

ES11

Safety switches



Described product

ES11

Manufacturer

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Original document

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1 About this document

These operating instructions are original operating instructions.

2 On safety

Read these operating instructions carefully and keep them in a safe place.

The operating instructions are to be provided to the person who is installing the emergency stop pushbutton.



DANGER

► Always note and follow the warnings below!

- Before starting the installation, electrically isolate system and device!
- Emergency stop pushbuttons provide a personnel protection function. Incorrect installation or manipulation can result in serious injuries!
- Emergency stop pushbuttons are not allowed to be bypassed, removed or rendered ineffective in any other manner!
- Incorrect installation or tampering can result in damage to the machine and workpiece!
- The emergency stop function is not allowed to be used as a replacement for protective measures or other safety functions, instead it should be designed as an additional protective measure.
- The emergency stop function is not allowed to degrade the effectiveness of protective devices or other devices with safety functions.
- Based on a risk analysis, the designer must ensure that the emergency stop achieves the required level of safety (SIL, SILCL or PL) in combination with control system.

2.1 Application

The national/international rules and regulations apply to the installation, commissioning, use and periodic technical inspections of the emergency stop pushbuttons, in particular:

- Machinery Directive 2006/42/EC
- safety regulations
- work safety regulations and safety rules

Manufacturers and operators of the machine on which the protective devices are used are responsible for obtaining and observing all applicable safety regulations and rules.

Correct use includes observance of the applicable requirements on installation and operation, in particular:

- EN 60947-5-1
- EN 60947-5-5
- EN ISO 13849-1
- EN ISO 13850
- EN 61508-1
- EN 60204-1

Correct use also includes the regular monitoring of the protective device by specialist personnel.

The product may be used in safety functions.

3 Product description

The emergency stop pushbutton has a compact housing and a plug connector M12. The emergency stop pushbutton is available in the following variants (see ["Ordering information", page 17](#)):

- emergency stop button, not illuminable
- emergency stop button, illuminable
- emergency stop button, not illuminable with additional reset button, illuminable

3.1 Items supplied

- Emergency stop pushbutton
- retaining clip
- ES11-SC... only: blue "RESET" cover (Note: Only press on after mounting!)

Other mounting material (screws, dowels, sliding nut) not included.

3.2 Function

- actuate: pressing the emergency stop button
- actuate: pressing the emergency stop button
- reset: pressing the reset button (ES11-SC... only)

4 Mounting



DANGER

Mount the emergency stop pushbutton such that it can be reached easily!

The emergency stop pushbutton is intended to be mounted so it is vertical (connecting cable down or up).

How to mount the emergency stop pushbutton (see figure 1):

- ▶ Mounting on profile rail: Insert sliding nut in profile (sliding nut not included).
- Or
- Wall mounting: Drill two mounting holes in the mounting plate.
- ▶ Fasten retaining clip.
- ▶ Fit housing to the side of the retaining spring, pull against spring pressure and press on. The emergency stop pushbutton engages.
- ▶ ES11-SC... only: Press "RESET" cover onto reset button, with label correctly positioned so it is legible, until it engages.
- ▶ Connect connecting cable to the connection plug. Pay attention to the permissible electrical and mechanical data (see "Technical specifications", page 15):

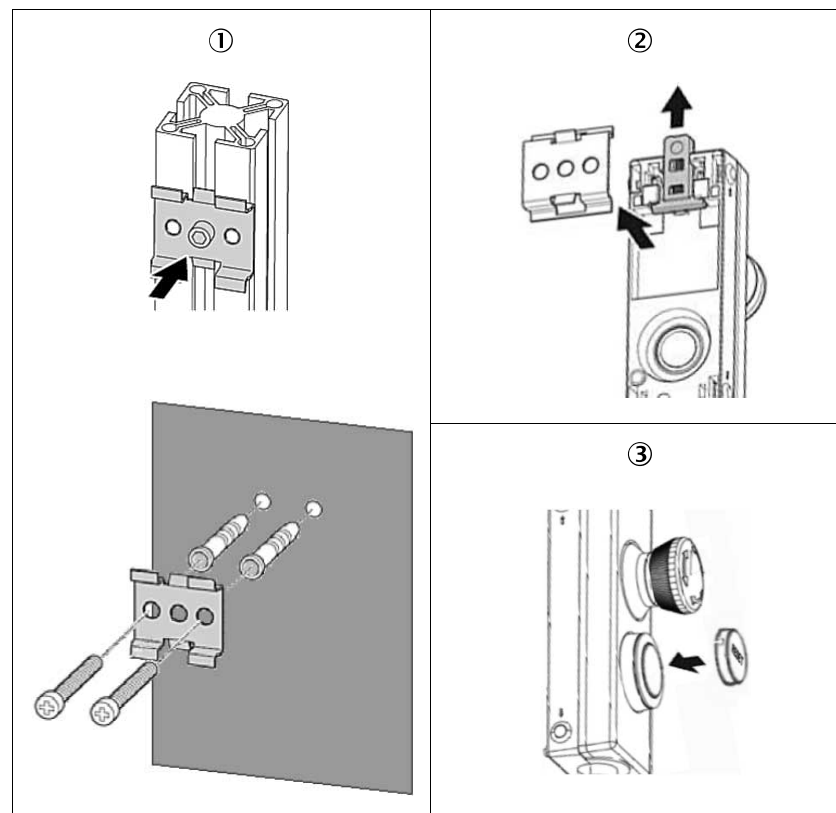
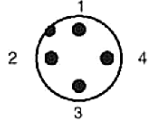
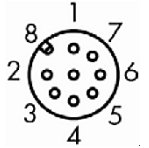
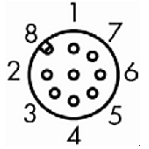


Figure 1: Mounting of the emergency stop pushbutton (screws and sliding nut not included)

5 Connection

Table 1: Pin assignment ES11 emergency stop pushbutton

	Pin	Assignment
ES11-SA1A4		
	1/2	Normally closed contact 1
	3/4	Normally closed contact 2
ES11-SA2B8		
	3/4	Normally closed contact 1
	7/8	Normally closed contact 2
	5	LED+ (emergency stop)
	6	LED+ (emergency stop)
	1/2	(Not connected)
ES11-SC4D8		
	3/4	Normally closed contact 1
	7/8	Normally closed contact 2
	5	LED+ (reset)
	6	LED- (reset)
	1/2	Normally open contact (reset)

6 Tests before the initial commissioning

Mechanical functional check

- Are there any signs of damage to the exterior of the emergency stop pushbutton?
- Is the emergency stop pushbutton's housing securely engaged on the retaining clip?
- Is the connecting cable securely fastened?
- Does the emergency stop button engage on actuation and can it be released again by turning?

Electrical functional check:

- ▶ Start the machine.
- ▶ Actuate the emergency stop button.



DANGER

Thoroughly check machine stop!

- ▶ Check whether the machine stops on the actuation of the emergency stop button.

-
- ▶ Unlock emergency stop button.
 - ▶ Actuate reset button.

Check whether the protective device has been reset.

7 Periodic technical inspections

Make regular checks to ensure correct, long-term function. The inspection interval is to be defined by the machine designer based on the risk assessment. However, it is recommended the responsible safety officer triggers the emergency stop pushbutton at least once a year for test purposes and to check for correct function:

- mechanical and electrical function check as per chapter ["Tests before the initial commissioning", page 9](#)
- no tampering or damage apparent
- no loose connections

8 What to do in case of a malfunction

**DANGER**

In case of mechanical overload or the action of external forces, the emergency stop pushbutton may be damaged and its function degraded.

1. Remove the cause.
 2. In this case undertake a function check as per chapter "[Tests before the initial commissioning](#)", page 9 .
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9 Uninstalling



DANGER

Electrically isolate the system and device prior to uninstalling!

1. Disconnect connecting cable from the plug connector.
2. Using a screwdriver pull up the slide (see figure 1, ②).
3. Release housing from retaining clip.

10 Disposal

Approach

- ▶ Always dispose of unusable devices in accordance with national waste disposal regulations.



Complementary information

SICK will be glad to help you dispose of these devices on request.

11 Conformities and certificates

You can obtain declarations of conformity, certificates, and the current operating instructions for the product at www.sick.com. To do so, enter the product part number in the search field (part number: see the entry in the “P/N” or “Ident. no.” field on the type label).

11.1 EU declaration of conformity

Excerpt

The undersigned, representing the manufacturer, herewith declares that the product is in conformity with the provisions of the following EU directive(s) (including all applicable amendments), and that the standards and/or technical specifications stated in the EU declaration of conformity have been used as a basis for this.

- ROHS DIRECTIVE 2011/65/EU
- MACHINERY DIRECTIVE 2006/42/EC

11.2 UK declaration of conformity

Excerpt

The undersigned, representing the following manufacturer herewith declares that this declaration of conformity is issued under the sole responsibility of the manufacturer. The product of this declaration is in conformity with the provisions of the following relevant UK Statutory Instruments (including all applicable amendments), and the respective standards and/or technical specifications have been used as a basis.

- Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
- Supply of Machinery (Safety) Regulations 2008

12 Technical specifications

12.1 Data sheet

Table 2: Technical specifications emergency stop pushbutton

	ES11-SA1A4	ES11-SA2B8	ES11-SC4D8
Enclosure rating (EN 60529)	IP65		
Protection class (EN 61140)	III		
Ambient operating temperature	-25 ... +70 °C		
Storage temperature	-25 ... +80 °C		
Switching elements (EN 6094751)	2 positive opening normally closed contacts	2 positive opening normally closed contacts, 1 normally open contact (reset)	
B _{10D} value (EN ISO 138491)	250000 switching operations		
MTTF _D (Mean time to failure, EN ISO 138491)	6849 (at switching frequency C = 1/d)		
Electrical/mechanical service life (at +20 °C)			
Emergency stop button	50000 switching operations (at rated load)		
Reset button	-	1 × 10 ⁶ switching operations	
Max. bounce time	10 ms		
Min. positive opening travel	3 mm		
Usage category (EN 6094751)	DC13	-	
Rated current I _e	2 A	-	
Rated voltage U _e	24 V DC	-	
Operating voltage	-	1 ... 30 V DC	
Operating current	-	1 ... 100 mA	
Maximum switching capacity	-	250 mW	
Housing material	PBT (polybutylene terephthalate)		
Contact material	AgNi	AgNi, gold plated 5 µm	
Emergency stop button illumination connection			
Operating voltage	-	30 V AC/DC	-
Operating current (typical)	-	4 mA (at 24 V DC)	-
Reset button illumination connection			
Operating voltage	-	-	30 V AC/DC
Operating current	-	-	14 mA (at 24 V)

12.2 Dimensional drawings

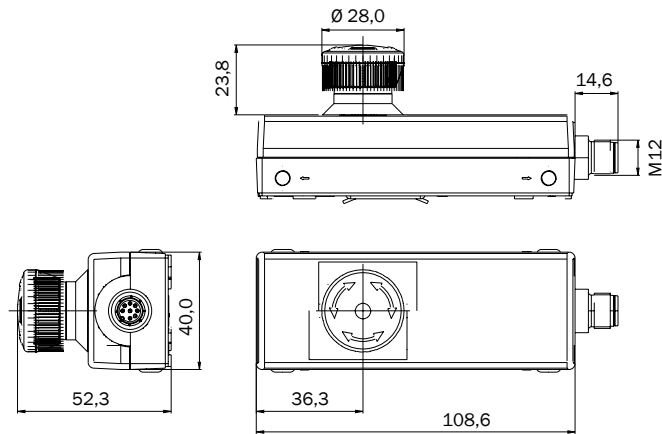


Figure 2: Dimensional drawing ES11-SA... (mm)

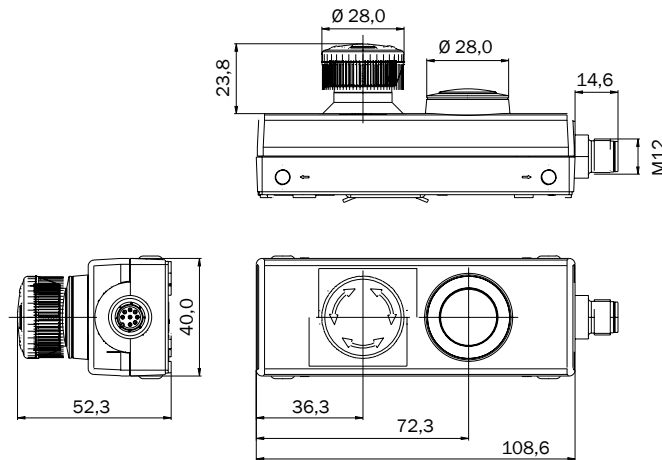


Figure 3: Dimensional drawing ES11-SC... (mm)

13 **Ordering information**

Table 3: Part numbers and type codes

Part	Part No.
Emergency stop pushbutton incl. removable retaining clip	
Emergency stop button, not illuminable, connection M12×4 plug	6051327 (ES11-SA1A4)
Emergency stop button, illuminable, connection M12×8 plug	6051328 (ES11-SA2B8)
Emergency stop button, not illuminable, reset button, illuminable, connection M12×8 plug	6051329 (ES11-SC4D8)
Spare parts	
Retaining clips, 10 pieces	5326274

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