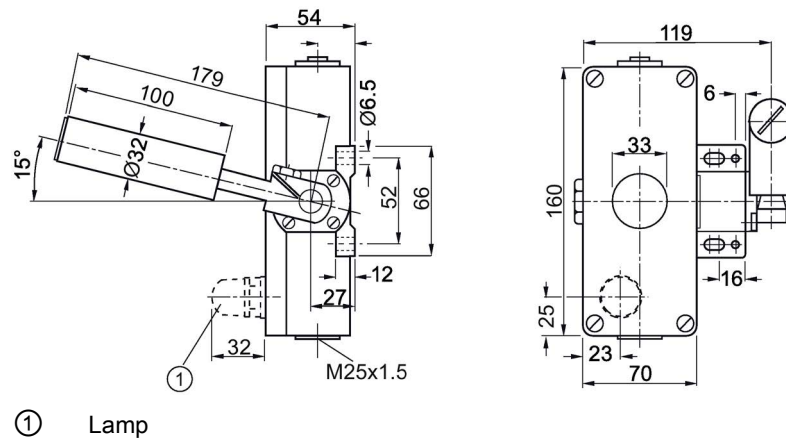
### 3SE7160-1BD..

With latching and button reset



### Conveyor belt unbalance tracker 3SE7310-1AE..

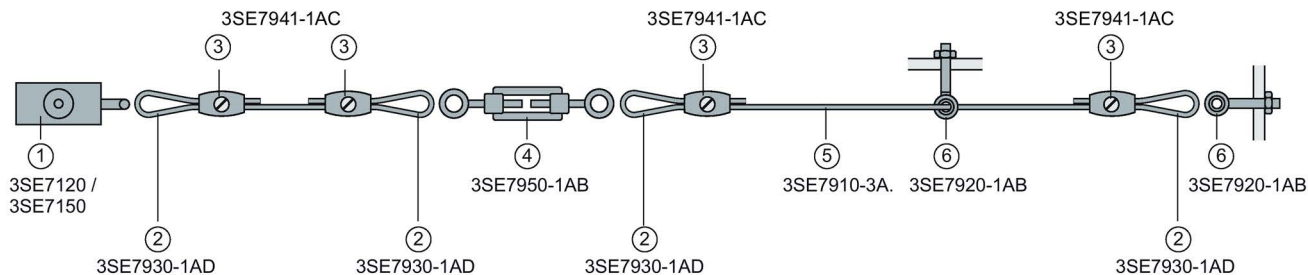
With latching and button reset



## 8.6 Application examples

### 8.6.1 Wire structure and attachment

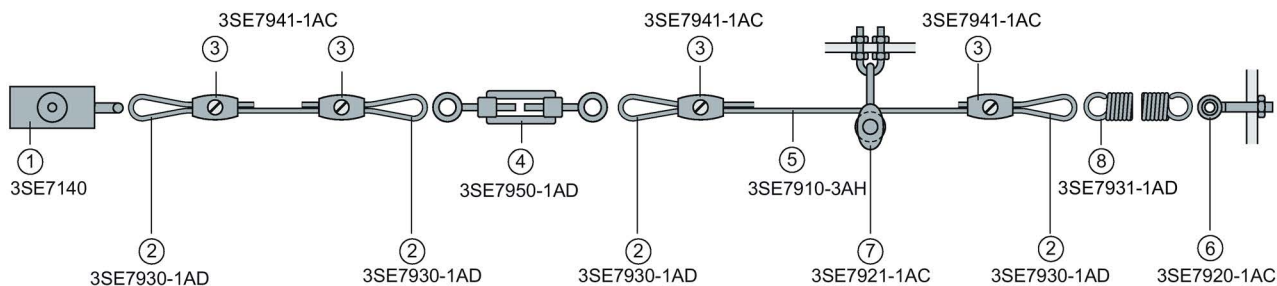
#### Short lengths of wire up to 25 m



- ① SIRIUS cable-operated switch
- ② Wire eye, diameter 4 mm
- ③ Wire clamp simplex, diameter 4 mm, oval
- ④ Turnbuckle, M6 x 60
- ⑤ Wire, diameter 4 mm
- ⑥ Eyebolt M8

Article No.	3SE7120 / 3SE7150
	3SE7930-1AD
	3SE7941-1AC
	3SE7950-1AB
	3SE7910-3A.
	3SE7920-1AB

#### Long lengths of wire up to 50 m



- ① SIRIUS cable-operated switch
- ② Wire eye, diameter 4 mm
- ③ Wire clamp simplex, diameter 4 mm, oval
- ④ Turnbuckle, M6 x 110
- ⑤ Wire, diameter 4 mm
- ⑥ Eyebolt M10
- ⑦ Wire roller, rotatable
- ⑧ Tension spring

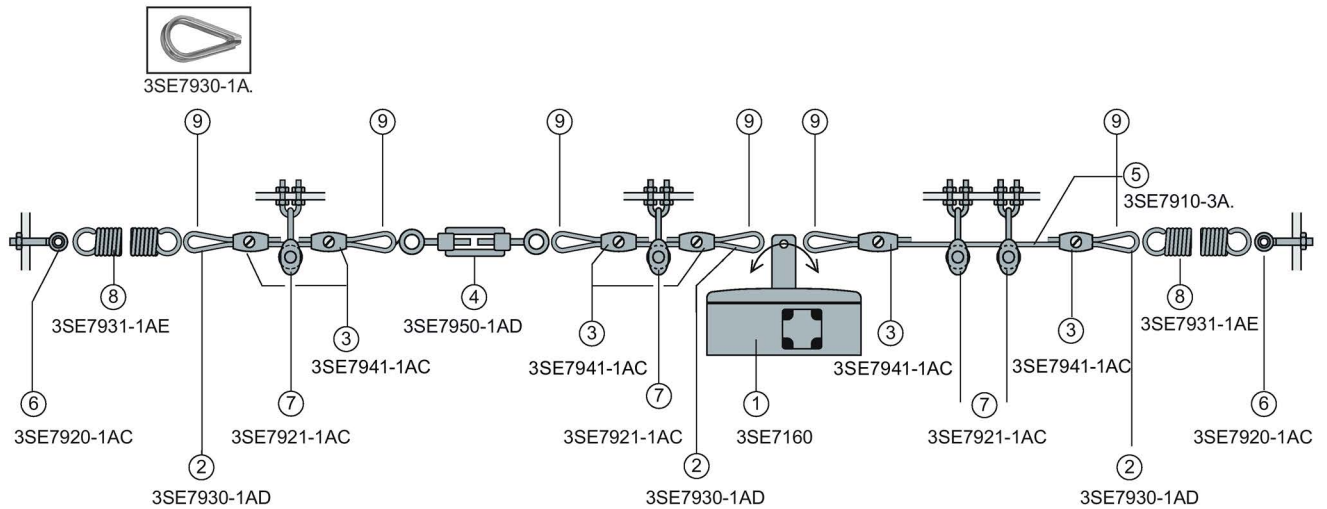
Article No.	3SE7140
	3SE7930-1AD
	3SE7941-1AC
	3SE7950-1AD
	3SE7910-3AH
	3SE7920-1AC
	3SE7921-1AC
	3SE7930-1AD
	3SE7931-1AD
	3SE7920-1AC

#### Note

Use of a tension spring is absolutely essential for lengths of wire  $\geq 25$  m.

**Actuation on both sides up to 2 x 100 m**

Design 3SE7160-1AE...



- ① SIRIUS cable-operated switch
- ② Wire eye, diameter 4 mm
- ③ Wire clamp simplex, diameter 4 mm, oval
- ④ Turnbuckle, M6 x 110
- ⑤ Wire, diameter 4 mm
- ⑥ Eyebolt M103
- ⑦ Wire roller, rotatable
- ⑧ Tension spring
- ⑨ Wire eye

## Article No.

- 3SE7160
- 3SE7930-1AD
- 3SE7941-1AC
- 3SE7950-1AD
- 3SE7910-3A.
- 3SE7920-1AC
- 3SE7921-1AC
- 3SE7931-1AE (up to 2 x 100 m)
- 3SE7930-1A.

**Note**

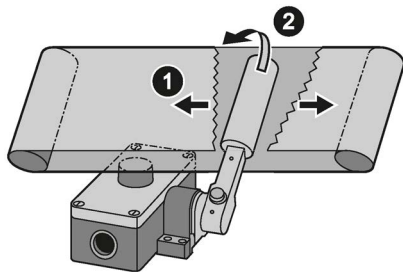
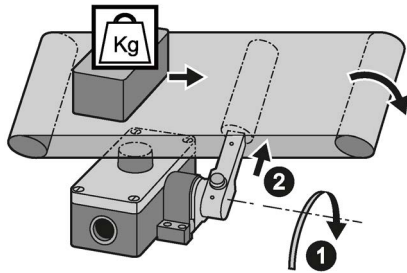
Use of a tension spring is absolutely essential for lengths of wire  $\geq 25$  m.

**Note**

The route of a wire may be redirected through a maximum angle of 90 degrees. Wire rollers must be used to redirect wire routes.

### 8.6.2 Application example with conveyor belt unbalance tracker

Design 3SE7310-1AE...



The roller of the conveyor belt unbalance tracker 3SE7310-1AE00 / 3SE7310-1AE04 is made of stainless steel NIRO 1.4104.

#### NOTICE

**Risk of material damage. Do not adjust the lever angle.**

The angle of the lever of the conveyor belt unbalance trackers 3SE7310-1AE00 / 3SE7310-1AE04 must not be adjusted.

The lever is securely pinned to the shaft for safety reasons. This ensures positive opening in accordance with IEC 60947-5-1, Annex K.

## 3SE2, 3SE3 foot switches

### 9.1 Application areas

3SE2/3SE3 foot switches are used in installations in which manual switch actuation is not possible.

Foot switches can be used for the following applications:



- Output of control signals to press brakes and machine tools
- Manual workstations in small batch production
- In the manufacture of machine tools and special-purpose machines
- Presses
- Sheet metal processing machines

## 9.2 Overview of foot switches

The 3SE29 and 3SE39 foot switch range encompasses versions in a metal enclosure for rugged applications as well as versions with plastic enclosure for use in less harsh environments. The devices can be supplied with or without a protective cover and have fixing holes for them to be screwed to the floor.

Latching or momentary-contact versions of the devices are available depending on the requirements of the application.

<b>Metal enclosures, degree of protection IP65</b>				
<b>Momentary-contact foot switches, single pedal</b> M20 x 1.5 cable entry				
 3SE290.-AA20	<ul style="list-style-type: none"> <li>Without protective cover</li> </ul>	⊕	1 NO + 1 NC 2 NO + 2 NC	3SE2902-0AB20 3SE2903-1AB20
	<ul style="list-style-type: none"> <li>With protective cover</li> </ul>	⊕	1 NO + 1 NC 2 NO + 2 NC	3SE2902-0AA20 3SE2903-1AA20
	<b>Foot switches, single pedal</b> M20 x 1.5 cable entry			
	<ul style="list-style-type: none"> <li>Without protective cover</li> </ul>	⊕	1 NO + 1 NC	3SE2912-2AB20
	<ul style="list-style-type: none"> <li>With protective cover</li> </ul>	⊕	1 NO + 1 NC	3SE2912-2AA20
<b>Momentary-contact foot switches, two pedals</b> M25 x 1.5 cable entry				
 3SE2932-.AB20	<ul style="list-style-type: none"> <li>Without protective cover</li> </ul>	⊕	1 NO + 1 NC 2 NO + 2 NC	3SE2932-0AB20 3SE2932-1AB20
 3SE2932-.AA20	<ul style="list-style-type: none"> <li>With protective cover</li> </ul>	⊕	1 NO + 1 NC 2 NO + 2 NC	3SE2932-0AA20 3SE2932-1AA20
 3SE2924-3AA20	<b>Safety momentary-contact foot switches, single pedal, with protective cover, M20 x 1.5 cable entry, with interlock according to ISO 13850, NO closes as momentary contact type, NC opens with latching</b>	⊕	2 NO + 2 NC	3SE2924-3AA20

<b>Metal enclosures, degree of protection IP65</b>			
<b>Plastic enclosures, degree of protection IP65</b>			
<b>Pedal pushbuttons, 3 m cable, single pedal</b>			
 3SE3902-4CA20	<ul style="list-style-type: none"> <li>Without protective cover</li> </ul>	1 CO	3SE3902-4CB20
	<ul style="list-style-type: none"> <li>With protective cover</li> </ul>	1 CO	3SE3902-4CA20
 3SE3934-5CB20	<b>Two pedals</b> , without protective cover	2 × 1 CO	3SE3934-5CB20

⊕ Positive opening according to IEC 60947-5-1, Appendix K

### 9.2.1 Safety momentary-contact foot switches

The single-pedal safety momentary-contact foot switches according to EN ISO 13850 lock when they are actuated. After the hazard has been eliminated, the machine cannot be restarted until the switch is unlocked manually directly at the switch. This is done by means of a pushbutton on top of the switch enclosure. The devices are supplied with a protective cover.

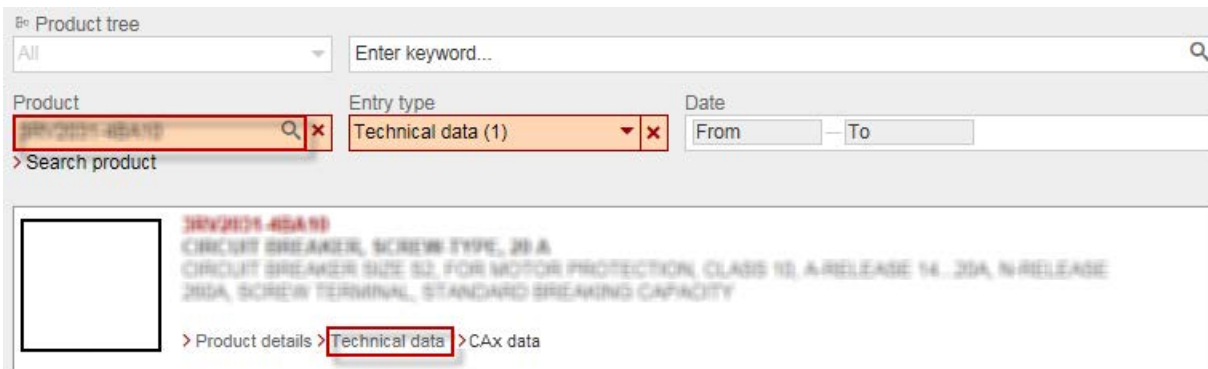
## 9.3 Technical data

### 9.3.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.





## 9.4 Dimensional drawings

### 9.4.1 Metal enclosures

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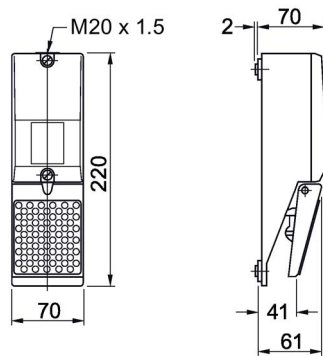
**Note**

All dimensions specified in mm.

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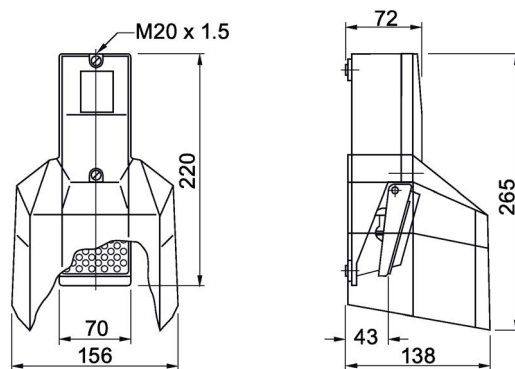
#### 3SE2902, 3SE2903-1AB20, 3SE2912-2AB20

Momentary-contact foot switch, foot switch, single-pedal, without protective cover



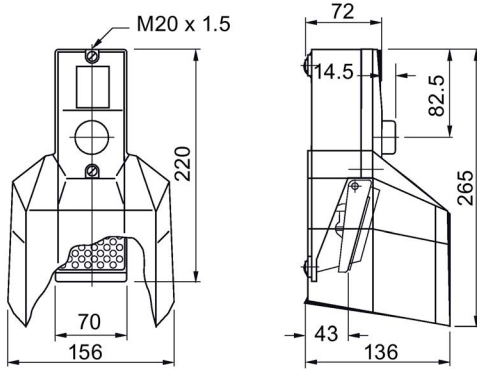
#### 3SE2902-0AA20, 3SE2903-1AA20, 3SE2912-2AA20

Momentary-contact foot switch, foot switch, single-pedal, with protective cover



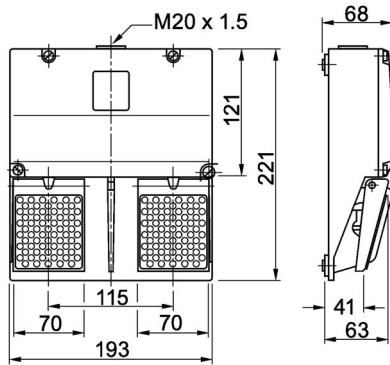
**3SE2924-3AA20**

Safety momentary-contact foot switch with interlock



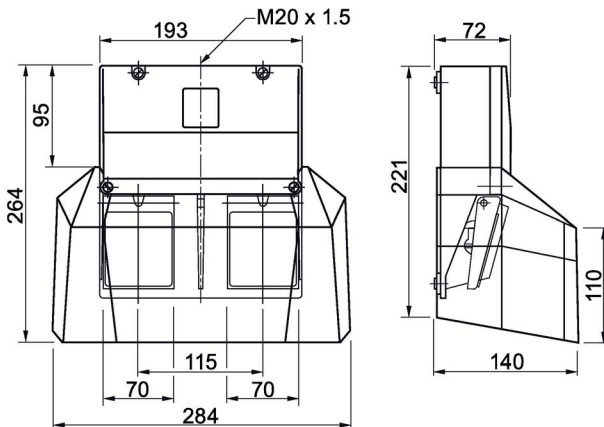
**3SE2932-0AB20, 3SE2932-1AB20**

Momentary-contact foot switch, two-pedal, without protective cover



**3SE2932-0AA20, 3SE2932-1AA20**

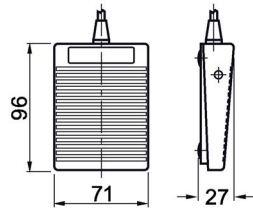
Momentary-contact foot switch, two-pedal, with protective cover



## 9.4.2 Plastic enclosures

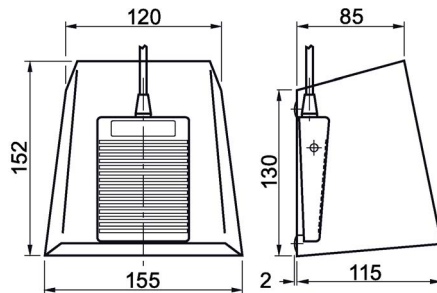
### 3SE3902-4CB20

Pedal pushbutton, single-pedal, without protective cover



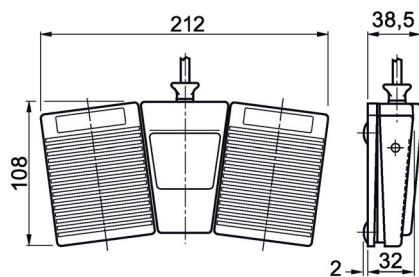
### 3SE3902-4CA20

Pedal pushbutton, single-pedal, with protective cover



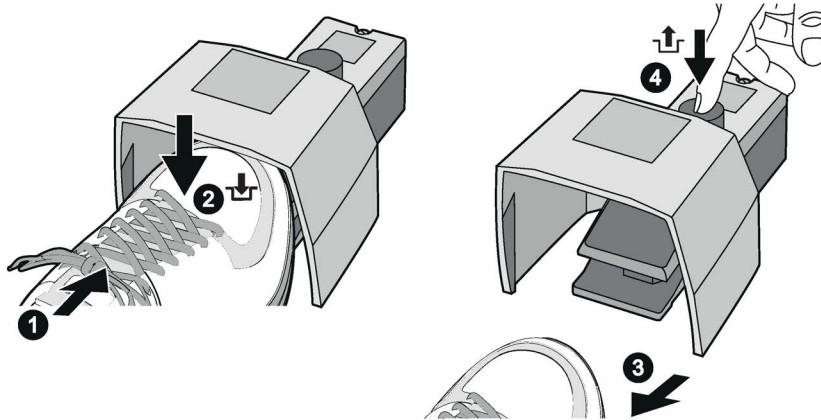
### 3SE3934-5CB20

Pedal pushbutton, two-pedal, without protective cover



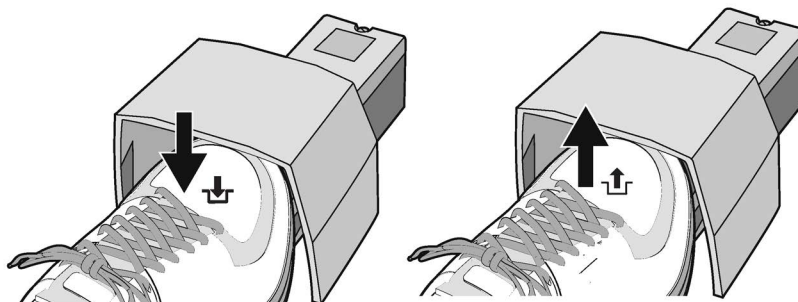
## 9.5 Application examples

### Momentary-contact safety foot switch 3SE2924-3AA20



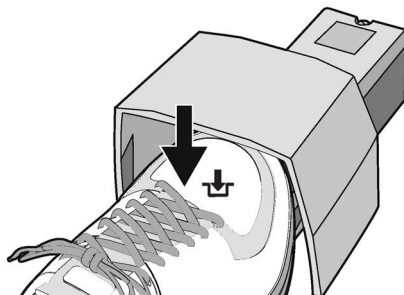
1. In order to lock the momentary-contact safety foot switch, press the pedal down with your foot.
2. To unlock the switch, remove your foot from the pedal and press down the button on the foot switch.

### Momentary-contact foot switch 3SE2902-0AA20



1. The momentary-contact foot switch 3SE2902-0AA20 starts up the machine while the pedal is pressed down.
2. The machine is stopped as soon as the pedal is released.

### Foot switch 3SE2912-2AA20



1. In order to lock the foot switch, press the pedal down with your foot. The switch engages.
2. To unlock the switch, press the pedal down again. The machine is then stopped.

## 8WD4 signaling columns

### 8WD44/8WD42

Signaling columns consist of cylindrical signaling elements of various colors arranged in a vertical column. By installing signaling columns locally at individual machines, it is possible to monitor manufacturing stations from a long distance. SIRIUS 8WD signaling columns and integrated signal lamps are designed to allow reliable monitoring of complex, high-speed processes. These modular units are flexible in application and are equipped with visual and acoustic alarm devices such as continuous light, flashing light, LEDs or buzzer elements.

8WD signaling columns are designed with a high degree of protection and have full communications capability via AS-Interface.

### 8WD44/8WD42 with AS-i

They are connected to AS-Interface by means of an adapter module on which up to three light elements can be mounted. Conditions are diagnosed on the basis of an LED status indication.

- A/B technology
- Addressing socket
- LED status indications for diagnostics
- Manual switchover to external auxiliary voltage

## 10.1 Application areas

Signaling columns are used at machines or in automated processes in order to monitor complex processes or to output alarms in emergency situations.

The following are potential application areas:

- Manufacturing plants
- Injection molding machines
- Conveyors
- Assembly systems for electronic components

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### Note

Lamps and LED modules are designed solely for use with SIRIUS command and signaling devices. They are not suitable for use in domestic lighting systems.

---

## 10.2 Overview

The 8WD4 signaling columns are modular in design and can be freely combined. They are available in two different diameters 50 mm and 70 mm.

Two device series are available:

- 8WD42
  - Thermoplastic enclosure, diameter 50 mm
  - IP54 degree of protection
  - Up to 4 elements can be mounted
- 8WD44
  - Thermoplastic enclosure, diameter 70 mm
  - Enhanced illumination
  - Connection by spring-type terminals
  - Integrated degree of protection IP65
  - Up to 5 elements can be mounted



Figure 10-1 Signaling columns, mounting example

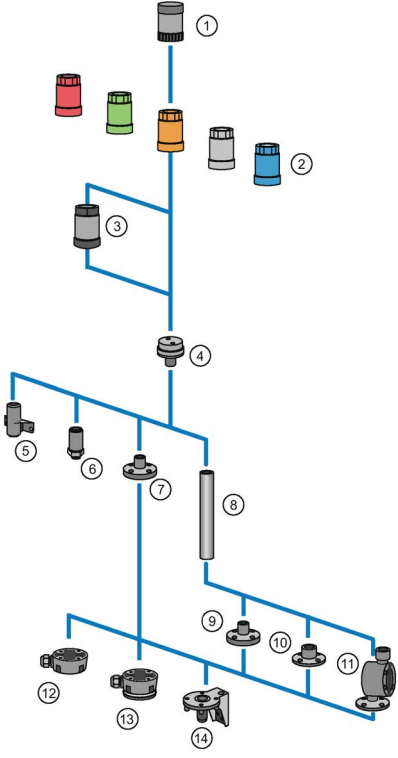
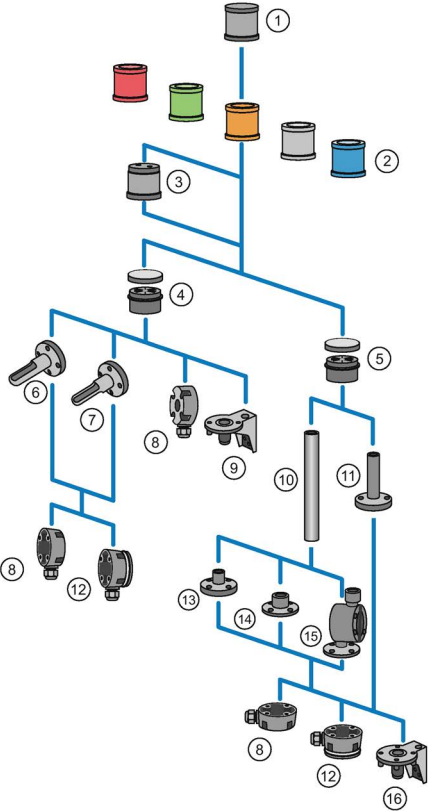
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### Note

The cover is supplied with the connection element and must be removed before the spherical caps can be fitted.

After the individual spherical caps have been mounted, the cover is placed on the top cap.

---

8WD42 signaling column (width 50 mm) with up to 4 elements	8WD44 signaling columns (width 70 mm) with up to 5 elements
	
① Acoustic element 8WD42 .0-0FA	① Acoustic element 8WD44
② Light element 8WD42	② Light element 8WD44
③ AS-Interface adapter element 8WD4228-0BB	③ AS-Interface adapter element 8WD4428-0BD/-0BE
④ Connection element 8WD4208-0AA	④ Connection element for bracket, base and floor mounting 8WD4408-0AB/-0AE
⑤ Bracket for wall mounting 8WD4208-0CD	⑤ Connection element for pipe mounting 8WD4408-0A.
⑥ Adapter for single-hole mounting 8WD4208-0EH	⑥ Bracket for wall mounting 8WD4308-0CA
⑦ Foot for base mounting 8WD4208-0DE	⑦ Bracket for wall mounting (2-sided) 8WD4308-0CB
⑧ Pipe 8WD42 08-0EF/8WD4308-0E.	⑧ Socket 8WD4308-0DD
⑨ Foot for pipe mounting 8WD4308-0DB	⑨ Bracket for base mounting 8WD4408-0CD
⑩ Foot for pipe mounting (> 400 mm) 8WD4308-0DC	⑩ Pipe 8WD4208-0EF/8WD4308-0E.
⑪ Adjustable-angle foot for pipe mounting 8WD44 08-0DF	⑪ Foot with pipe 8WD4308-0DA
⑫ Socket 8WD4308-0DD	⑫ Socket (magnetic fixing) 8WD4308-0DE
⑬ Socket (magnetic fixing) 8WD4308-0DE	⑬ Foot for pipe mounting 8WD4308-0DB
⑭ Bracket for foot mounting 8WD4408-0CC	⑭ Foot for pipe mounting (> 400 mm) 8WD4308-0DC
	⑮ Adjustable-angle foot for pipe mounting 8WD4408-0DF
	⑯ Bracket for foot mounting 8WD4408-0CC

8WD42 signaling column, 50 mm diameter		Rated voltage	Color	Article No.
	① Acoustic element, buzzer element 80 dB, pulsating or continuous tone	24 V AC/DC	Black	8WD4220-0FA
	② Continuous light element for incandescent lamp/LED, BA 15d base	24 to 230 V AC/DC	Red	8WD4200-1AB
		24 to 230 V AC/DC	Green	8WD4200-1AC
		24 to 230 V AC/DC	Yellow	8WD4200-1AD
	② Continuous light element with integrated LED	24 V AC/DC	Red	8WD4220-5AB
		24 V AC/DC	Green	8WD4220-5AC
		24 V AC/DC	Yellow	8WD4220-5AD
	③ Connection element incl. cover (pipe, base, bracket mounting)		Black	8WD4208-0AA
	④ Pipe, single, 100 mm long			8WD4208-0EF
	⑤ Foot, single, plastic, for pipe mounting			8WD4308-0DB
	⑥ Brackets for mounting with foot			8WD4408-0CC



8WD44 signaling column, 70 mm diameter		Rated voltage	Color	Article No.	
	①	Acoustic element, buzzer element 85 dB, pulsating or continuous tone	24 V AC/DC	Black	8WD4420-0FA
	①	Acoustic element 105 dB, siren IP65	24 V DC	Black	8WD4420-0EA
	②	Continuous light element for incandescent lamp/LED, BA 15d base	12 to 230 V AC/DC	Red	8WD4400-1AB
			12 to 230 V AC/DC	Green	8WD4400-1AC
			12 to 230 V AC/DC	Yellow	8WD4400-1AD
	②	Continuous light element with integrated LED	24 V AC/DC	Red	8WD4420-5AB
			24 V AC/DC	Green	8WD4420-5AC
			24 V AC/DC	Yellow	8WD4420-5AD
	②	Flashlight element with integrated electronic flash	24 V DC	Red	8WD4420-0CB
			24 V DC	Green	8WD4420-0CC
			24 V DC	Yellow	8WD4420-0CD
	③	Connection element incl. cover, screw terminals *for bracket, floor and base mounting		Black	8WD4408-0AB
	④	*for mounting on pipes		Black	8WD4408-0AA
	⑤	Bracket for wall mounting (one-sided mounting without foot/pipe)			8WD4308-0CA
	⑥	Socket for foot (magnetic fixing)			8WD4308-0DE
	⑦	Pipe, single, 100 mm long			8WD4208-0EF
	⑧	Foot with pipe, plastic, pipe length 100 mm			8WD4308-0DA
	⑨	Foot for pipe mounting, plastic			8WD4308-0DB
	⑩	Brackets for mounting with foot			8WD4408-0CC
<b>Accessories for 8WD42 and 8WD44</b>					
		Incandescent lamps, 5 W, base BA 15d	24 V AC/DC		8WD4328-1XX
		LED, base BA 15d	24 V AC/DC	Clear	8WD4428-6XE
		<b>Labeling panel</b> With fixing accessories for mounting on pipe diameter 25 mm Inscription area/ step 50 mm x 140 mm Suitable for standard labels			8WD4408-0FA

### 10.2.1 Design

The 8WD4 signaling columns are modular in design and can be freely combined. They are available in two different diameters 50 mm and 70 mm.

### 10.2.2 Signaling elements

Individual modules are mechanically and electrically joined by means of a bayonet lock. There is no need to interrupt operation in order to replace a lamp; the affected element can be simply removed without tools.

The following versions of signaling elements are available:

- Continuous light element (incandescent lamp, LED)
- Flashing light element (incandescent lamp, LED)
- Flashlight element
- Rotating light element (LED)
- Buzzer element
- Siren element

The tone of the buzzer element, i.e. pulsating tone or continuous tone, can be freely selected by means of a switch in the buzzer element.

### 10.2.3 Fixing options

The following fixing options can be used for signaling elements:

- Bracket mounting
- Base mounting
- Pipe mounting

With the 8WD44 signaling column, a maximum of 5 signaling elements can be mounted on a connection element (or 4 signaling elements with the 8WD42). Using the bracket for two-sided mounting, it is possible to install two connection elements and thus up to 10 signaling elements at one location for 8WD44 signaling columns.

Signal emission is powerful and uniform in intensity over a 360-degree arc. The LED elements have a service life of 50000 operating hours.

The accessories for both series are standardized.

### 10.2.4 Color assignment for signaling columns

Color	Explanation	Application example
Red	Dangerous condition	Malfunction on an important system component
Yellow	Critical condition is imminent	A protective device of an auxiliary unit has tripped
Green	Normal state	Release for startup, display of normal operating conditions
Blue	Display of a condition that requires action	Instructions to the operator to set preselected values
White / clear	Any meaning; may be used if there is any doubt with regard to the colors red, yellow, green and blue	Instructions to the operator to set preselected values

## 10.3 Mounting

### 10.3.1 Base mounting

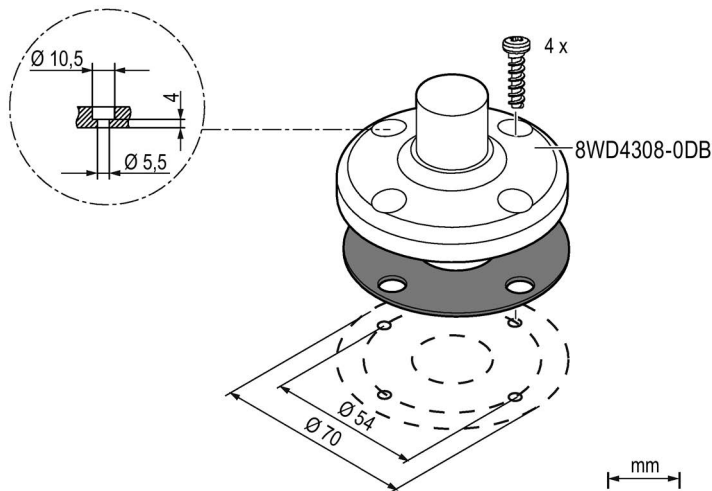
#### Pipe mounting

Pipes of various lengths from 150 mm to 1000 mm are available. Use of a special cast foot to provide stability is recommended for pipe lengths of 500 mm or higher.

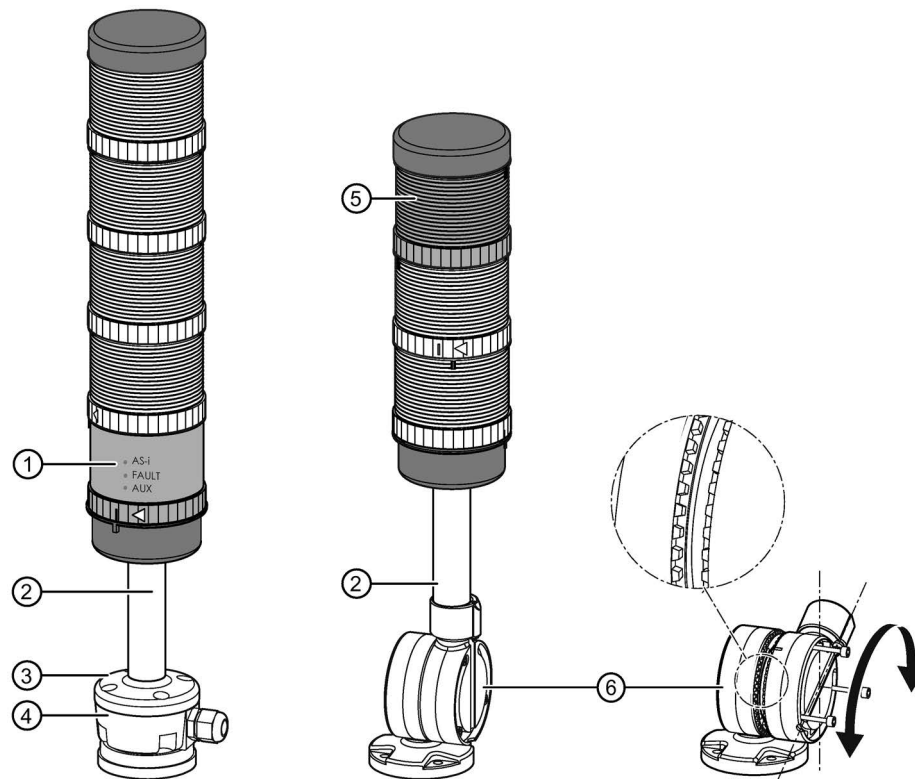
The 8WD42 signaling columns are mounted on the base/floor with a 8WD4208-0DE plastic foot.

#### Signaling columns

8WD44 signaling columns can be screwed directly to the connection element for base mounting.



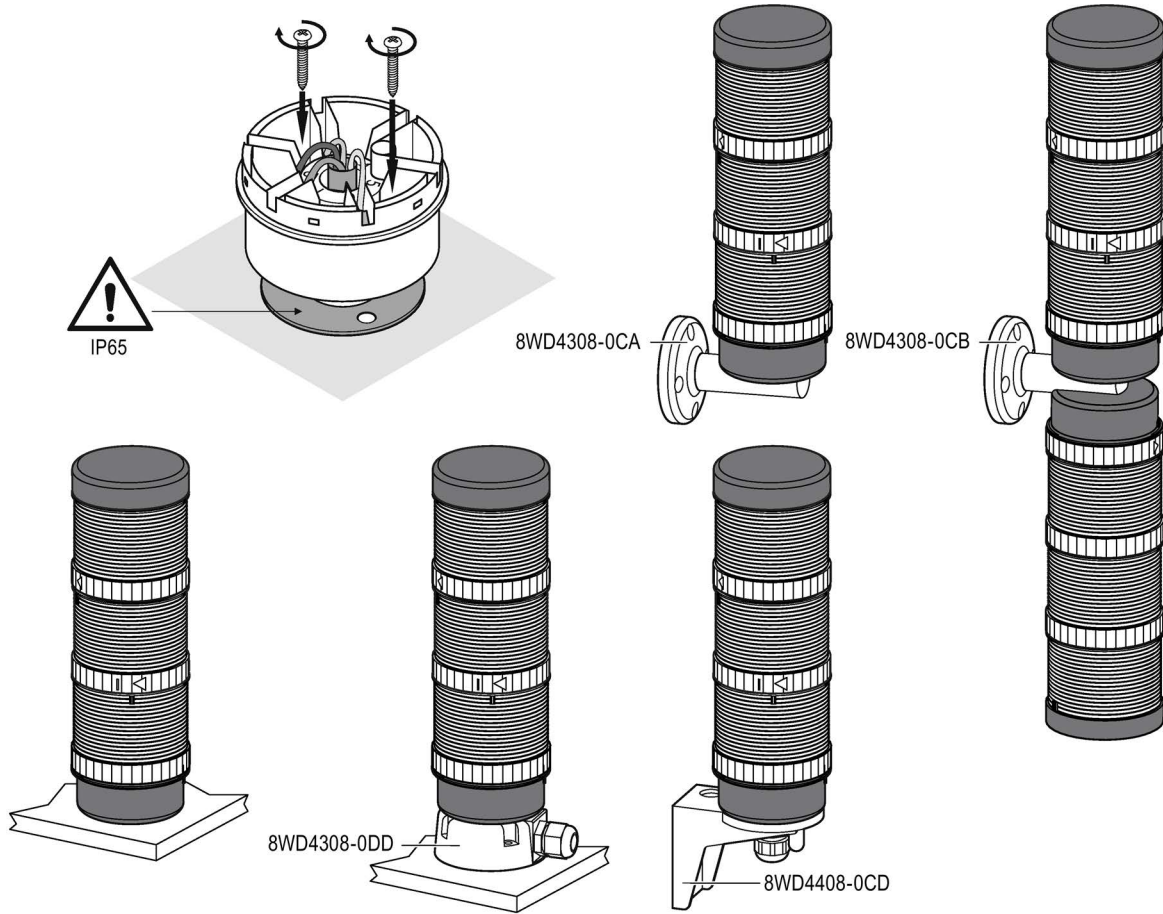
8WD4308-0DB = Foot, single, plastic, for pipe mounting



- ① 8WD4428-0B. = AS-Interface adapter element
- ② 8WD4208-0EF = Pipe, 100 mm in length, accessory for signaling columns of 50 mm and 70 mm diameter
- ③ 8WD4308-0DA = Pipe with foot, 100 mm in length, accessory for signaling columns of 70 mm diameter
- ④ 8WD4308-0DE = Socket for foot, cable exit at side, with magnetic fixing, accessory for signaling columns of 50 mm and 70 mm diameter
- ⑤ 8WD44.0-0.A. = Siren element, multi-tone, diameter 70 mm
- ⑥ 8WD4408-0DF = Adjustable-angle foot, plastic for pipe mounting with rubber seal, accessory for signaling columns of 50 mm and 70 mm diameter

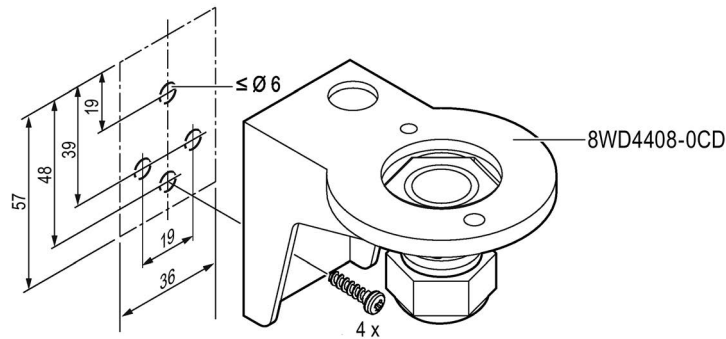
### 10.3.2 Bracket mounting

The accessory for mounting a signaling column at right angles, e.g. on walls, is attached directly to the connection element. 8WD44 signaling columns require a special connection element for bracket mounting.

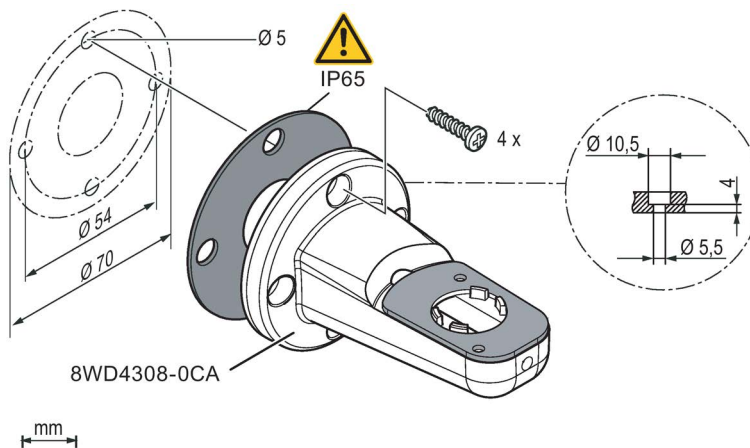


### 10.3.3 Drilling pattern for accessories

#### Drilling pattern bracket for base mounting



#### Drilling pattern bracket for wall mounting

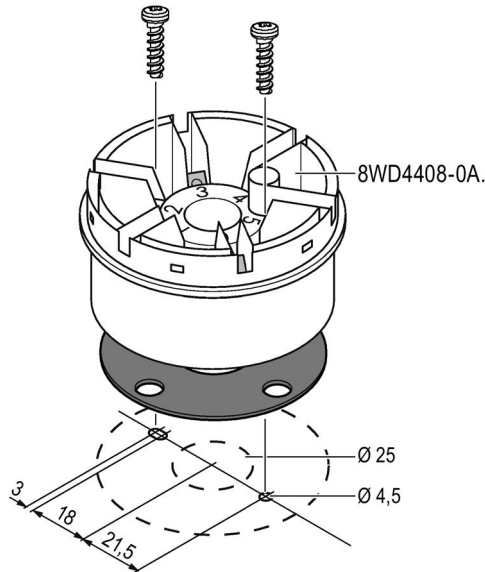


#### Note

##### Degree of protection IP65

Degree of protection IP65 is only reached when using the seals provided.

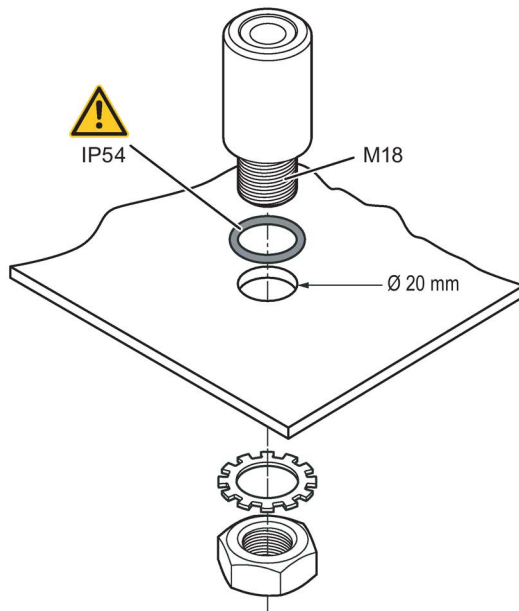
### 10.3.4 Drilling pattern for connection element



### 10.3.5 Single-hole mounting

#### Adapter for single-hole mounting 8WD4208-0EH

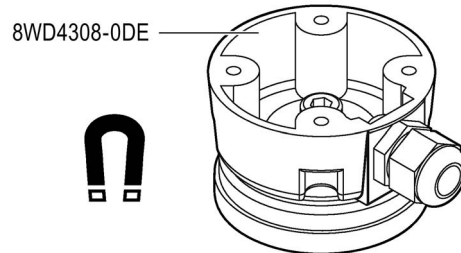
An adapter is available for single-hole mounting of 8WD42 signaling columns. The adapter is screwed in place from below.





### 10.3.6 Magnetic fixing

#### Socket for magnetic foot (8WD42 and 8WD44)



The adapter with the cable outlet at the side is also available in a special version with magnet fixing. This offers a simple, flexible and extremely shock-resistant method of fixing signaling columns to metal plates or panels.

### 10.3.7 Connection

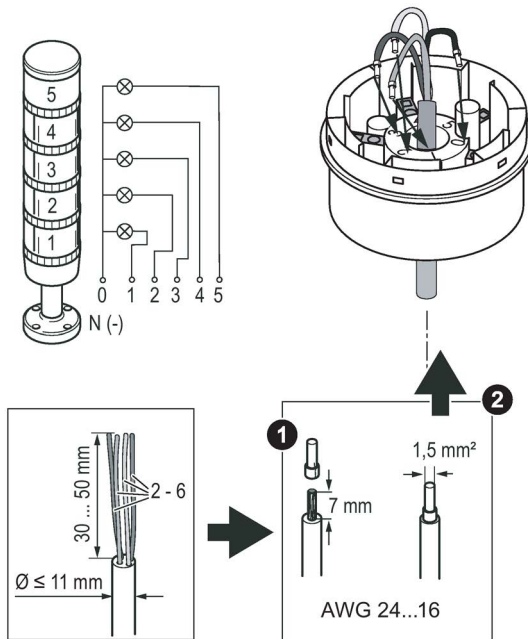
The signaling elements are wired using terminals in the connection element, screw terminals for 8WD42 and screw or spring-type terminals for 8WD44.

#### Conductor cross-sections for 8WD44 signaling columns

The following conductor cross-sections apply to 8WD44 signaling columns:

	8WD4408-0AA 8WD4408-0AB	8WD4408-0AD 8WD4408-0AE
	0.4 Nm	—
	0.5 ... 1.5 mm <sup>2</sup>	0.5 ... 1.5 mm <sup>2</sup>
	0.25... 1.5 mm <sup>2</sup>	0.25... 1.5 mm <sup>2</sup>
<b>AWG</b>	24 to 16	24 to 16

**Cable entry**



The connecting cables can be guided downward via the connection element. With 8WD42 signaling columns, the cables can be guided via an adapter for single-hole mounting.

This makes wiring easier if there is no access from below.

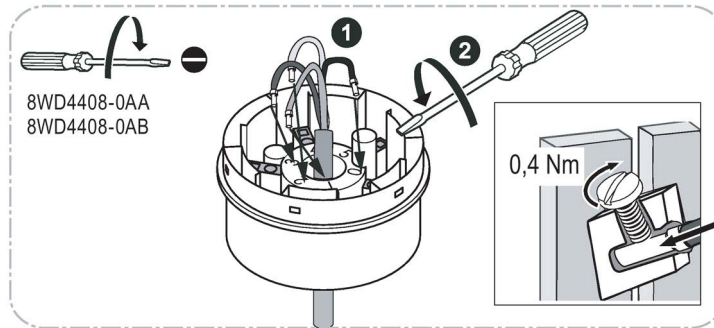
**Note**

**Number of cables used**

Up to 5 signaling elements can be arranged in a vertical column on 8WD44 signaling columns. The number of cables is limited to a maximum of 6.

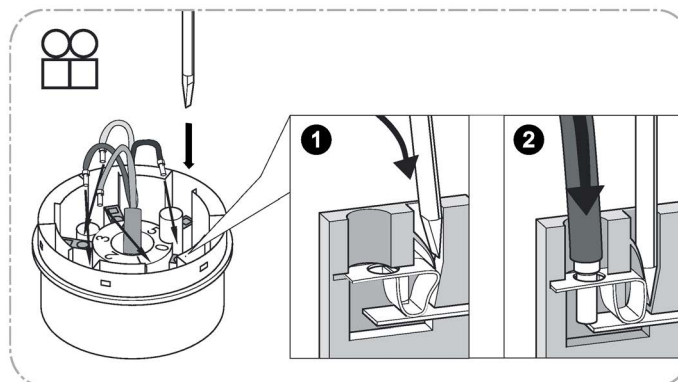
Up to 4 signaling elements can be arranged in a vertical column on 8WD42 signaling columns. The number of cables is limited to a maximum of 5.

### Cable entry with screw terminals



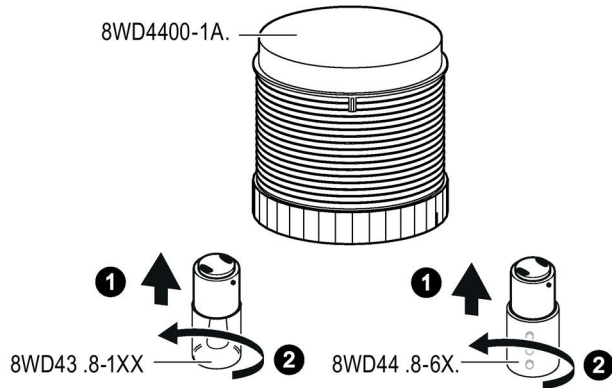
1. Remove the cover from the connection element (8WD4408-0A..). After the signaling column has been assembled, place the cover on top of the column.
2. Push the cable from below through the cable opening.
3. Place the stripped ends of the cables into the screw terminals and insert a flathead screwdriver from the side to tighten the terminals.

### Cable entry with spring-type terminals



1. Remove the cover from the connection element (8WD4408-0A..). After the signaling column has been assembled, place the cover on top of the column.
2. Push the cable from below through the cable opening.
3. Push a flathead screwdriver into a terminal opening (1) in order to open the spring-type terminal.
4. Insert a stripped cable from above into the cable opening (2).
5. Remove the screwdriver in order to lock the cable in the terminal.

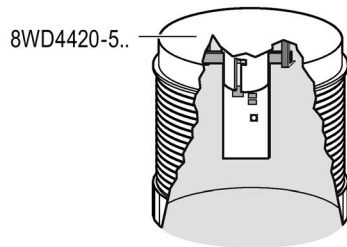
### 10.3.8 Installing lights



- 8WD4400-1A. Continuous light element
- 8WD43.8-1XX Incandescent lamp with base
- 8WD44.8-6X. LED with base

1. Insert the incandescent lamp or LED from below into the spherical cap.
2. Turn the lamp counter-clockwise until the bayonet lock audibly engages.

#### Light element with integrated LED



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#### Note

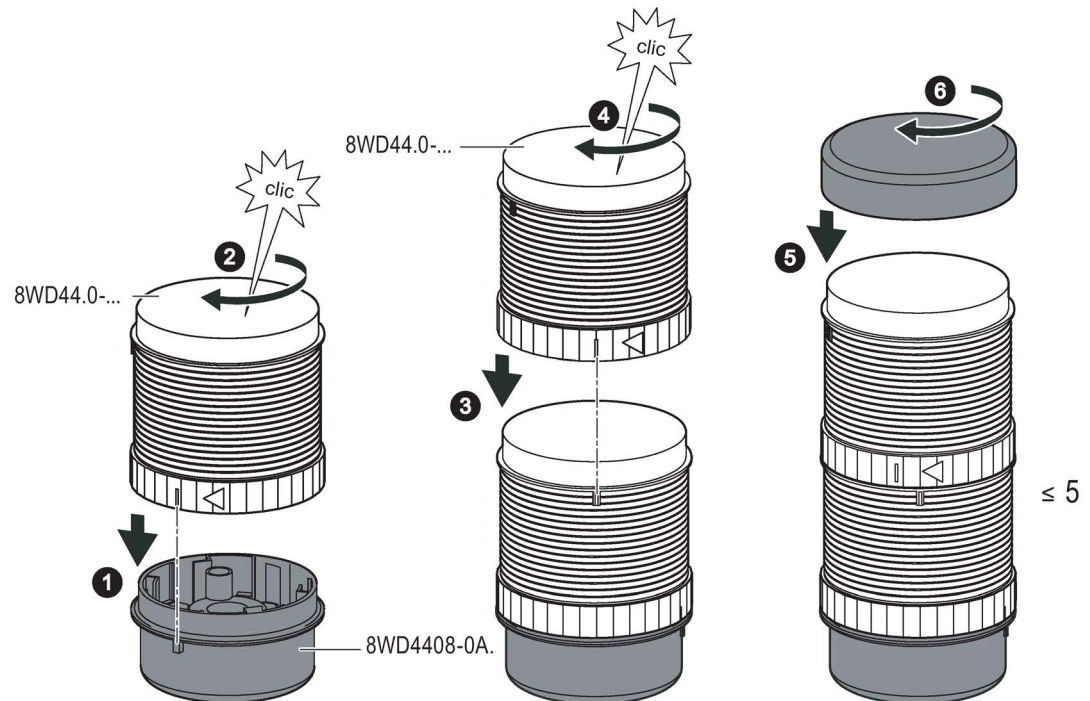
#### LED is permanently integrated

The LED is permanently integrated in the 8WD4420-5 light element and cannot be replaced.

---

### 10.3.9 Mounting the signaling column elements

The assembly method for 8WD44 and 8WD42 signaling columns is identical.



8WD44.0-... Light element

8WD4408-0A. Connection element with cover and screw or spring-type terminals

1. Remove the cover from the connection element.
2. Place the signaling element on the connection element.
3. Turn the signaling element clockwise until it audibly engages.
4. Use the same method to assemble additional signaling elements.
5. Up to 5 signaling elements can be arranged in a vertical column on 8WD44 signaling columns.  
Up to 4 signaling elements can be arranged in a vertical column on 8WD42 signaling columns.
6. Place the connection element cover on the uppermost signaling element by turning it clockwise.

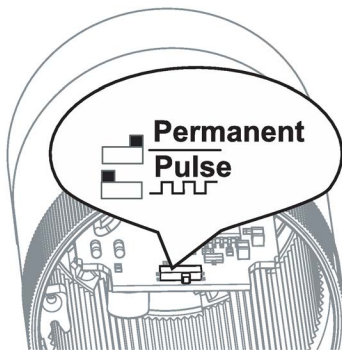
### 10.3.10 Acoustic elements

**NOTICE**

**Arrangement of acoustic elements**

Note that acoustic elements such as siren elements or buzzers can only ever be used as the uppermost element on a signaling column.

#### 8WD4220-0FA buzzer element



With the 8WD4220-0FA buzzer element, you change the signal tone from continuous to pulsating by moving the switch on the inside.

### 10.3.11 Connection to AS-Interface

#### 8WD42:

The two-wire bus cable is fixed to the screw terminals in the connection element. The adapter element must be the first module to be placed on the connection element. A maximum of 4 signaling elements can then be mounted on it.

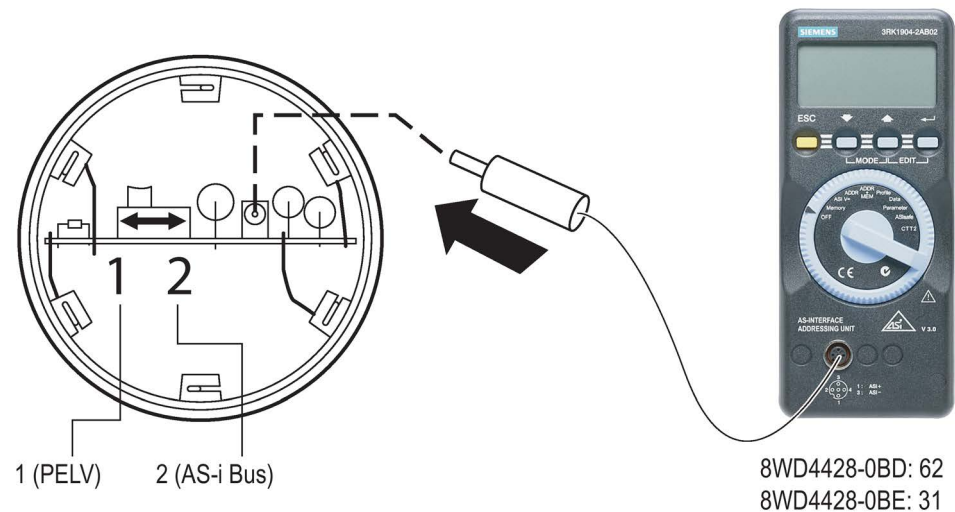
The 8WD4228-0BB adapter element is a standard slave.

#### 8WD44:

The two-wire bus cable is fixed to the screw or spring-type terminals in the connection element. The adapter element must be the first module to be placed on the connection element. The signaling elements can then be mounted on it.











The 8WD4428-0BE adapter element is a standard slave. A maximum of 4 signaling elements can be mounted on it.

The 8WD4428-0BD adapter element with A/B technology enables the connection of up to 62 slaves on one AS-Interface system. The addressing socket provides user-friendly parameterization of the AS-Interface elements. A maximum of 3 signaling elements can be mounted on it.



**Conductor cross-sections for 8WD44 signaling columns with AS-Interface**

The following conductor cross-sections apply to 8WD44 signaling columns with AS-Interface:

	8WD44		8WD44
	 0,8 Nm		
	2 x (1,0 ... 1,5) mm <sup>2</sup>		0,25 ... 1,5 mm <sup>2</sup>
	0,5 ... 0,75 mm <sup>2</sup>		—
	—		0,25 ... 1,5 mm <sup>2</sup>
	2 x (0,50 ... 1,5) mm <sup>2</sup>		0,25 ... 0,75 mm <sup>2</sup>
<b>AWG</b>	18 to 14	<b>AWG</b>	20 to 16



## 10.4 Technical data

### 10.4.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.

The screenshot shows the Siemens Industry Online Support search interface. At the top, there is a search bar with the text "Enter keyword...". Below the search bar, there are three filters: "Product", "Entry type", and "Date". The "Product" filter is set to "3RV2011-4BA10", the "Entry type" filter is set to "Technical data (1)", and the "Date" filter is set to "From" and "To". Below the filters, there is a search button labeled "> Search product". The search results are displayed in a table with one row. The first column contains a placeholder image. The second column contains the product name "3RV2011-4BA10" and a description: "CIRCUIT BREAKER, SCREW TYPE, 20 A, CIRCUIT BREAKER SIZE S2, FOR MOTOR PROTECTION, CLASS 10, A-RELEASE 14, 20A, N-RELEASE 20DA, SCREW TERMINAL, STANDARD BREAKING CAPACITY". Below the description, there is a breadcrumb trail: "> Product details > Technical data > CAx data".

## 10.5 Dimensional drawings

### 10.5.1 8WD42 signaling columns, 50 mm diameter

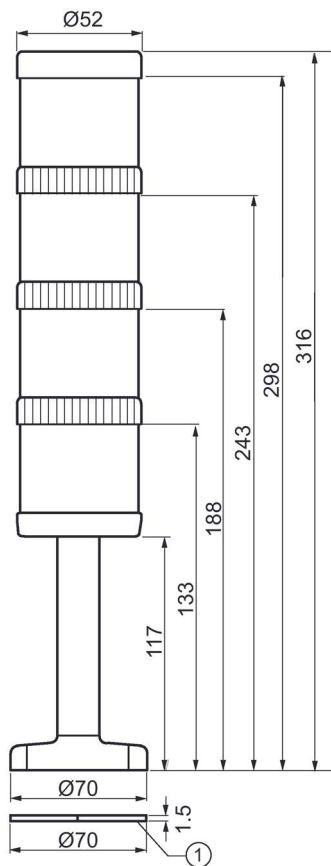
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**Note**

All dimensions specified in mm.

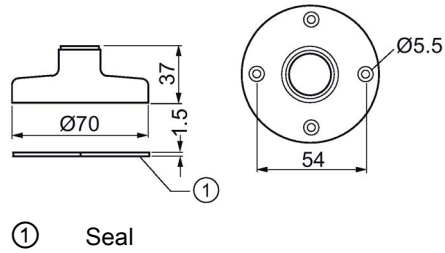
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#### Signaling columns (with 4 spherical caps)

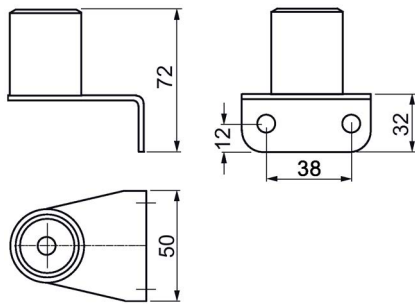


① Flat seal

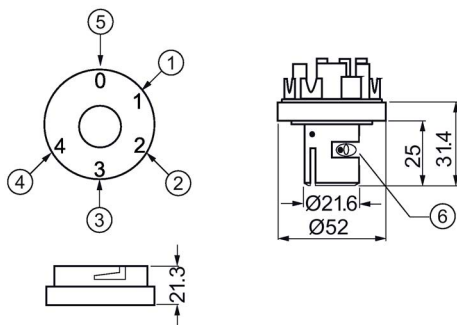
## Foot



## Bracket for wall mounting

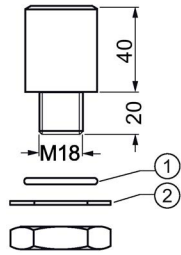


## Connection element



- ① Level 1
- ② Level 2
- ③ Level 3
- ④ Level 4
- ⑤ Connection diagram for common conductor
- ⑥ Strain relief

### Adapter for single-hole mounting

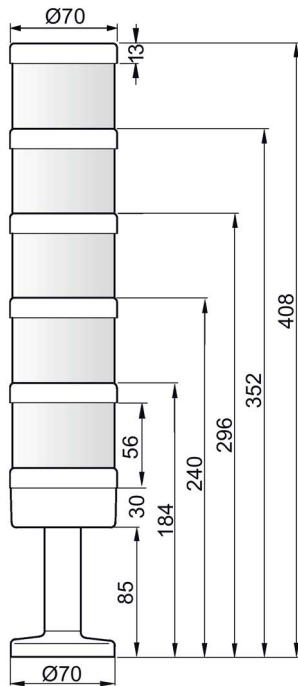


- ① O-ring seal
- ② Lock washer

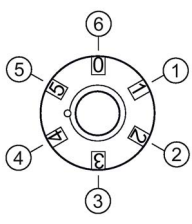
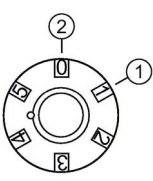
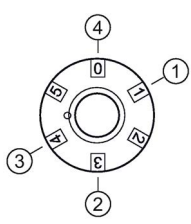
Only 1 element is recommended for horizontal mounting.

### 10.5.2 8WD44 signaling columns, 70 mm diameter

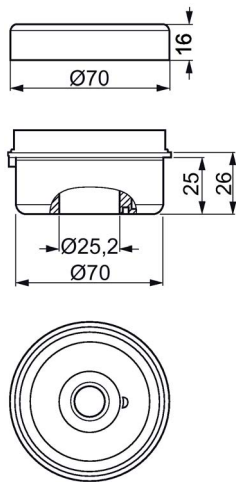
#### Signaling columns (with 5 spherical caps)



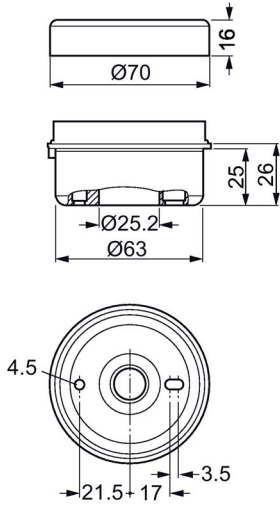
Connection elements

		
Conventional	With AS-Interface, without external auxiliary voltage	With AS-Interface, with external auxiliary voltage
① Level 1	① AS-Interface plus	① AS-Interface plus
② Level 2	② AS-Interface minus	② U <sub>external</sub> , minus
③ Level 3		③ U <sub>external</sub> , plus
④ Level 4		④ AS-Interface minus
⑤ Level 5		
⑥ Common conductor		

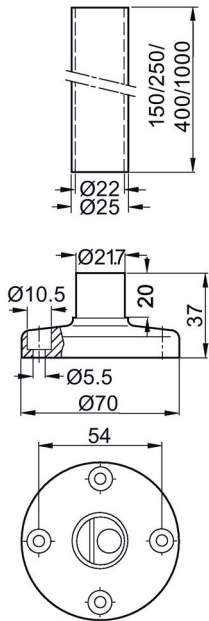
Connection element with cover for pipe mounting



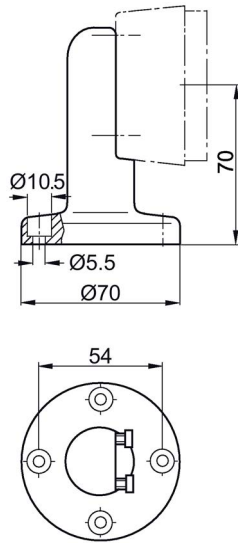
Connection element with cover for base/bracket mounting



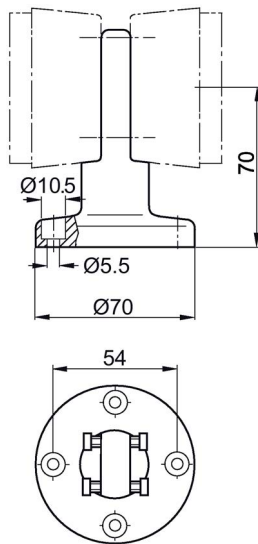
Foot with pipe



**Bracket for single-sided mounting**



**Bracket for double-sided mounting**







## 8WD5 integrated signal lamps

### 11.1 Application areas

SIRIUS 8WD53 integrated signal lamps can be used as visual signaling devices in harsh ambient conditions and in outdoor installations.

Visual signaling devices for indicating operating conditions can be used for the following applications:

- Manufacturing plants
- Injection molding machines
- Conveyors
- Assembly systems for electronic components

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#### Note

Lamps and LED modules are designed solely for use with SIRIUS command and signaling devices. They are not suitable for use in domestic lighting systems.

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## 11.2 Overview



### 11.2.1 Features

- Degree of protection IP65
- Thermoplastic enclosure
- Diameter: 70 mm
- Continuous light (incandescent lamp version and single-flash light) is available in the colors red, green, yellow, clear and blue.
- The special shape of the integrated signal lamps means that the light is emitted optimally in every direction (to the sides and upwards).
- LED versions of the integrated signal lamps offer a considerably longer endurance than the incandescent lamp versions.
- Available in continuous light, flashing light or rotating light versions
- Rated voltage 24 V, 115 V, 230 V AC/DC
- Ambient temperature -20 to +50 °C, incandescent lamp up to 60 °C

## 11.3 Mounting

8WD53 integrated signal lamps can be mounted directly at any point of the machine for the purpose of giving visual signals. They are mounted by means of a Pg 29 screw base with nut.

### **! WARNING**

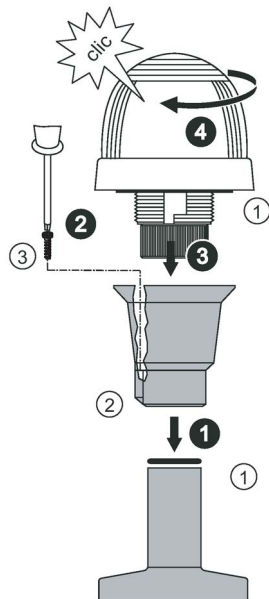
Grounding is required for voltages higher than safety extra-low voltage!

### **! WARNING**

**Risk of serious injury or damage to property.**

Failure to follow the proper procedures for disassembling components can result in serious physical injury.

### 11.3.1 Base mounting



- ① Seal
- ② Anti-twist protection
- ③ Screw

1. Place the seal ① on the pipe or the supporting foot and then mount the pipe adapter.
2. Insert the screw ③ into the anti-twist protection ②.
3. Place the integrated signal lamp on the pipe adapter.
4. Turn the integrated signal lamp clockwise until it engages.

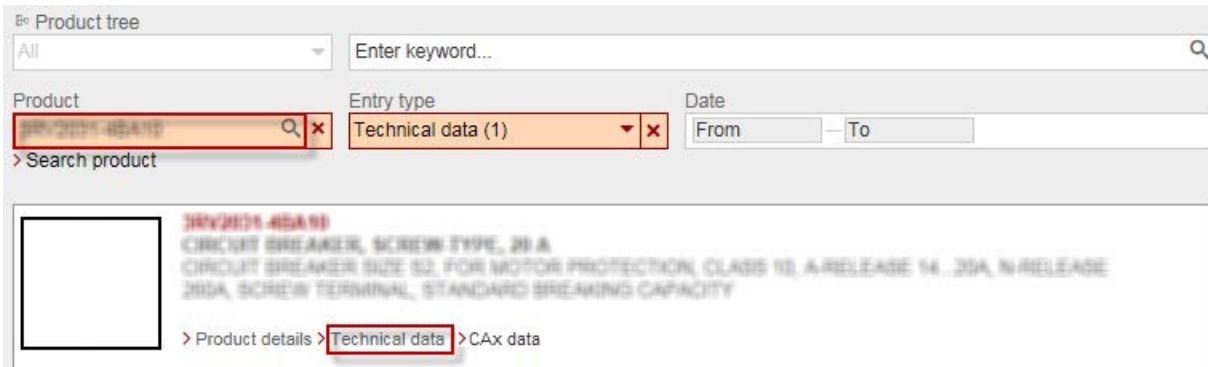
## 11.4 Technical data

### 11.4.1 Technical data in Siemens Industry Online Support

#### Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/16444/td>).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data link.



## 11.4.2 Technical specifications

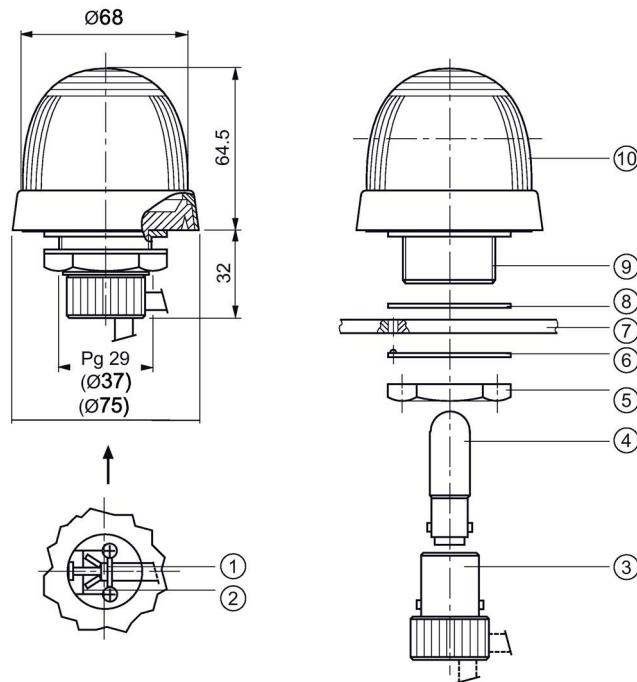
Type	8WD53	
<b>General data</b>		
Approvals	UL, CSA	
Rated voltage (AC values at 50 Hz)		
• Continuous light, BA 15d (incandescent lamps)	24 V, 115 V, 230 V AC/DC, 5 W	
• Continuous light, BA 15d (LED)	24 V, 115 V, 230 V AC/DC	
• Single flash light	24 V AC/DC/125 mA; 230 V AC/15 mA; 230 V AC/15 mA	
• Luminaires with integrated LED	24 V AC/DC/70 mA	
Single flash, flash energy at 1 Hz	Ws	2
LED lamps		
• Flashlight, flash frequency	Hz	approx. 1
• Rotating light, rotation frequency	rpm	approx. 120
Inrush current		
• LED light	A	< 0,5
• Single flash light	A	< 0,5
<b>Enclosures</b>		
Enclosure material	PC/ABS shield, shock-proof, black	
Spherical cap	Thermoplastic (polycarbonate) shock-proof up to 20 J	
Mounting	37 mm diameter hole (Pg 29)	
Degree of protection	IP65	
Ambient temperature		
• Continuous light (incandescent lamp)	°C	-20 ... +60
• Single-flash light, LED light	°C	-20 ... +50
Cable connection	Radial or axial	

<b>Type</b>		<b>8WD53</b>
Enclosure		PC/ABS shield, shock-proof, black
Spherical cap		Thermoplastic (polycarbonate) shock-proof up to 20 J
Mounting	mm	37 mm diameter hole (Pg 29)
Cable outlet		Radial or axial
Ambient temperature	°C	-20 to +60 Single-flash light LED up to +50
Degree of protection		IP65
Approvals		UL/CSA
<b>Operational voltage (AC values at 50 Hz)</b>		
Continuous light (incandescent lamp/LED)	V/mA	24 V AC/DC/115 V/230 V
Single flash light	V/mA	24 V AC/DC/125 mA; 115 V/20 mA; 230 V/15 mA
LED light	V/mA	24 V AC/DC/70 mA
Flash energy		2 Ws/approx. 1 Hz
<b>LED lamps</b>		
Flashlight, flash frequency	Hz	approx. 1
Rotating light, rotation frequency	rpm	approx. 120
<b>Inrush current</b>		
LED light	A	< 0,5
Single flash light		24 V/115 V < 0.5 A; 230 V < 0.5 A

## 11.5 Dimensional drawings

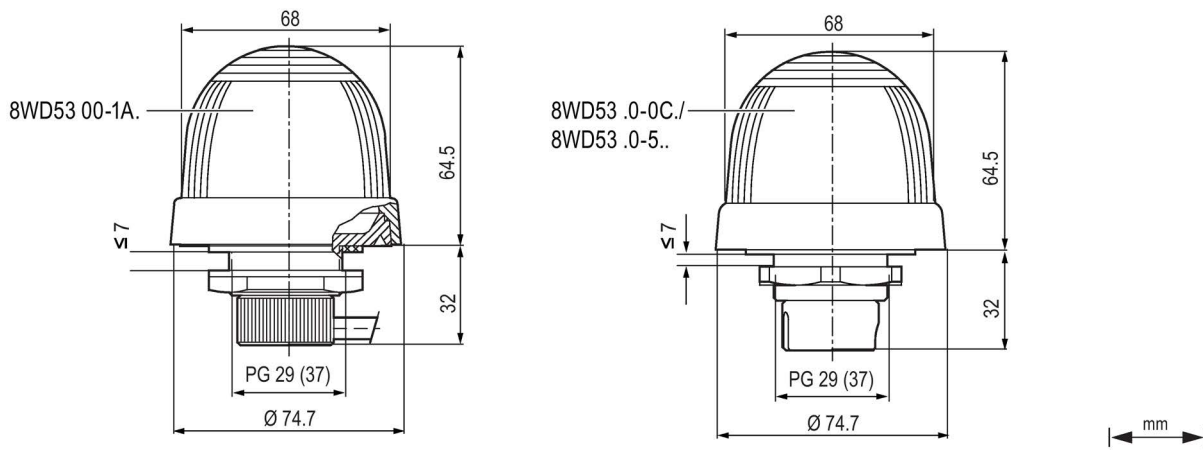
### Note

All dimensions specified in mm.



- ① Strain relief
- ② M3 screw terminals
- ③ Lampholder with bayonet lock
- ④ Incandescent lamp BA 15d
- ⑤ Hexagon nut
- ⑥ Anti-twist protection
- ⑦ Enclosure wall, max. 7 mm
- ⑧ Rubber seal
- ⑨ Thread Pg 29 (diameter 37)
- ⑩ Spherical cap

11.5 Dimensional drawings





# Appendix

## A.1 Certifications and approvals

### Approval markings



Communautés Européennes

(The CE approval mark is required in order to market your products within Europe. The CE mark indicates to European authorities that your claims of product compliance meet the applicable standards.)



Underwriters Laboratories Inc.

(Product safety certification organization)

(Approval mark for Canada and USA)



Underwriters Laboratories Inc.

(Product safety certification organization)



UL Recognized Component Mark

(Approval mark for recognized components)



Canadian Standards Association

(Zertifizierung für den kanadischen Markt)



Atmosphère explosible

(Explosion protection)



China Compulsory Certification

(Certification system in China)

## A.2 List of abbreviations

Abbreviation	Meaning
4I/4O	AS-Interface slave with 4 inputs and 4 outputs
4I/3O	AS-Interface slave with 4 inputs and 3 outputs
AS-i	AS-Interface The AS-Interface (or actuator/sensor interface; abbreviated as AS-i) is a connection system for the lowest process level in automation systems. The AS-International Association promotes the AS-Interface as a multi-vendor industry standard. It is open to users and manufacturers of AS-Interface as well as research organizations. National groups are established in various countries.
AC	Alternating current
AC-12	Control of resistive loads and solid-state loads with isolation by optocouplers
AC-15	Utilization category for contactor relays according to IEC 60947-5-1 AC-15 Control of electromagnetic loads (> 72 VA).
ASIsafe	Concept for integration of safety-related components in an AS-Interface network
ATEX	Atmosphère explosible (French) = Explosion protection Synonym for the two European Directives for explosion protection: <ul style="list-style-type: none"> <li>• ATEX Directive 94/9/EC (applies to equipment manufacturers)</li> <li>• ATEX Directive 1999/92/EC (applies to workplace owners)</li> </ul>
AWG	American Wire Gauge = coding for wire diameters in North America
BG	Employer's Liability Insurance Associations
BKS	Manufacturer of locking systems and cylinder locks
Bus	Binary Unit System System for transferring data between multiple nodes
C-Charakteristik	Circuit breakers with C characteristic are used for cables to loads with high inrush current.
CE	CE marking Confirmation of conformity of the product with the applicable EU directives and compliance with the essential requirements contained in these directives.
CES	Manufacturer of locking systems and cylinder locks
CCC	China Compulsory Certification. The CCC certificate is the compulsory Chinese certificate for various product groups, especially electronic products and products in the automobile industry.
CSA	Canadian Standards Association Provider of product testing and certification services in North America.
C-UL-US	C-UL-US Listing approval mark This classification mark is used for products that are sold in Canadian and U.S. markets. It indicates that Canadian and U.S. requirements for classified products have been fulfilled.
DC	Direct current
DC-13	Utilization category for contactor relays according to IEC 60947-5-1 DC-13 Control of DC electromagnets

Abbreviation	Meaning
DIAZED	Diametrically graded two-part Edison fuse DIAZED is a trademark of Siemens AG. The neutral standard designation is D fuse.
DIN	The "Deutsche Institut für Normung" is the German institution that is responsible for standards development and that represents German interests in European and global standards organizations.
EMC	Electromagnetic compatibility
EN	Europäische Norm (European standard)
GOST	Certification for Russia
IEC	International Electrotechnical Commission
IP	Ingress protection
ISO	International Organization for Standardization
KFW	Saturated atmosphere with variations in air humidity and temperature
KK	Constant saturated atmosphere
KTW	Saturated atmosphere with variations in air temperature
LED	Light emitting diode
M12	Metric ISO thread
CET	Central European Time
NC	NC contact
PDF	Platform-independent file format for documents (Portable Document Format)
PE	Protective Earth
SELV	Safety extra-low voltage
PFD	Probability of dangerous failure on demand
UL	Underwriters Laboratories Inc. U.S. organization for certifying electrotechnical products.
NO	NO contact
SIL	Safety Integrity Level
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e. V. (Association of Electrical Engineering, Electronics and Information Technology (Germany))



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