

Visualisation; Diagnostics

Easy to Configure

Programming IEC 61131-3

Rapid Installation

PSEN sg2c

► PSEN sensor technology

PILZ
THE SPIRIT OF SAFETY

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SD means Secure Digital

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1 Introduction

1.1 Validity of documentation

This documentation is valid for the product PSEN sg2c. It is valid until new documentation is published.

This operating manual explains the function and operation, describes the installation and provides guidelines on how to connect the product.

1.2 Using the documentation

This document is intended for instruction. Only install and commission the product if you have read and understood this document. The document should be retained for future reference.

1.3 Definition of symbols

Information that is particularly important is identified as follows:



DANGER!

This warning must be heeded! It warns of a hazardous situation that poses an immediate threat of serious injury and death and indicates preventive measures that can be taken.



WARNING!

This warning must be heeded! It warns of a hazardous situation that could lead to serious injury and death and indicates preventive measures that can be taken.



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.

**INFORMATION**

This gives advice on applications and provides information on special features.

2 Overview

2.1 Scope of PSEN sg2c Unit

- ▶ Safety switch
- ▶ Handle unit with actuator
- ▶ Colour covers for illuminated buttons
- ▶ Pin for escape release

2.2 Unit features

- ▶ Safe guard locking (only for revolving gates and swing gates)
 - ▶ Safe interlocking (position monitoring)
 - ▶ Transponder technology
 - ▶ 2 safety inputs for series connection of multiple safety switches
 - ▶ 2 safety outputs
 - ▶ Guard locking element keeps the safety gate from being opened unintentionally
 - ▶ Detection of broken bolt tongue and broken guard locking element
 - ▶ Handle unit with locking lever to attach padlocks as a restart interlock
 - ▶ Auxiliary release for opening the safety gate, when the plant's voltage is switched off
 - ▶ Escape release for fast manual release of the guard locking in emergency situations from within the danger zone (revolving gates and swing gates)
 - ▶ Suitable for left and right hinged safety gates
Note: The handle unit PSEN sg2c actuator is only suitable for revolving gates and swing gates.
 - ▶ Plug-in spring-loaded terminals
 - ▶ LED indicator for:
 - Supply voltage/fault
 - Gate locked
 - State of the hazardous machine
 - Request to stop the machine
 - State of the inputs
 - Bolt tongue engaged
 - ▶ Depends on device type
 - Various control elements, for example integral E-STOP pushbutton, section stop pushbutton, key-operated pushbutton, key switch...
 - Coding:
 - coded
 - uniquely coded
- See section entitled Device types

3 Safety

3.1 Intended use

The safety gate system is used for guard locking and interlocking swing gates and revolving gates.

It meets the requirements in accordance with:

- ▶ EN 60947-5-3
- ▶ EN ISO 14119
- ▶ EN 62061: SIL CL 3
- ▶ EN ISO 13849-1: Up to PL e (Cat. 4)

The safety level PL e (Cat. 4)/SIL CL 3 can be achieved when

- ▶ The safety outputs use 2-channel processing and
- ▶ The solenoid is operated 2-channel via safe relay outputs, suitable for PL e (Cat. 4)/SIL CL 3 applications.

Wiring errors should be excluded using appropriate measures. The potential solutions are the protected cable layout or the use of pulsed semiconductor outputs.

3.2 Safety regulations

3.2.1 Safety assessment

Before using a unit it is necessary to perform a safety assessment in accordance with the Machinery Directive.

Functional safety is guaranteed for the product as a single component. However, this does not guarantee the functional safety of the overall plant/machine. In order to achieve the required safety level for the overall plant/machine, define the safety requirements for the plant/machine and then define how these must be implemented from a technical and organisational standpoint.

3.2.2 Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, maintained and decommissioned by competent persons.

A competent person is someone who, because of their training, experience and current professional activity, has the specialist knowledge required to test, assess and operate the work equipment, devices, systems, plant and machinery in accordance with the general standards and guidelines for safety technology.

It is the company's responsibility only to employ personnel who:

- ▶ Are familiar with the basic regulations concerning health and safety / accident prevention
- ▶ Have read and understood the information provided in this description under "Safety"
- ▶ And have a good knowledge of the generic and specialist standards applicable to the specific application.

3.2.3 Warranty and liability

All claims to warranty and liability will be rendered invalid if

- ▶ The product was used contrary to the purpose for which it is intended
- ▶ Damage can be attributed to not having followed the guidelines in the manual
- ▶ Operating personnel are not suitably qualified
- ▶ Any type of modification has been made (e.g. exchanging components on the PCB boards, soldering work etc.).

3.2.4 Disposal

- ▶ In safety-related applications, please comply with the mission time T_M in the safety-related characteristic data.
- ▶ When decommissioning, please comply with local regulations regarding the disposal of electronic devices (e.g. Electrical and Electronic Equipment Act).

3.3 For your safety



WARNING!

Potential loss of safety function during adjustment and repair work!

When carrying out adjustment and repair work, make sure that the power supply of the plant is switched off and protected against switching on again.



WARNING!

Loss of safety function due to manipulative use of substitute actuating elements!

When substitute actuating elements are used, these have to be installed as described in chapter [Initial installation of safety switch](#) [31]. When substitute actuating elements are used in a manipulative way to defeat the protective device, operating the plant presents a threat to life.

The operator has to consider this in the hazard analysis and he must determine possible countermeasures.

4 Function description

The interlocking and guard locking system prevents the safety gates to the danger zone from opening while the hazardous machine is switched on.

There is a high signal (safety gate closed and locked) at safety outputs X1-3 and X1-4 if the following conditions are met simultaneously:

- ▶ Inputs X2-3 and X2-4 are high and
- ▶ The bolt tongue is within the response range and
- ▶ The guard locking element is engaged in the bolt tongue and
- ▶ The escape or auxiliary release pin is in the correct position.

Signal output X1-9 is high if:

- ▶ The bolt tongue is within the response rang

There is a low signal (safety gate open and hazardous machine function interlocked) at safety outputs X1-3 and X1-4 if the following occurs:

- ▶ Inputs X2-3 or X2-4 are low or
- ▶ The guard locking element is outside the bolt tongue or
- ▶ The escape or auxiliary release has been operated or
- ▶ The guard locking element is not engaged in the bolt tongue.

If the safety outputs have been shut down by either of the inputs X2-3 or X2-4, they cannot be switched back on until both inputs are low simultaneously.

To operate the solenoid, a high signal must be present at X1-6 (X2-6) and at X1-7 (X2-7) after the hazardous movement has been ended.

4.1 Normal /Unlock mode

Normal mode:

The safety gate to the danger zone is not unlocked until the hazardous machine is stopped and the pushbutton for access request has been operated.

- ▶ The guard locking element is disengaged from the bolt tongue as soon as there is a high signal at terminals X1-6 and X1-7 or X2-6 and X2-7, followed by operation of the pushbutton for access request.

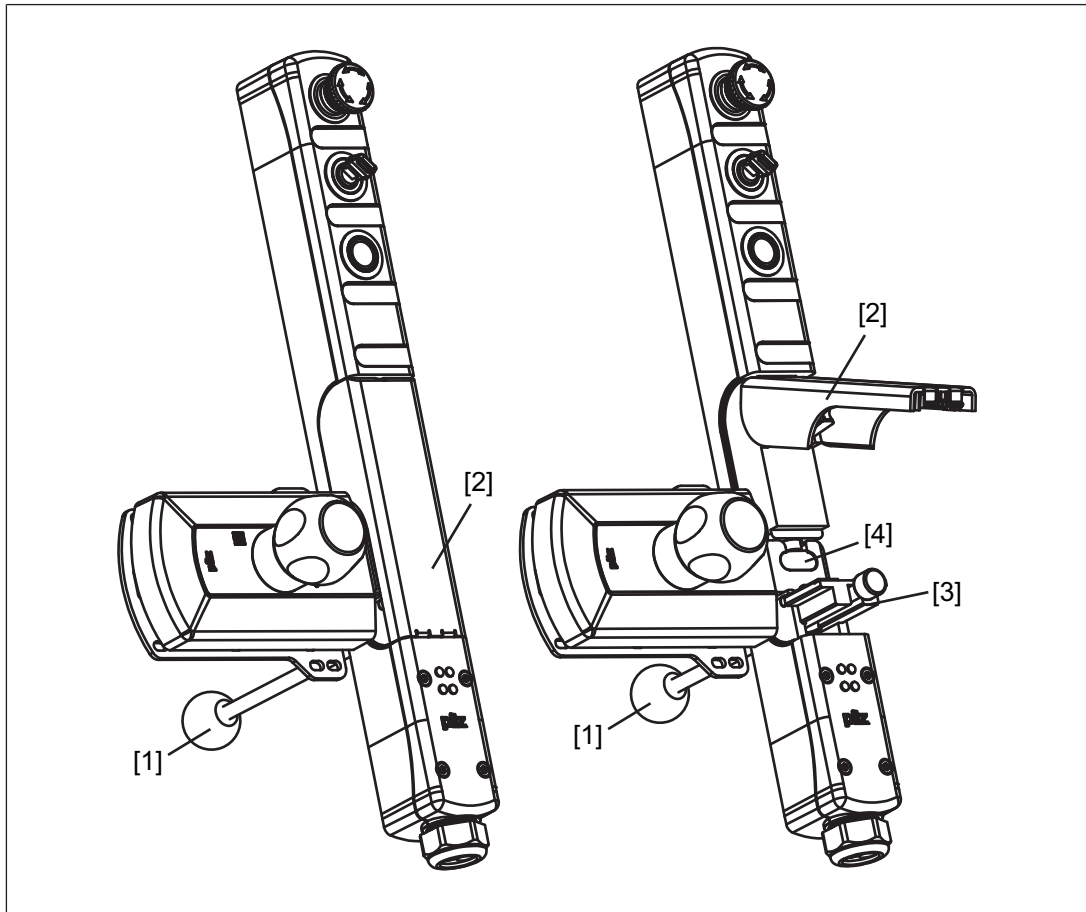
Unlock mode:

The safety gate to the danger zone is unlocked when the hazardous machine is stopped. This enables easier access for cleaning staff once the shift has ended, for example.

- ▶ The guard locking element is disengaged from the bolt tongue as soon as there is a high signal at terminals X1-6 and X1-7 or X2-6 and X2-7.

4.2 Escape release

The escape release enables the guard locking to be manually released from within the danger zone.



Mode of operation

Within the danger zone, if the escape release pin [1] is pressed in the direction of the safety gate, the cover on the escape release [2] detaches from the locked position and lifts upwards. The swivel piece [3] folds downwards. The bolt tongue [4] behind the swivel piece is released. The safety gate can be opened immediately, enabling the operator to leave the danger zone.


**WARNING!**

Loss of safety function due to the incorrect installation of the escape release!


If the escape release pin is accessible from the outside, the guard locking device can be released from the outside and the safety gates opened, although the hazardous machine is switched on.

Depending on the application, serious injury or death may result.

The escape release should be installed so that it is only accessible from inside the danger zone.

It is also important to refer to the maintenance instructions (see chapter entitled [Maintenance](#) [ 44])

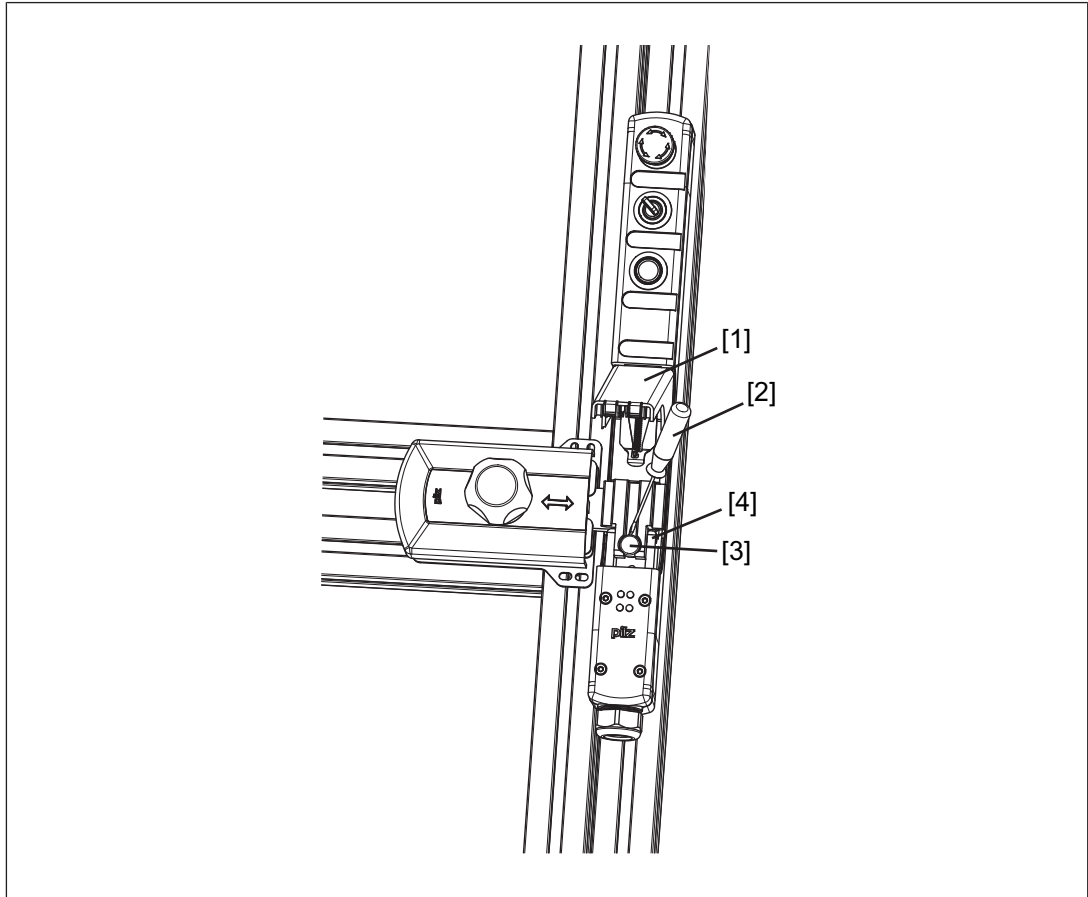
**INFORMATION**

When the escape or auxiliary release is operated, there is a low signal at the safety outputs X1-3 and X1-4. An error code is issued (see section entitled [Remedy](#) [ 49]). The PSENsgate is not ready for operation again until the escape release or auxiliary release has been reset to its unoperated state and the error has been rectified and reset.

Please note that the cover of the escape release has to be checked and re-installed after operation.

4.3 Auxiliary release

When the plant is powered down, the auxiliary release enables the guard locking device to be released from the access side to the danger zone.



Mode of operation:

Carefully remove the cover of the escape release (1) from the latch below. Use a screwdriver (2) to pull out the escape or auxiliary release pin (3) from the swivel piece (4). The swivel piece folds downwards, the bolt tongue behind the swivel piece is released. The safety gate to the danger zone can be opened.



INFORMATION

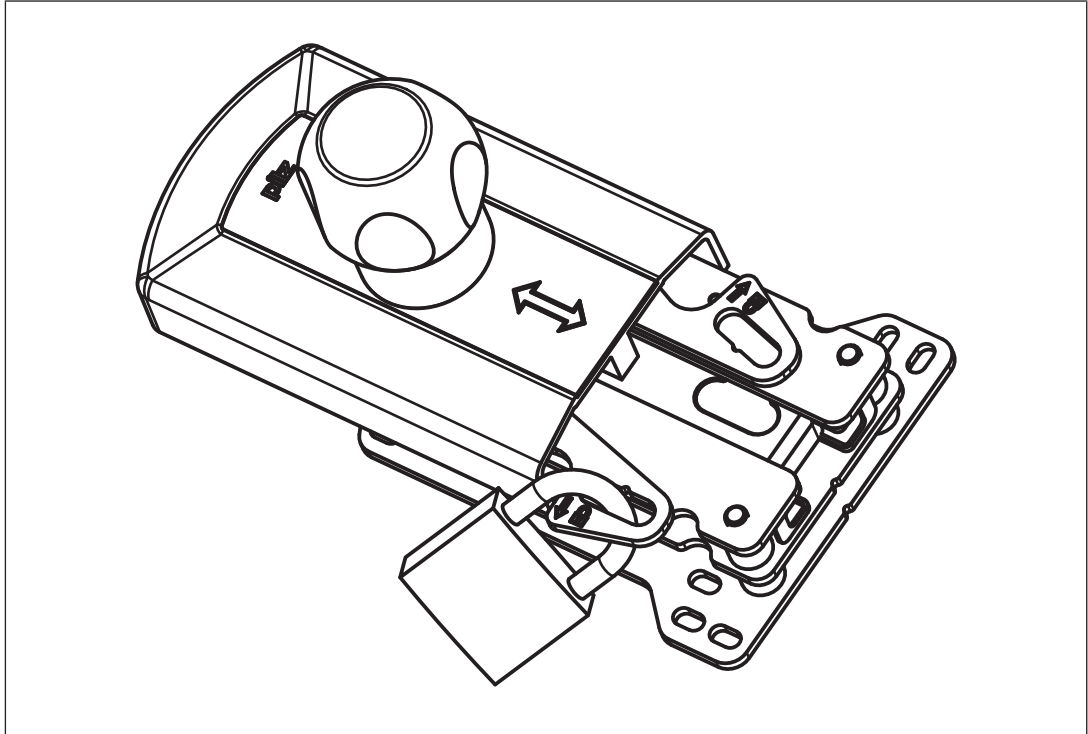
When the escape or auxiliary release is operated, there is a low signal at the safety outputs X1-3 and X1-4. An error code is issued (see section entitled [Remedy \[49\]](#)). The PSENsgate is not ready for operation again until the escape release or auxiliary release has been reset to its unoperated state and the error has been rectified and reset.

Please note that the cover of the escape release has to be checked and re-installed after operation.

4.4 Restart interlock

To prevent the machine restarting while there is someone inside the danger zone, a padlock can be attached to one of the locking levers (see illustration). As a result, the guard locking element cannot engage in the bolt tongue, the guard locking device is not activated and the machine is prevented from restarting.

The padlock's shackle diameter may be max. 8 mm.

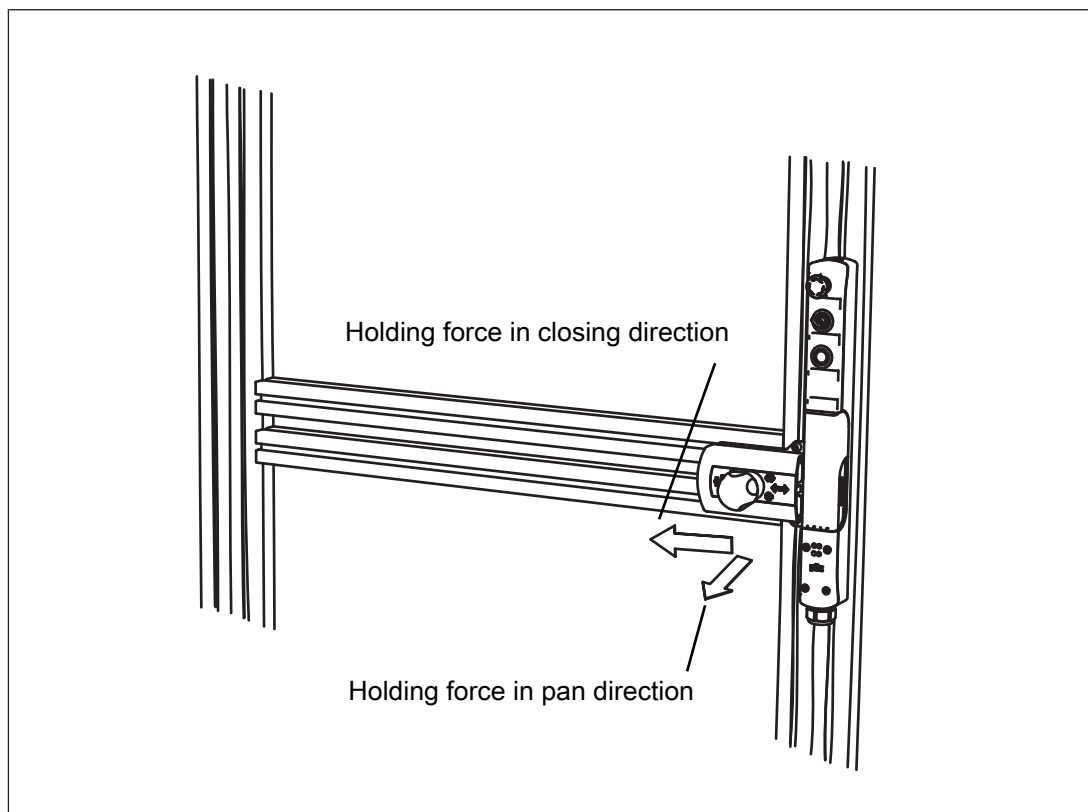


4.5 Holding forces

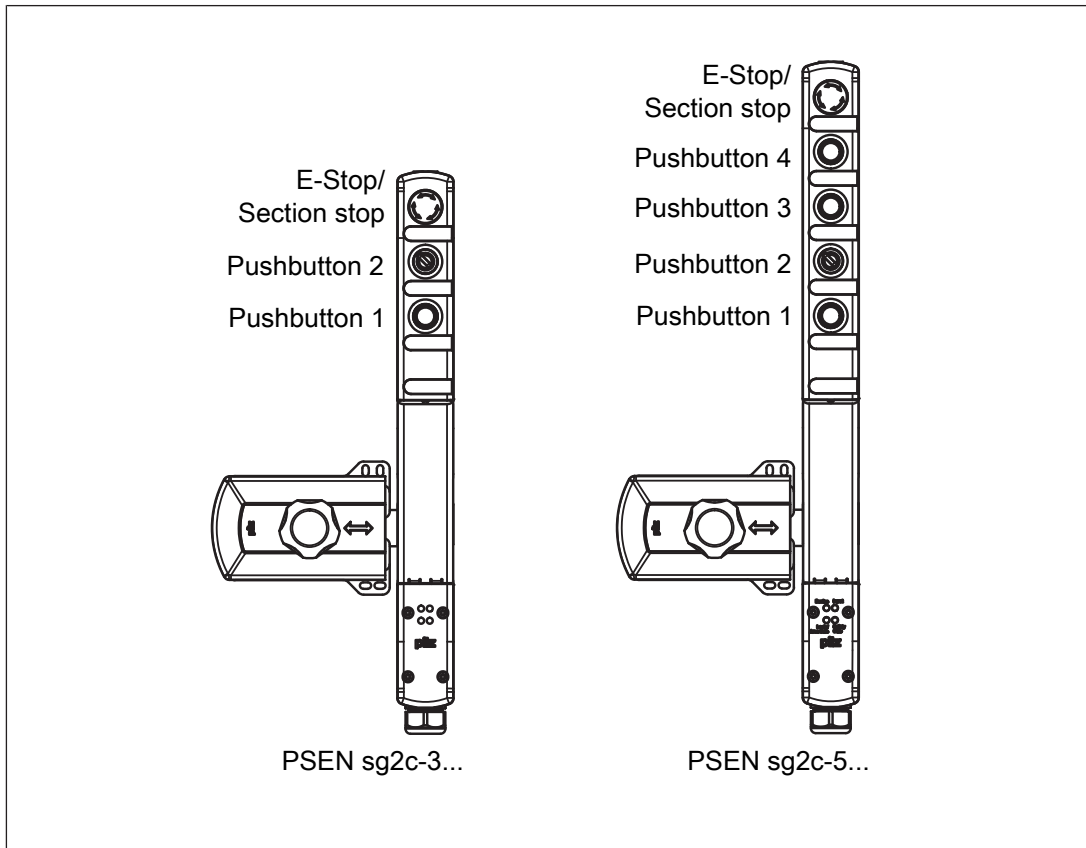
The maximum holding forces that can be used to lock the safety gate are stated in the technical details.

A distinction is made between the following holding forces:

- ▶ Holding force in pan direction and
- ▶ Holding force in closing direction



4.6 Pushbutton



▶ **Pushbutton 1: pushbutton for activating the safety gate guard locking device**

By pressing the pushbutton for activating guard locking, the guard locking element is engaged in the bolt tongue when the bolt tongue is detected by the sensor and a high signal is present at X1-6 and X1-7 or at X2-6 and X2-7 (solenoid operation).

▶ **Pushbutton 2: pushbutton for access request and release of the safety gate**

- Pressing the pushbutton for access request disengages the guard locking element from the bolt tongue when a high signal is present at X1-6 and X1-7 or at X2-6 and X2-7 (solenoid operation).
- Pressing the pushbutton for access request switches output X1-5 (access request) when a low signal is present at X1-6 and X1-7 or at X2-6 and X2-7 (solenoid operation).

Depending on the design, the device also has:

▶ **E-STOP / or section stop pushbutton**

▶ **Pushbutton 3 and pushbutton 4**

Pushbuttons that can be used depending on the application:

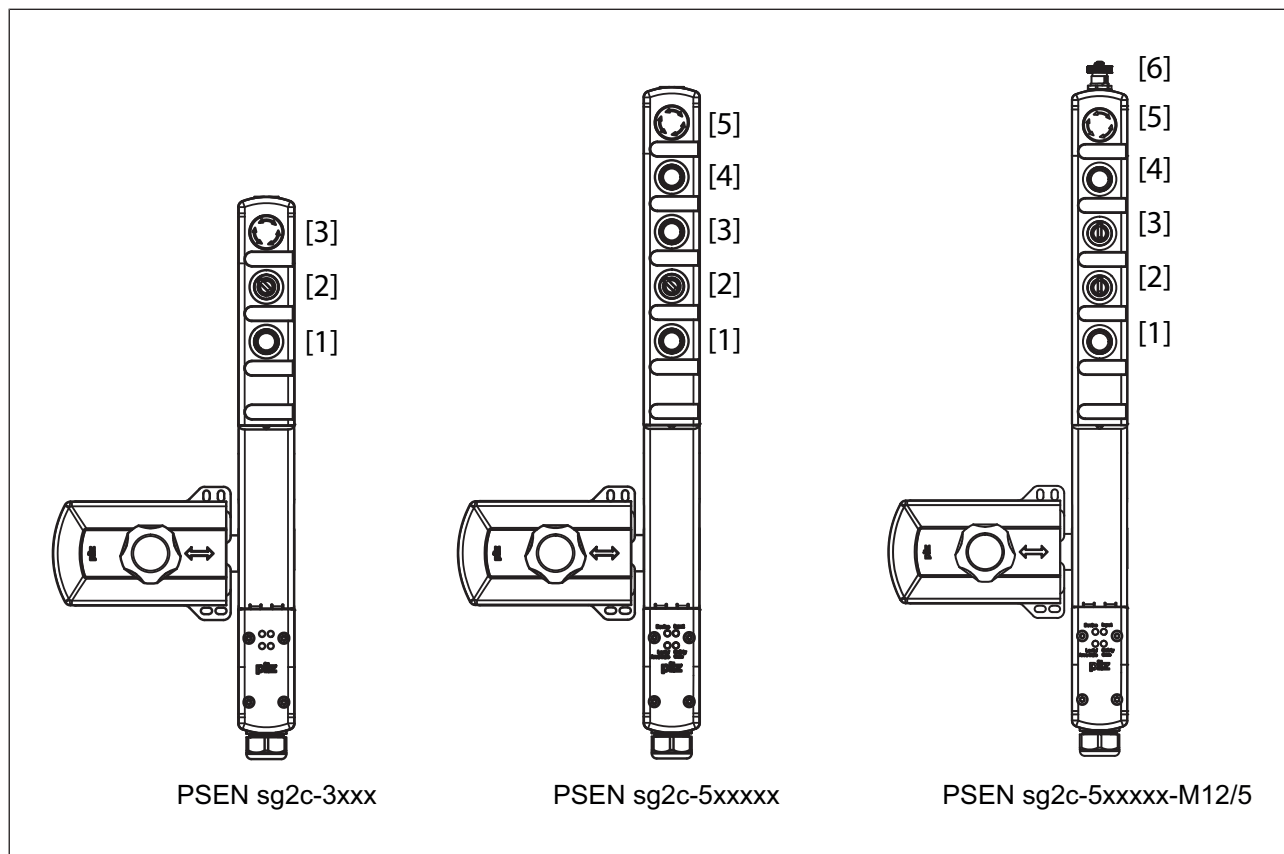
- Operating a pushbutton switches the pushbutton output
- The LEDs of the pushbuttons can be operated via the LED inputs.

Further information on the different types can be found in the section entitled [Device types](#) [17].

4.7 Device types

21 different versions are available. They differ as follows:

- ▶ Number and quality of the pushbuttons
- ▶ Coded or uniquely coded
- ▶ With or without M12 connection for enabling switch



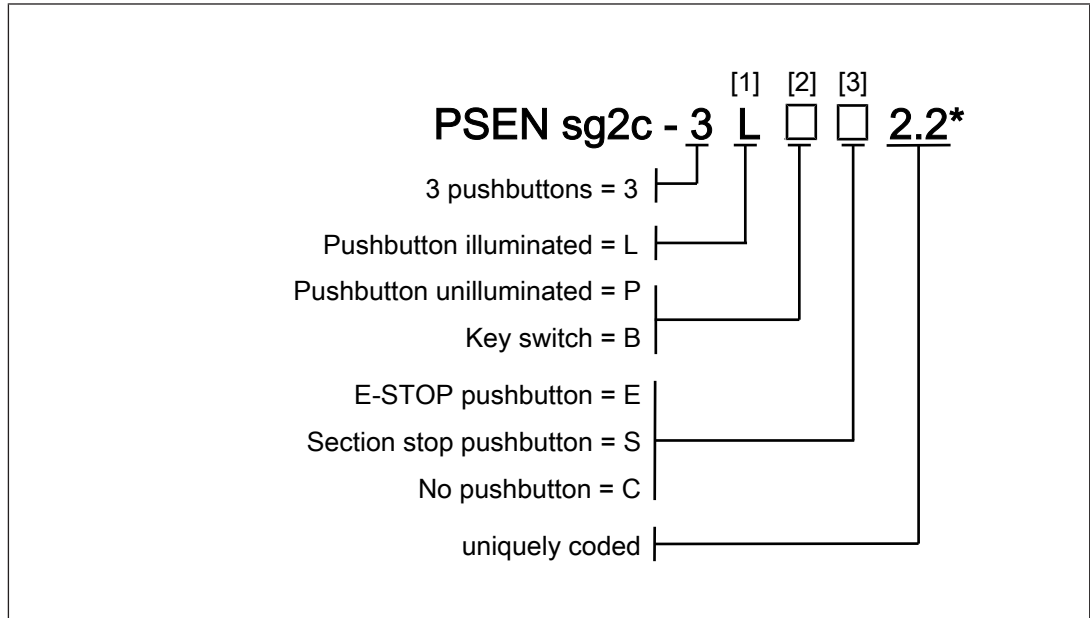
PSEN sg2c-3xxx (3 pushbuttons)

[1] Pushbutton 1: pushbutton for activating the safety gate guard locking device

[2] Pushbutton 2: pushbutton for access request and release of the safety gate

[3] E-STOP / or section stop pushbutton

Type code:



*not included with all versions

Types:

	Pushbutton 1	Pushbutton 2	E-Stop/ Section stop	Coding
-3LPE	Pushbutton illuminated	Pushbutton unilluminated	E-Stop	coded
-3LBE	Pushbutton illuminated	Key switch	E-Stop	coded
-3LPS	Pushbutton illuminated	Pushbutton unilluminated	Section stop	coded
-3LBS	Pushbutton illuminated	Key-operated pushbutton	Section stop	coded
-3LPC	Pushbutton illuminated	Pushbutton unilluminated	---	coded
-3LBC	Pushbutton illuminated	Key-operated pushbutton	---	coded
-3LPE 2.2	Pushbutton illuminated	Pushbutton unilluminated	E-Stop	uniquely coded

PSEN sg2c-5-xxxxx and PSEN sg2c-5-xxxxx-M12 (5 pushbuttons):

- [1] Pushbutton 1: pushbutton for activating the safety gate guard locking device
- [2] Pushbutton 2: pushbutton for access request and release of the safety gate
- [3], [4] pushbuttons 3 - 4: can be used depending on the application
- [5] E-STOP / or section stop pushbutton
- [6] M12 connection for enabling switch

Type code:

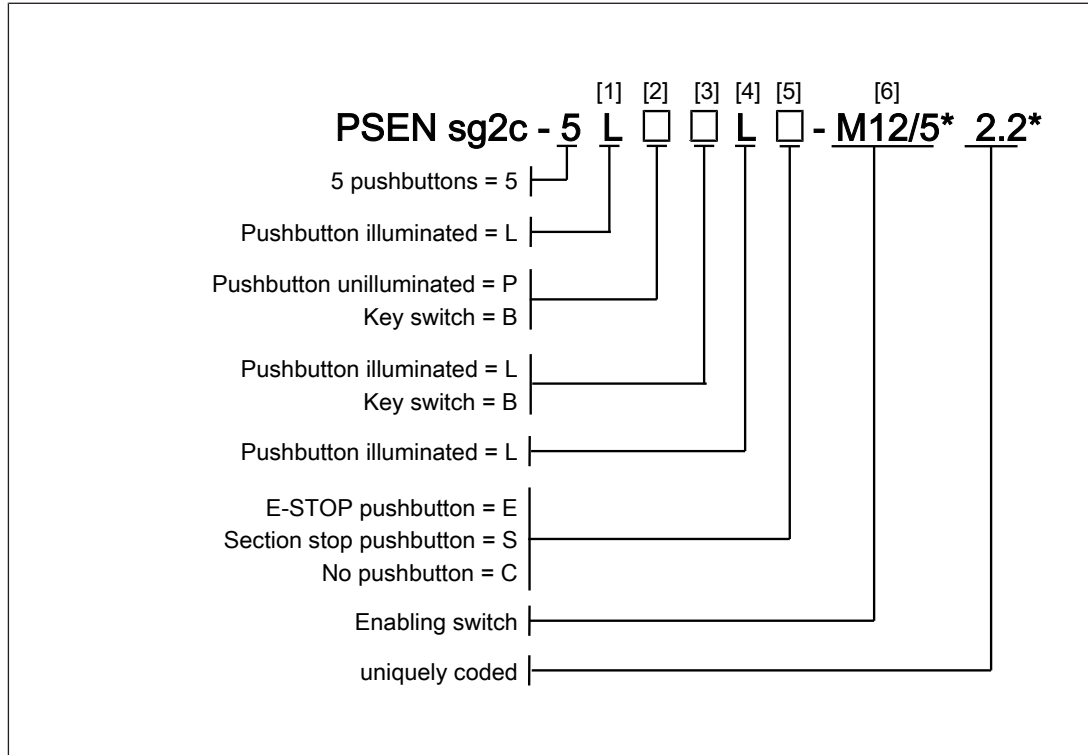


Fig.: *not included with all versions

Types:

	Pushbut- ton 1	Pushbut- ton 2	Pushbut- ton 3	Pushbut- ton 4	E-Stop/ Section stop	M1 2	Coding
-5LPLLE	Pushbut- ton illuminated	Pushbut- ton unillumin- ated	Pushbut- ton illuminated	Pushbut- ton illuminated	E-Stop	---	coded
-5LBLLE	Pushbut- ton illuminated	Key-oper- ated pushbutton	Pushbut- ton illuminated	Pushbut- ton illuminated	E-Stop	---	coded
-5LPLLS	Pushbut- ton illuminated	Pushbut- ton unillumin- ated	Pushbut- ton illuminated	Pushbut- ton illuminated	Section stop	---	coded

-5LBLLS	Pushbutton illuminated	Key-operated pushbutton	Pushbutton illuminated	Pushbutton illuminated	Section stop	---	coded
-5LPLLC	Pushbutton illuminated	Pushbutton unilluminated	Pushbutton illuminated	Pushbutton illuminated	---	---	coded
-5LBLLC	Pushbutton illuminated	Key-operated pushbutton	Pushbutton illuminated	Pushbutton illuminated	---	---	coded
-5LPKLE-M12/5	Pushbutton illuminated	Pushbutton unilluminated	Key switch	Pushbutton illuminated	E-Stop	Yes	coded
-5LBKLE-M12/5	Pushbutton illuminated	Key-operated pushbutton	Key switch	Pushbutton illuminated	E-Stop	Yes	coded
-5LPKLS-M12/5	Pushbutton illuminated	Pushbutton unilluminated	Key switch	Pushbutton illuminated	Section stop	Yes	coded
-5LBKLS-M12/5	Pushbutton illuminated	Key-operated pushbutton	Key switch	Pushbutton illuminated	Section stop	Yes	coded
-5LPKLC-M12/5	Pushbutton illuminated	Pushbutton unilluminated	Key switch	Pushbutton illuminated	---	---	coded
-5LBKLC-M12/5	Pushbutton illuminated	Key-operated pushbutton	Key switch	Pushbutton illuminated	---	Yes	coded
-5LPLLE 2.2	Pushbutton illuminated	Pushbutton unilluminated	Pushbutton illuminated	Pushbutton illuminated	E-Stop	---	uniquely coded
-5LPKLE-M12/5 2.2	Pushbutton illuminated	Pushbutton unilluminated	Key switch	Pushbutton illuminated	E-Stop	Yes	uniquely coded

4.8 Block diagram

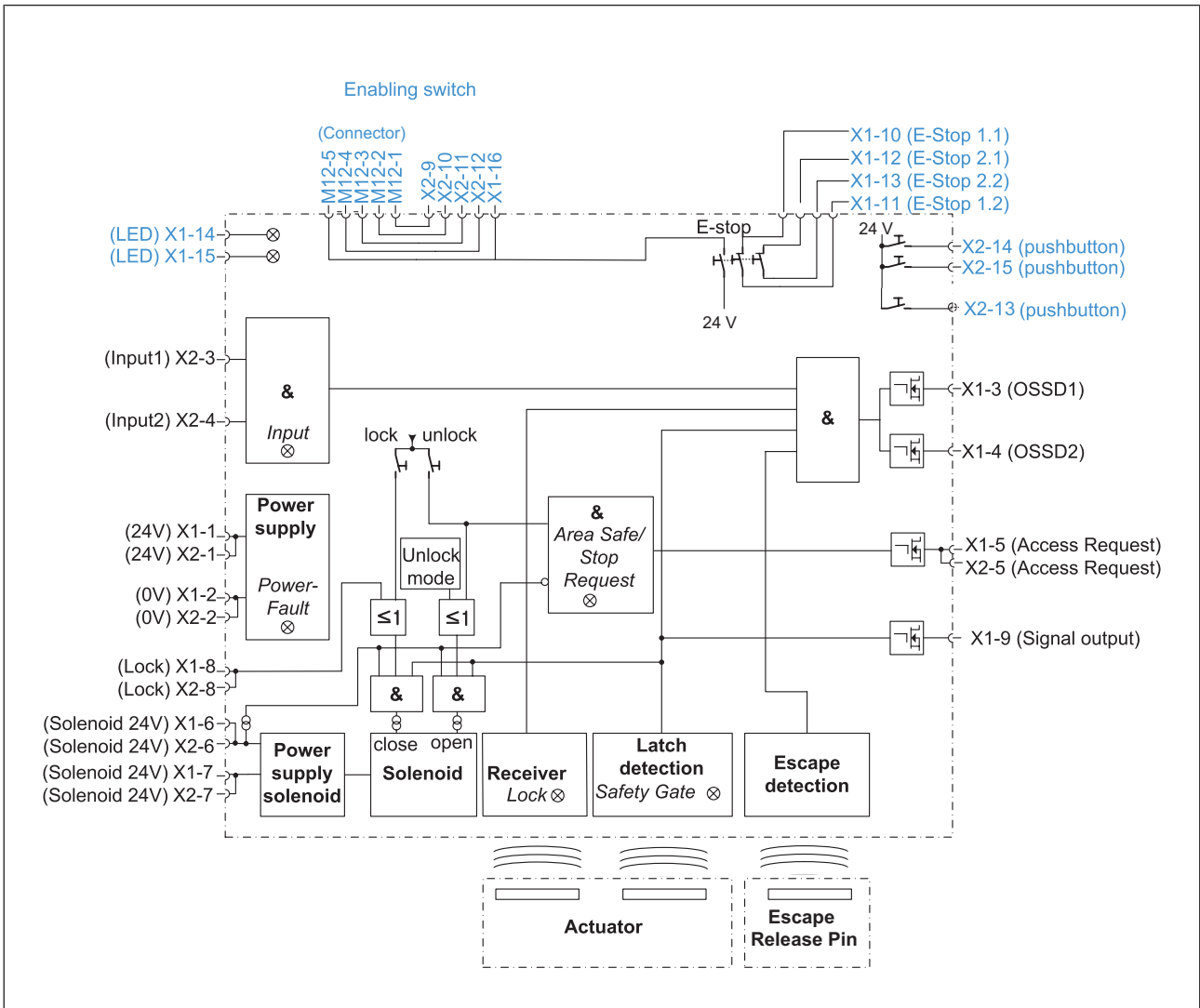


Fig.: The connections shown in blue are available depending on the device type (see section entitled [Device types](#) [17]).

5 Wiring

5.1 Notes on cable run

The maximum cable run depends on the voltage drop in the supply voltage conductors for solenoid operation. The level of voltage drop is determined by the

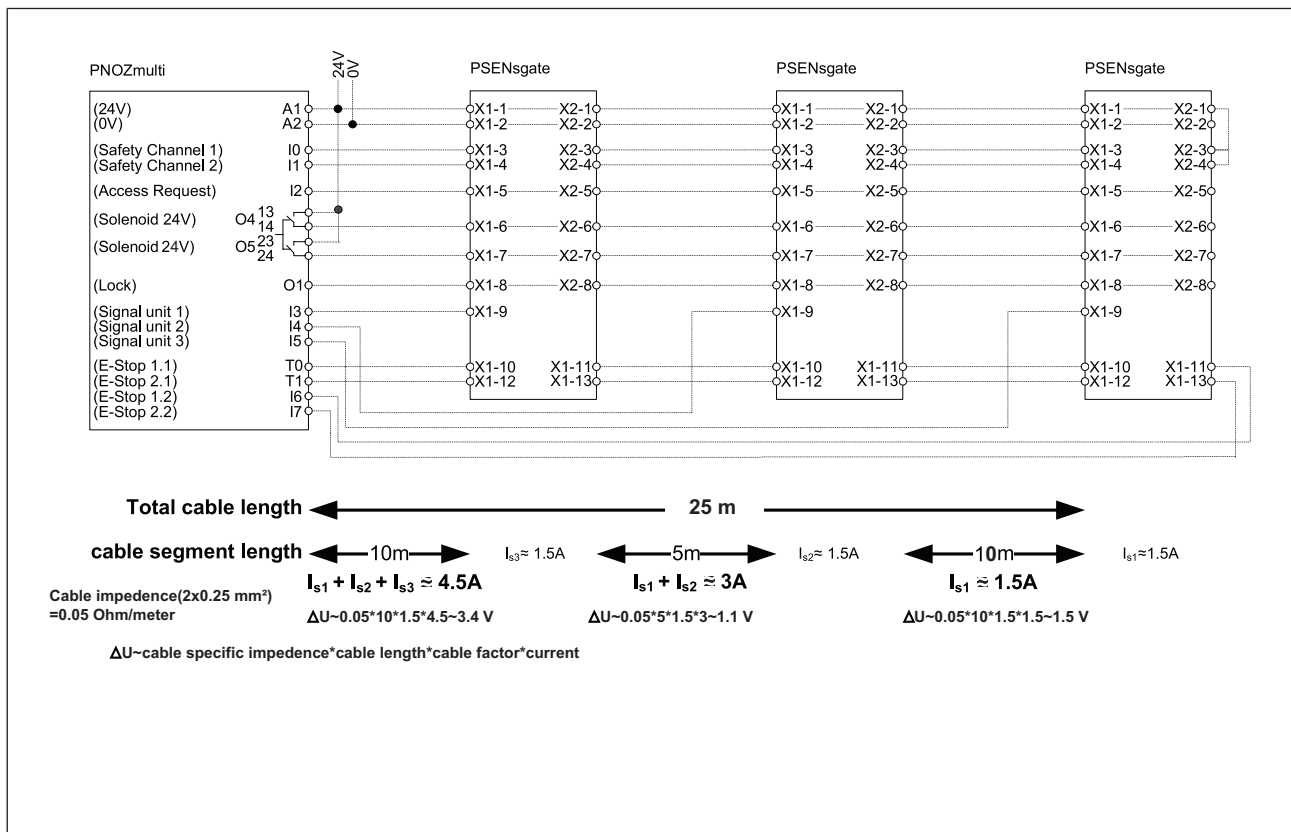
- ▶ cable resistance of the cables
- ▶ solenoid current of the solenoid

If the voltage drop in the supply voltage conductors becomes too high, the voltage for solenoid operation can permanently be set to the upper tolerance range (see Technical details).

The max. cable diameter is 10 mm.

Example:

- ▶ Connecting 3 safety switches in series
- ▶ Total cable run: 25 m
- ▶ Conductor cross section: 0.5 mm²
- ▶ Solenoid current per solenoid: 1.5 A
- ▶ Voltage for solenoid operation: 24 V



The voltage drop over all the safety switches is 6 V. This means, there are only 18.0 V at the terminals of the last solenoid. The solenoid is no longer operated reliably. If the voltage for operating the solenoid is increased by the max. permitted tolerance to 26.4, there are still 20.4 V at the terminals of the last solenoid. The solenoid switches reliably.

5.2 Recommended cable cross sections

The values in the table are valid for a series connection with max. 3 sensors and a voltage for solenoid operation of 24 V. The solenoid current is 1.5 A per solenoid.

For differing values the conductor cross section must be calculated.

Total cable run [m]	1 safety switches	2 safety switches	3 safety switches
5	0.25 mm ² , AWG24	0.25 mm ² , AWG24	0.5 mm ² , AWG21
10	0.25 mm ² , AWG24	0.25 mm ² , AWG24	0.5 mm ² , AWG21
15	0.25 mm ² , AWG24	0.25 mm ² , AWG24	0.5 mm ² , AWG21
20	0.25 mm ² , AWG24	0.5 mm ² , AWG21	x
25	0.25 mm ² , AWG24	0.5 mm ² , AWG21	x
30	0.25 mm ² , AWG24	x	x
40	0.5 mm ² , AWG21	x	x
50	0.5 mm ² , AWG21	x	x
60	0.5 mm ² , AWG21	x	x
70	x	x	x

Cable runs marked with an x are not recommended.

For operating several safety switches with greater cable runs, the cables for solenoid operation (terminals X1-6 and X1-7) have to be carried individually, or several cables have to be used. If more than three safety switches are connected in series or cable runs over 60 m are required, please contact Pilz.

The permitted conductor cross section is at least 0.25 mm². To have a higher conductor cross section, two cable cores can be inserted into a terminal. This adds together the conductor cross sections and halves the cable resistances. In this case, use a terminal lug! The signals important for cable resistance are:

- ▶ 24 V (X1-1 or X2-1)
- ▶ 0 V (X1-2 or X2-2)
- ▶ the two solenoid operation signals (X1-6 and X1-7 or X2-6 and X2-7).

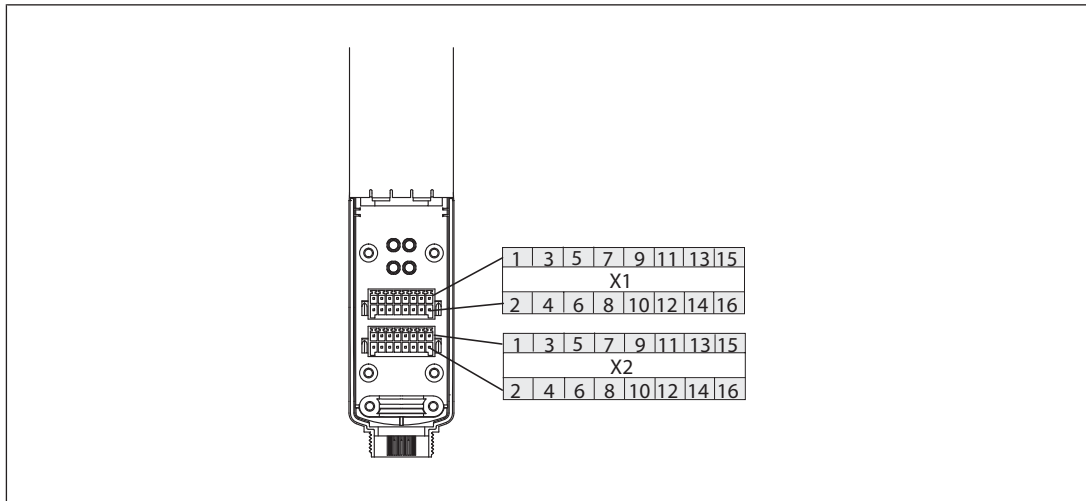
5.3 General wiring guidelines

Please note:

- ▶ All metallic surfaces on the safety switch are connected to 0 V via a resistor (100 kOhm) for functional earthing.
- ▶ UL requirements:
 - Use copper wiring with a temperature stability of 75 °C.
 - Use an LVLC supply (LVLC: limited voltage, limited current).
 - Use multicore cable with a cable diameter of 6 ... 10 mm.
- ▶ When 2 cables are used, make sure that both cables have the same cable diameter, otherwise the strain relief will fail.

- ▶ The permitted conductor cross section for the connectors is 0.25 - 1.0 mm², 23 - 17 AWG.
- ▶ When calculating the max. cable run, remember to take into account the chapter "Notes on cable run".

5.4 Terminal configuration



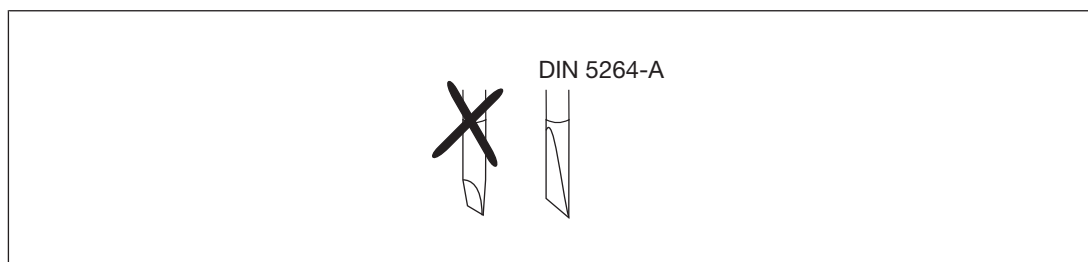
Terminal	PSEN sg2c-3xxx	PSEN sg2c-5xxxx	PSEN sg2c-5xxxx-M12/5
X1-1 - X2-1 linked internally	+24 VDC supply voltage	+24 VDC supply voltage	+24 VDC supply voltage
X1-2 - X2-2 linked internally	0 V	0 V	0 V
X1-3	Safety output channel 1 (OSSD1)	Safety output channel 1 (OSSD1)	Safety output channel 1 (OSSD1)
X1-4	Safety output channel 2 (OSSD2)	Safety output channel 2 (OSSD2)	Safety output channel 2 (OSSD2)
X1-5 - X2-5 linked internally	Output pushbutton for access request [2]	Output pushbutton for access request [2]	Output pushbutton for access request [2]
X1-6 - X2-6 linked internally	Solenoid operation (24 V)	Solenoid operation (24 V)	Solenoid operation (24 V)
X1-7 - X2-7 linked internally	Solenoid operation (24 V)	Solenoid operation (24 V)	Solenoid operation (24 V)
X1-8 - X2-8 linked internally	Input for activating the safety gate guard locking device	Input for activating the safety gate guard locking device	Input for activating the safety gate guard locking device
X1-9	Signal output for state of the bolt tongue	Signal output for state of the bolt tongue	Signal output for state of the bolt tongue
X1-10	E-STOP 1.1	E-STOP 1.1	E-STOP 1.1
X1-11	E-STOP 1.2	E-STOP 1.2	E-STOP 1.2
X1-12	E-STOP 2.1	E-STOP 2.1	E-STOP 2.1
X1-13	E-STOP 2.2	E-STOP 2.2	E-STOP 2.2

Terminal	PSEN sg2c-3xxx	PSEN sg2c-5xxxx	PSEN sg2c-5xxxx-M12/5
X1-14	n.c	Pushbutton 3 LED3	n.c
X1-15	n.c	Pushbutton 4 LED4	Pushbutton 4 LED4
X1-16	Signal output, E-STOP	Signal output, E-STOP	Enabling switch Pin5 and signal output E-STOP
X2-3	Input, channel 1	Input, channel 1	Input, channel 1
X2-4	Input, channel 2	Input, channel 2	Input, channel 2
X2-9	n.c	n.c	Enabling switch M12 Pin 1 (optional)
X2-10	n.c	n.c	Enabling switch M12 Pin 2 (optional)
X2-11	n.c	n.c	Enabling switch M12 Pin 3 (optional)
X2-12	n.c	n.c	Enabling switch M12 Pin 4 (optional)
X2-13	n.c	Pushbutton 3 channel 1	Pushbutton 3: Key switch rotated 90° to the left
X2-14	n.c	n.c	Pushbutton 3: Key switch rotated 90° to the right
X2-15	n.c	Pushbutton 4 channel 1	Pushbutton 4 channel 1
X2-16	n.c	n.c	n.c

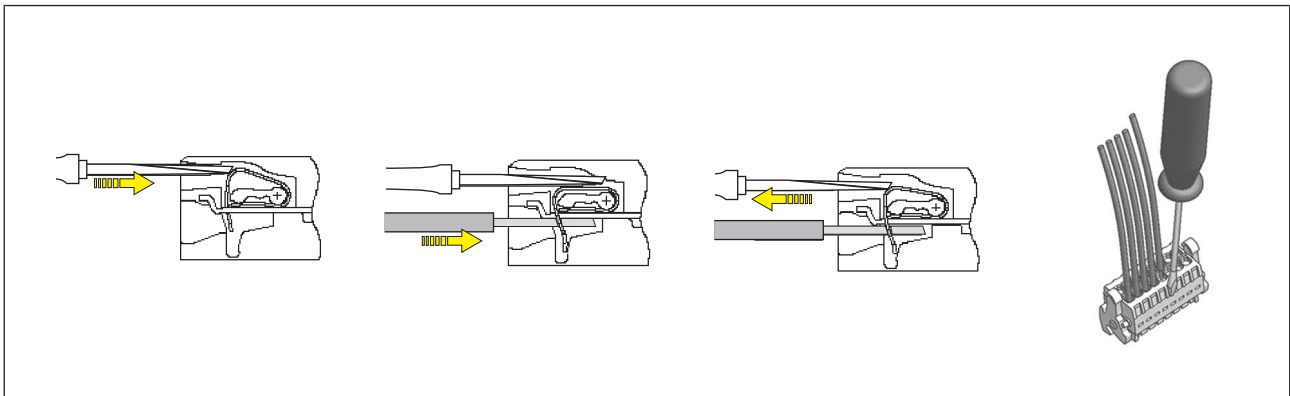
5.5 Wiring the connection terminals

Connecting the cables:

- ▶ Use a flat blade screwdriver (DIN 5264-A)!



- ▶ Strip the wire back 7 mm.
- ▶ Insert the screwdriver into the square hole.
- ▶ Insert the stripped wire into the square hole as far as it will go.
- ▶ Pull out the screwdriver.
- ▶ Check that the cable is firmly seated.



5.6 E-STOP pushbutton connection



CAUTION!

With versions with integral E-STOP pushbutton, the E-STOP pushbutton (terminals X1-10 to X1-13) must be integrated into the plant/machine's E-STOP concept in accordance with EN/IEC 60204.

5.7 Enabling switch connection

Details of the pin assignment of the female 5-pin M12 connector for the enabling switch can be found in the block diagram and the terminal configuration.

We recommend you use the PIT en1.0p-5m-s (order no. 401 110) as the enabling switch.

5.8 EMC requirements

Please note:

- ▶ The power supply must meet the regulations for extra low voltages with protective separation (SELV, PELV).
- ▶ The inputs and outputs of the safety switch must have a protective separation to voltages over 60 V AC.
- ▶ The supply voltage has to be at the safety switch terminals within the indicated tolerances (see Technical details).
- ▶ the supply voltage of the safety switch must be secured with a fuse of type quick between 2 A and 10 A.
- ▶ The electrical installation must be performed in accordance with IEC/EN 60204.
- ▶ The assured release distance (S_{a0}) can be influenced by external influences (e.g.: temperature, dirt, EMC) (see Technical details).

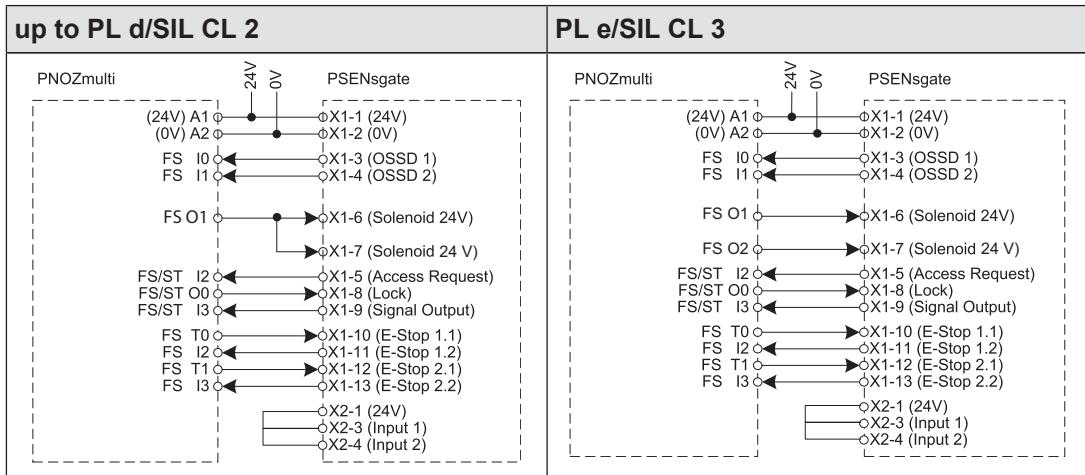


INFORMATION

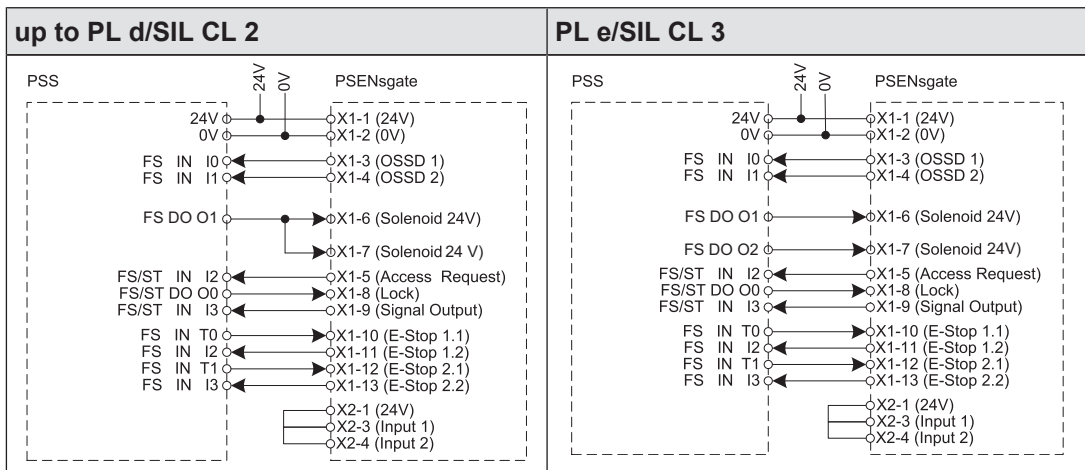
Safety relays with a wide-range power supply or in AC device versions have internal potential isolation and are not suitable as evaluation devices. Only safety relays with a 24 VDC supply voltage are suitable.

5.9 Connection to evaluation devices

5.9.1 Connection examples PNOZmulti



5.9.2 Connection examples PSS



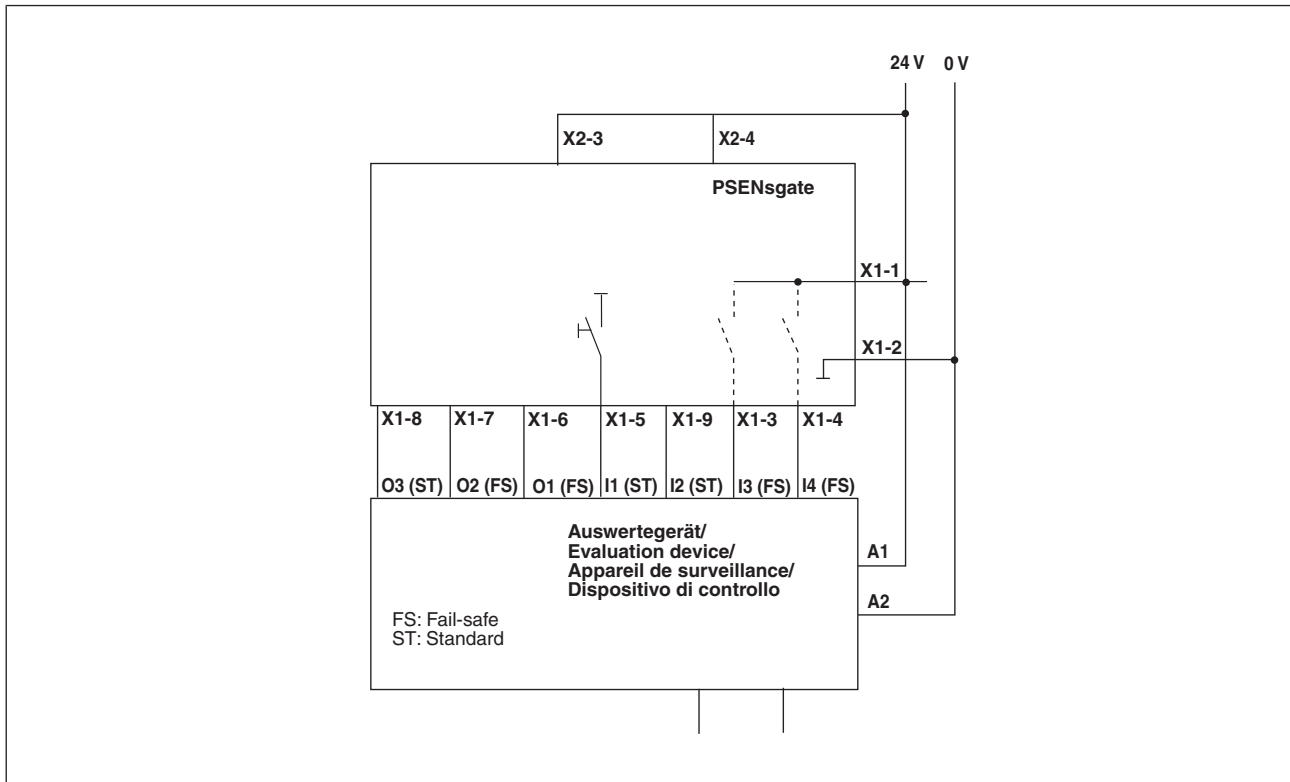
5.10 Single connection



INFORMATION

When the solenoid is operated in single-channel, only a safety level of PL d (Cat. 2)/SIL CL 2 can be achieved.

To achieve PL e (Cat. 4/SIL CL 3, the solenoid must have dual-channel operation, e. g. via safe pulsed semiconductor outputs with high current load capacity (0.9 A for 50 ms).



5.11 Series connection



CAUTION!

Extension of delay-on de-energisation

When several (n) devices are connected in series, the delay-on de-energisation time adds with the number of interconnected safety switches. The max. delay-on de-energisation is composed of

- max. delay-on de-energisation actuator
- + (n-1) x max. delay-on de-energisation of the inputs
- + delay-on de-energisation of the evaluation device



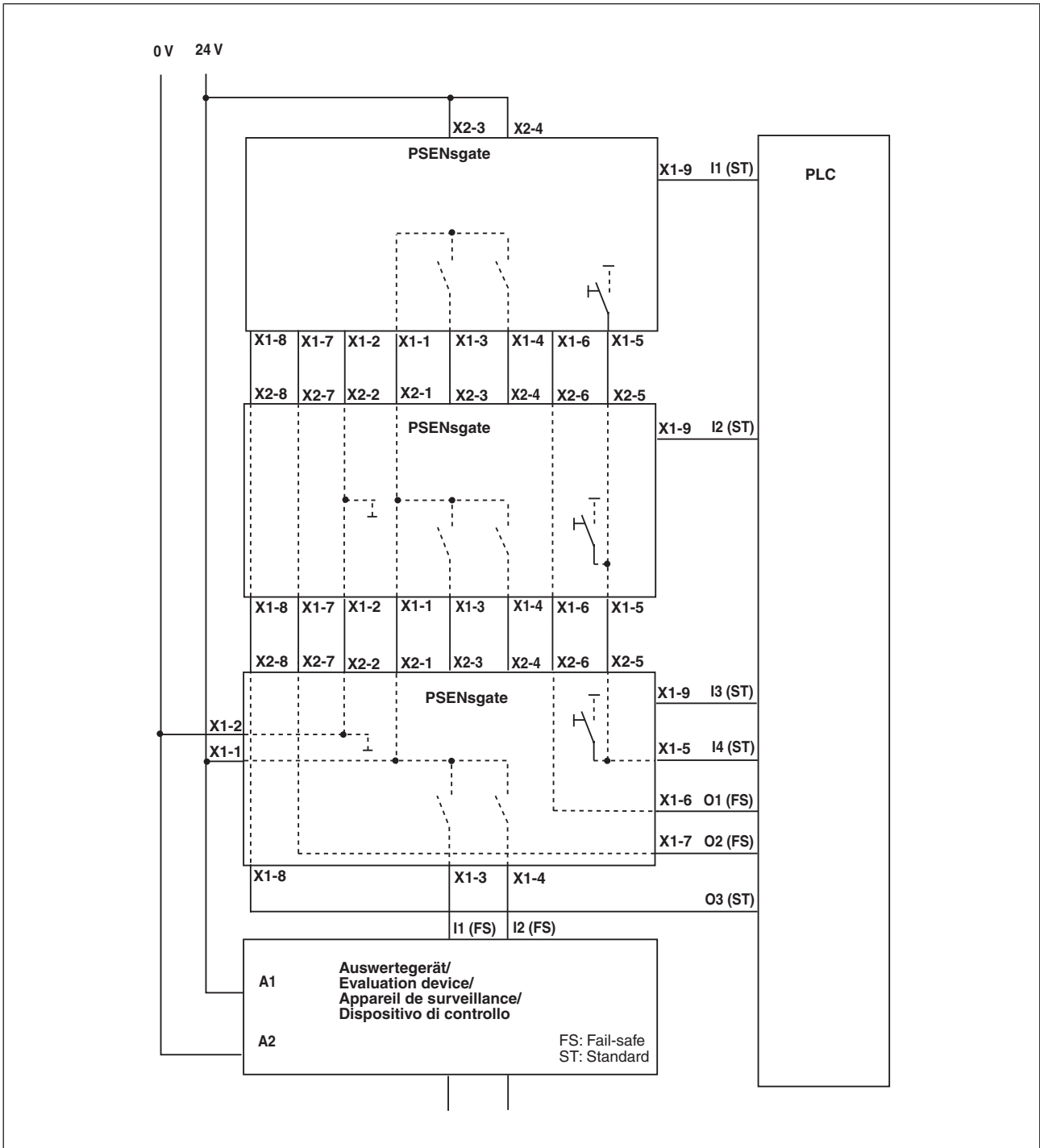
INFORMATION

When the solenoid is operated in single-channel, only a safety level of PL d (Cat. 2) / SIL CL 2 can be achieved.

To achieve PL e (Cat. 4)/SIL CL 3, the solenoid must have dual-channel operation.

For applications with single-channel operation of the solenoid (up to PL d/SIL CL 2) a momentarily overloadable safe output (1.8 A for 50 ms) can be used.

The device can be switched in series with all safety switches from Pilz. In the connection example, the safety switch guard locking device is activated / deactivated via access request (X1-5). The maximum switching current of the solenoid is present only while switching the solenoids for about 50 ms. The solenoids of the safety switches are switched with a low time offset of ca. 1 s, to avoid power surges at the evaluation device.



6 Installation

- ▶ When installing make sure you comply with the requirements of EN ISO 14119.
- ▶ The safety switch and handle unit with actuator should be installed opposite each other in parallel.
- ▶ The safety switch and handle unit with actuator should be secured only with socket head cap screws M5 - DIN EN ISO 4762.



NOTICE

It must not be possible to operate or remove the handle unit from inside the danger zone. Protect the handle unit from access, e.g. by covers on the hazard side of the door.



INFORMATION

The handle unit should be protected from unauthorised removal and from contamination.



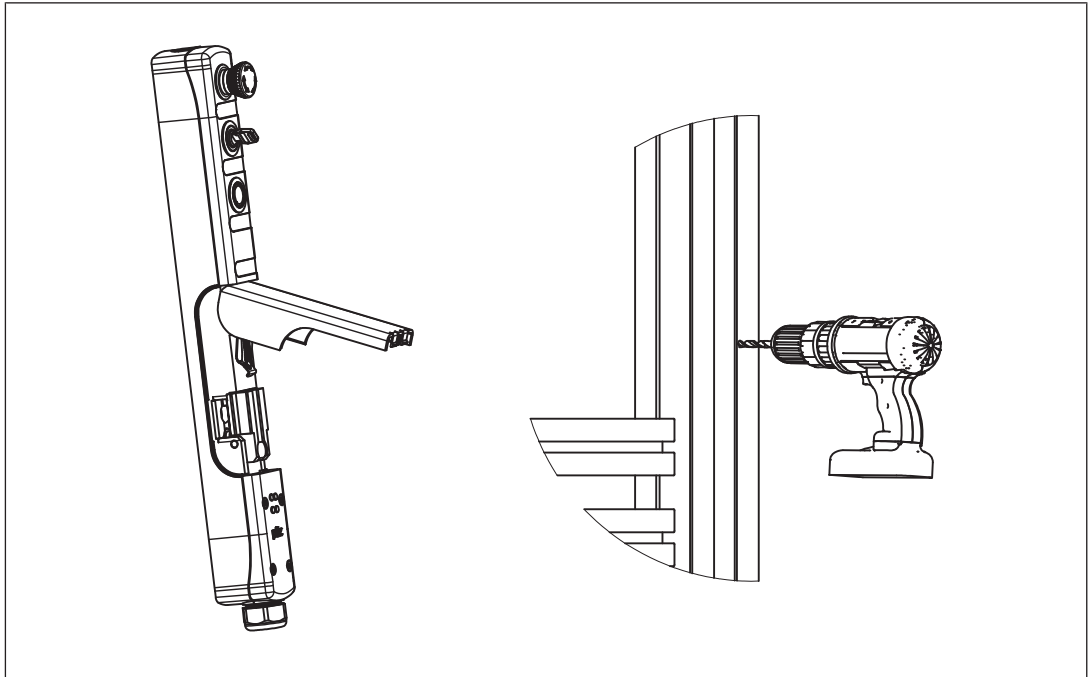
CAUTION!

Safety switch and handle unit

- Should not be exposed to heavy shock or vibration
- Should not be used as a limit stop

6.1 Initial installation of safety switch

- ▶ Open the cover for the escape release in the direction of opening and remove it.
 - ▶ Prepare 9 mm hole for the escape release and attach profile nuts to the aluminium profile (see also [Dimensions for the drill holes](#) [39]).
- The escape release does not require a drill hole.



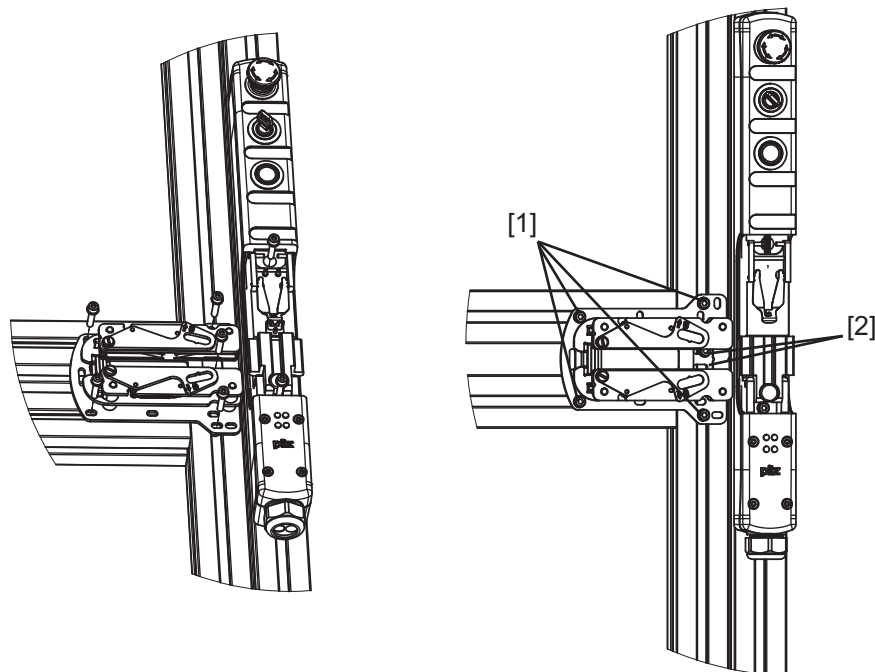
- ▶ Align actuator guide plate and safety switch. Please note the distance between the handle unit and the safety switch (see chapter entitled [Adjustment](#) [43]).
- ▶ Fix actuator guide plate and safety switch with M5 - DIN EN ISO 4762 - socket head cap screws (hexagon socket, e.g.: Bossard: BN3 (without shaft), galvanised blue, torque setting $M_a = 5 \text{ Nm}$). Use washer M5 - DIN125A (e.g.: Bossard: BN 715, galvanised blue, dimension: 10 x 5.3 x 1) for this.
The fixing screws on the safety switch are located under the cover of the escape release. Use an appropriate screw adhesive (e.g. Loctite 2700) to protect the socket head cap screws from working loose.

**WARNING!**

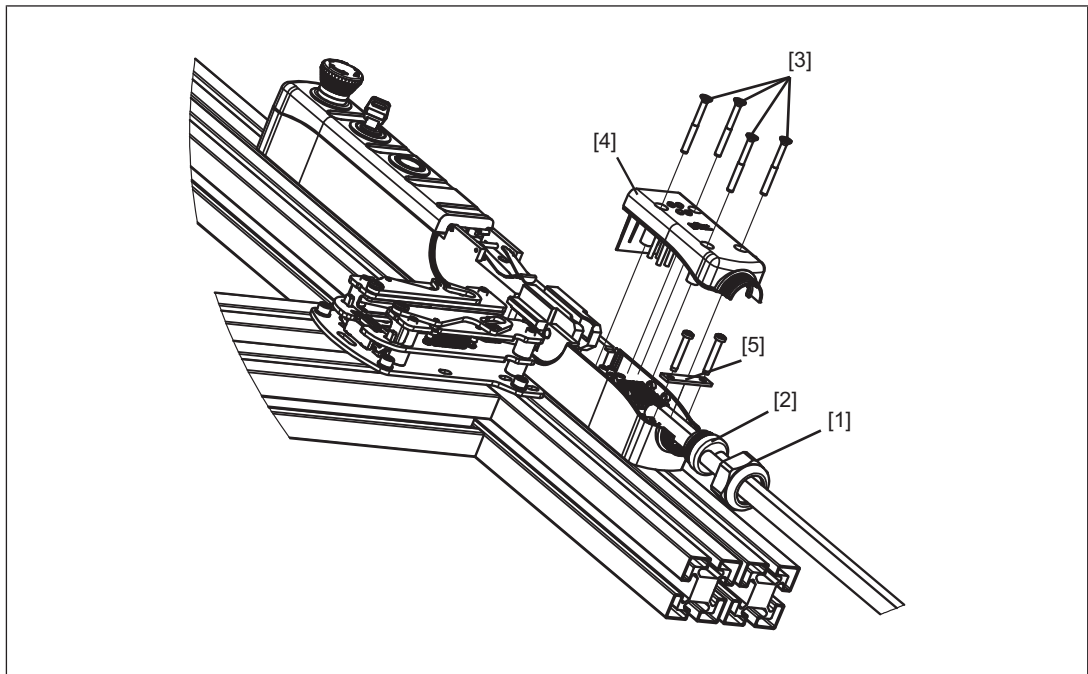
Risk of manipulation of the safety device if the actuator guide plate is not secured permanently!

If the actuator guide plate is not secured permanently, there is a risk that the safety function will be defeated through manipulation. Depending on the application, serious injury or death may result.

- If the actuator guide plate is installed using only the unprotected screws [1] accessible from the side, then one-way screws must be used for manipulation protection.
- If the screws used under the bolt tongue [2] are protected against manipulation, then this is not necessary.



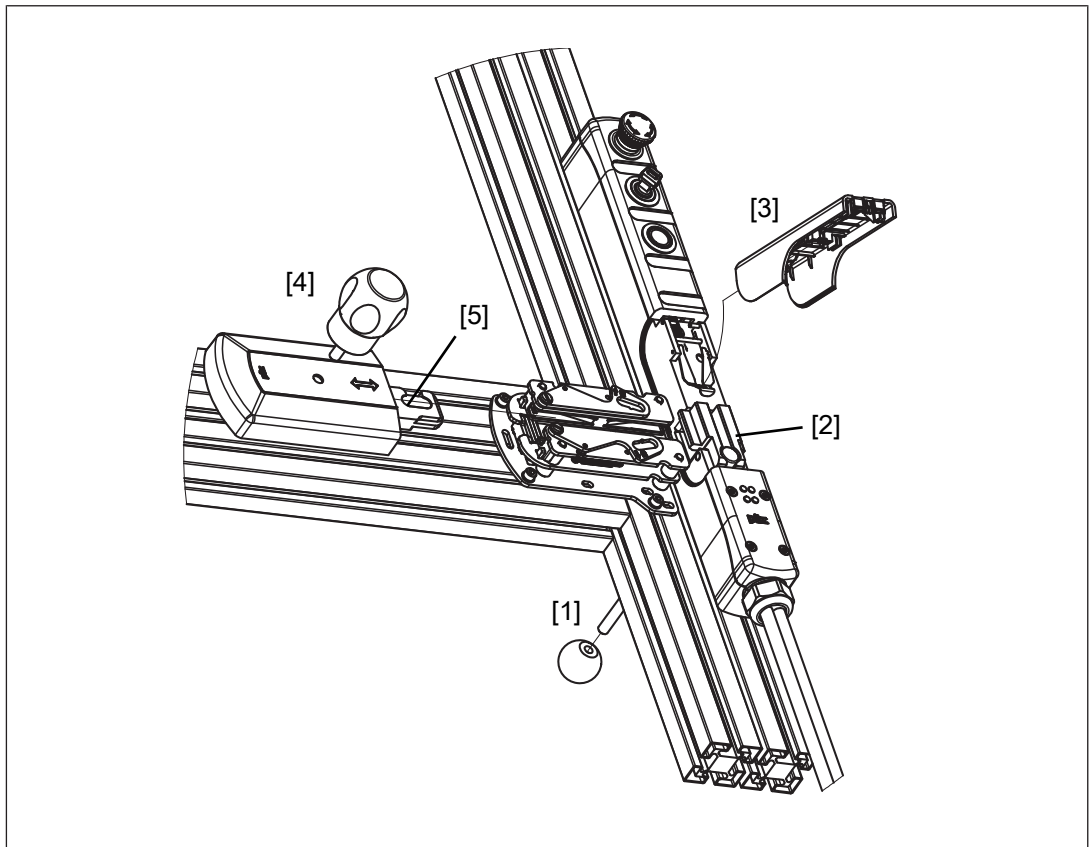
- ▶ Unscrew the pressure screw [1] from the housing and remove the rubber seal [2].
- ▶ Thread the cable through the correctly oriented pressure screw and the rubber seal, remove the blind insert if necessary.
- ▶ Remove the countersunk screws [3] on the housing cover for the connection terminals and slowly remove the housing cover [4]. In doing so, the spring mechanism moves the cover of the escape release upwards.
- ▶ Unscrew the strain relief plate [5].
- ▶ Connect and insert connection terminals.
- ▶ Position cable and screw on the strain relief plate (torque setting Ma 0.9 Nm +/- 0.1 (8 in-lbs)).
- ▶ Fix housing cover with screws (torque setting Ma 1.7 Nm +/- 0.1 (15 in-lbs)).
- ▶ Move the rubber seal along the cables and position it in the housing.
- ▶ Screw pressure screw on the thread.



- ▶ Insert the escape or auxiliary release pin [1] into the safety switch and push it right to the back. The swivel piece [2] must be maintained in a vertical position, safe from the escape or auxiliary release pin. Screw the ball head on to the escape release pin. Check the escape release for ease of movement. Fold down the cover on the escape release ② and lock into position.
- ▶ Screw the ball handle [4] into the handle unit, lock the bolt tongue of the handle unit [5] into position in the actuator guide plate. (See section entitled [Initial installation of handle unit](#) [📖 36])

**INFORMATION**

If the escape or auxiliary release pin is not inserted into the swivel piece correctly, commissioning of the PSENsgate will be aborted and an error code will be issued.




**WARNING!**

Loss of safety function due to the incorrect installation of the escape release!

If the escape release pin is accessible from the outside, the guard locking device can be released from the outside and the safety gates opened, although the hazardous machine is switched on.

Depending on the application, serious injury or death may result.

The escape release should be installed so that it is only accessible from inside the danger zone.

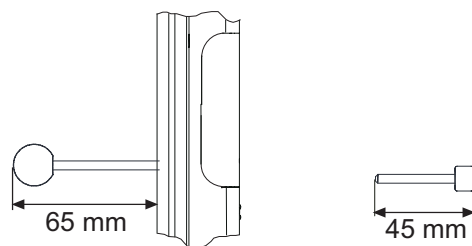
It is also important to refer to the maintenance instructions (see chapter entitled [Maintenance](#) [ 44])

Shorten the escape release pin


The escape release pin can be shortened, if required, so that it does not extend too much into the danger zone.

**NOTICE**

Inside the danger zone, the escape release pin must protrude at least 65 mm from the profile. After installation, the escape release must be checked for proper operation. When shortening the escape release pin, the material of the escape release must not exceed a temperature of 100 °C



Pin for escape release with ball handle Pin for auxiliary release

If the escape release is not to be used, the escape release pin can be shortened to a length of 45 mm and then be used for the auxiliary release. The auxiliary release pin is also available as an accessory (see order references for [Accessories](#) [ 85]).

**NOTICE**

Please note that the escape release pin must not be shorter than 45 mm, to guarantee the full holding force.

6.2 Initial installation of handle unit

- ▶ Check whether the present bolt tongue is correctly oriented at the handle unit. Standard is right-hand door hinge at delivery (leave of the door opens to the right).
- ▶ Coat the thread of the ball handle with screw adhesive (e.g. Loctite 2700) and screw firmly together with the handle unit by hand.

Install bolt tongue with handle unit:

- ▶ Remove the screw blocking the spring-loaded limit stop mechanism (see illustration "Handle unit and actuator with screw").
- ▶ Position the screwdrivers in the slots provided on the limit stop mechanism (see illustration "Unlock bolt").
- ▶ Press screwdriver towards the base plate to release the spring-loaded limit stop mechanism.
- ▶ Engage bolt tongue with handle unit in the actuator guide.
- ▶ Ensure by moving backwards and forwards towards the limit stop that the handle unit cannot be removed from the actuator guide.
- ▶ Re-attach the screw with a torque setting of 2 Nm \pm 0.1. Use an appropriate screw adhesive (e.g. Loctite 2700) to protect the screw from working loose.

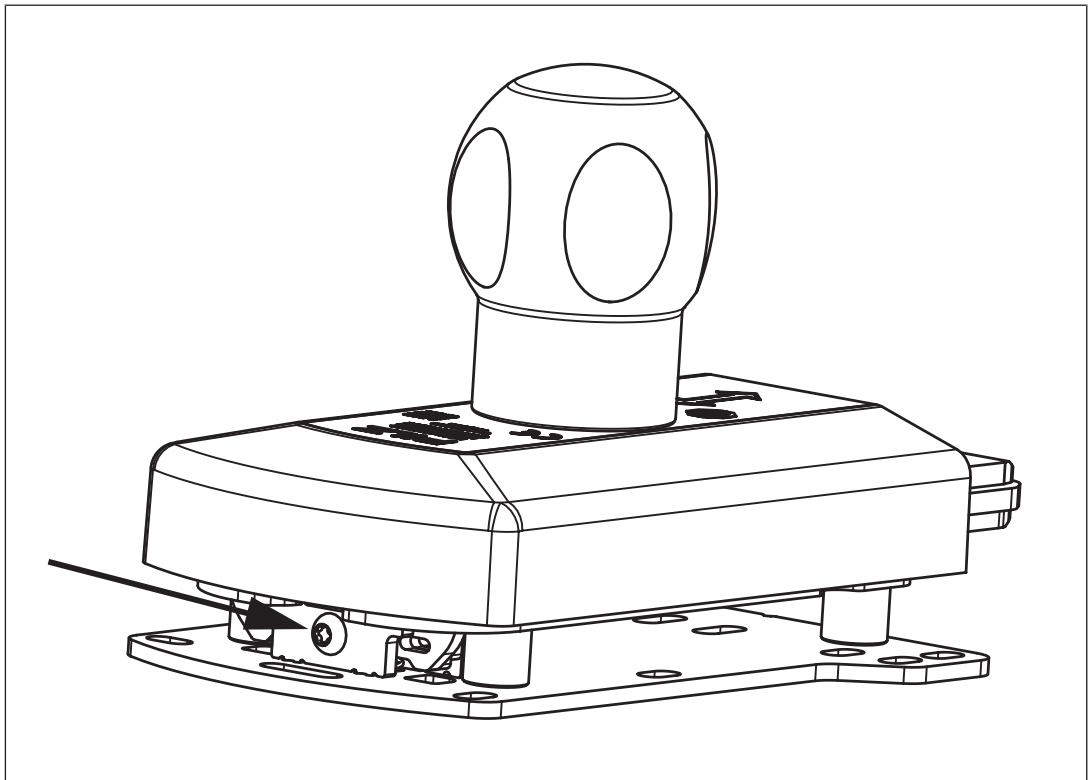


Fig.: Handle unit and actuator with screw

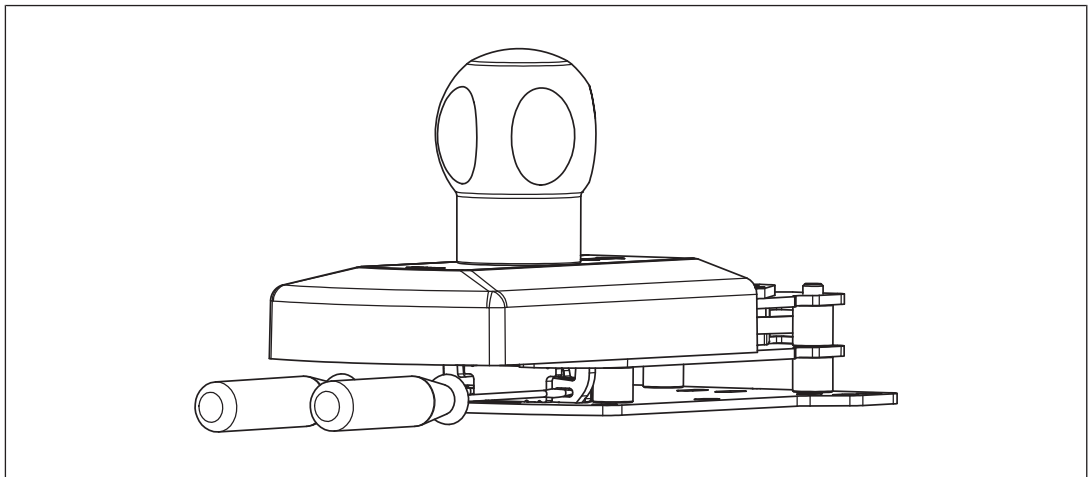


Fig.: Unlock bolt

6.3 Second installation of safety switch and handle unit / upgrade for left-hinged gates

- ▶ Remove the screw blocking the spring-loaded limit stop mechanism (see illustration in previous section "Handle unit and actuator with screw").
- ▶ Uninstall the safety switch from the installation site (compare steps in section entitled [Initial installation of safety switch](#) [📖 31] in reverse order).
- ▶ Uninstall handle unit from the gate. To do this, position the screwdrivers in the slots provided on the limit stop mechanism (see graphic "Unlock bolt").
- ▶ Press screwdriver towards the base plate to release the spring-loaded limit stop mechanism.
- ▶ Disengage bolt tongue with handle unit in the actuator guide.
- ▶ Remove exposed fixing screws.
- ▶ Unscrew ball handle from the handle unit.
- ▶ Remove the cover of the handle unit from the bolt tongue (2 countersunk screws).
- ▶ Take limit stop from the bolt tongue and insert it from the other side into the location hole.
- ▶ Turn bolt tongue around its longitudinal axis and screw together with the cover of the handle unit.
- ▶ Carry out the steps from the sections entitled [Initial installation of handle unit](#) [📖 36] and [Initial installation of safety switch](#) [📖 31].

6.4 Labelling the pushbuttons

Colour covers are supplied with the PSEN sg2c Unit; these must be attached to the pushbuttons, based on their function (see also order references for [Accessories](#) [📖 85]).

- ▶ Press the colour covers into the pushbuttons in accordance with the required function. The colour covers lock into position on the pushbuttons.

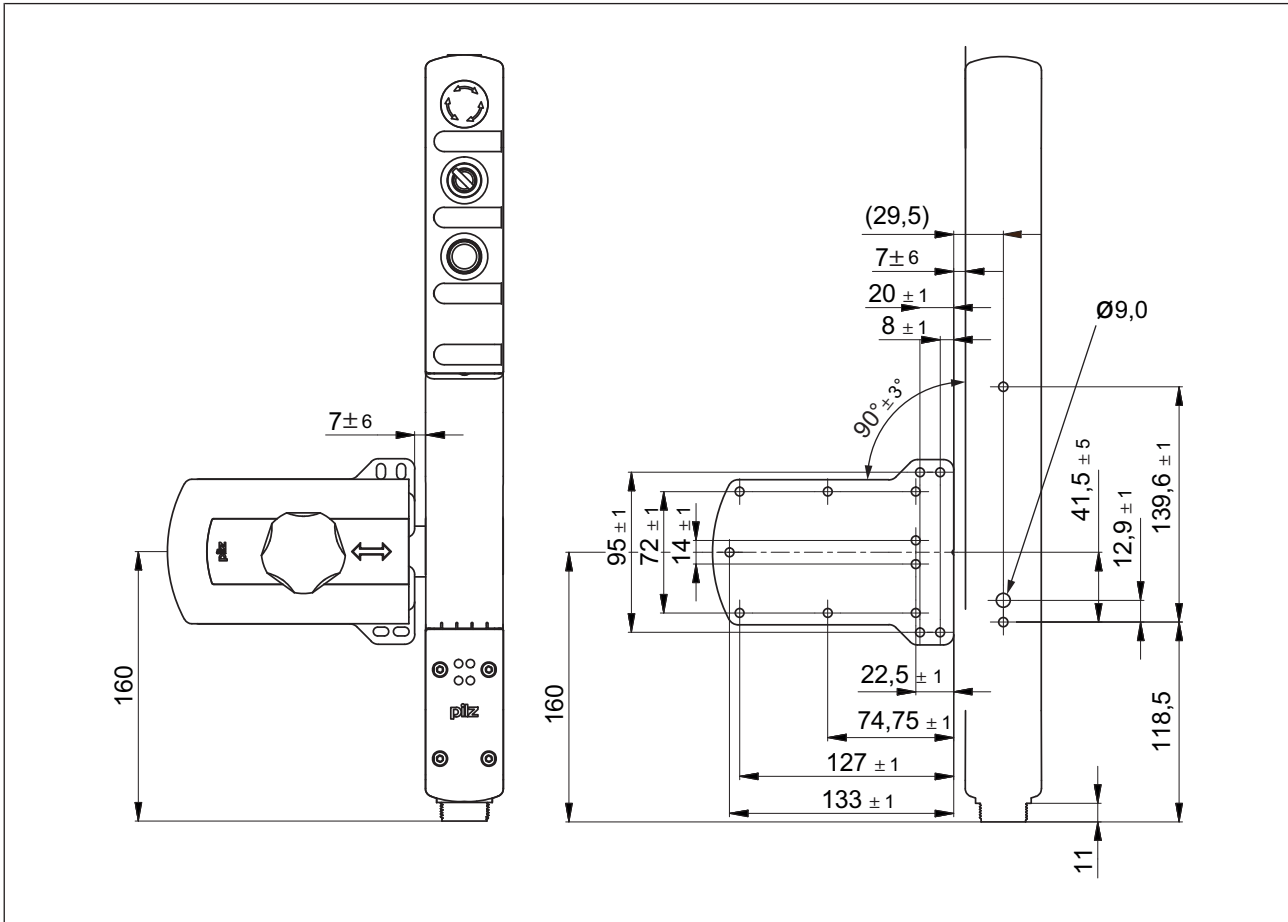
**NOTICE**

The safety switch may only be operated with colour covers correctly locked into position. Once the colour covers have locked into position, they can no longer be removed.

The fields below the pushbuttons can be used for inscribing the pushbuttons. The pushbuttons can be written with a lettering device for 12 mm lettering band or with 32 x 10 mm labels (e.g. AVERY(R) article number: 3320).

6.5 Dimensions in mm

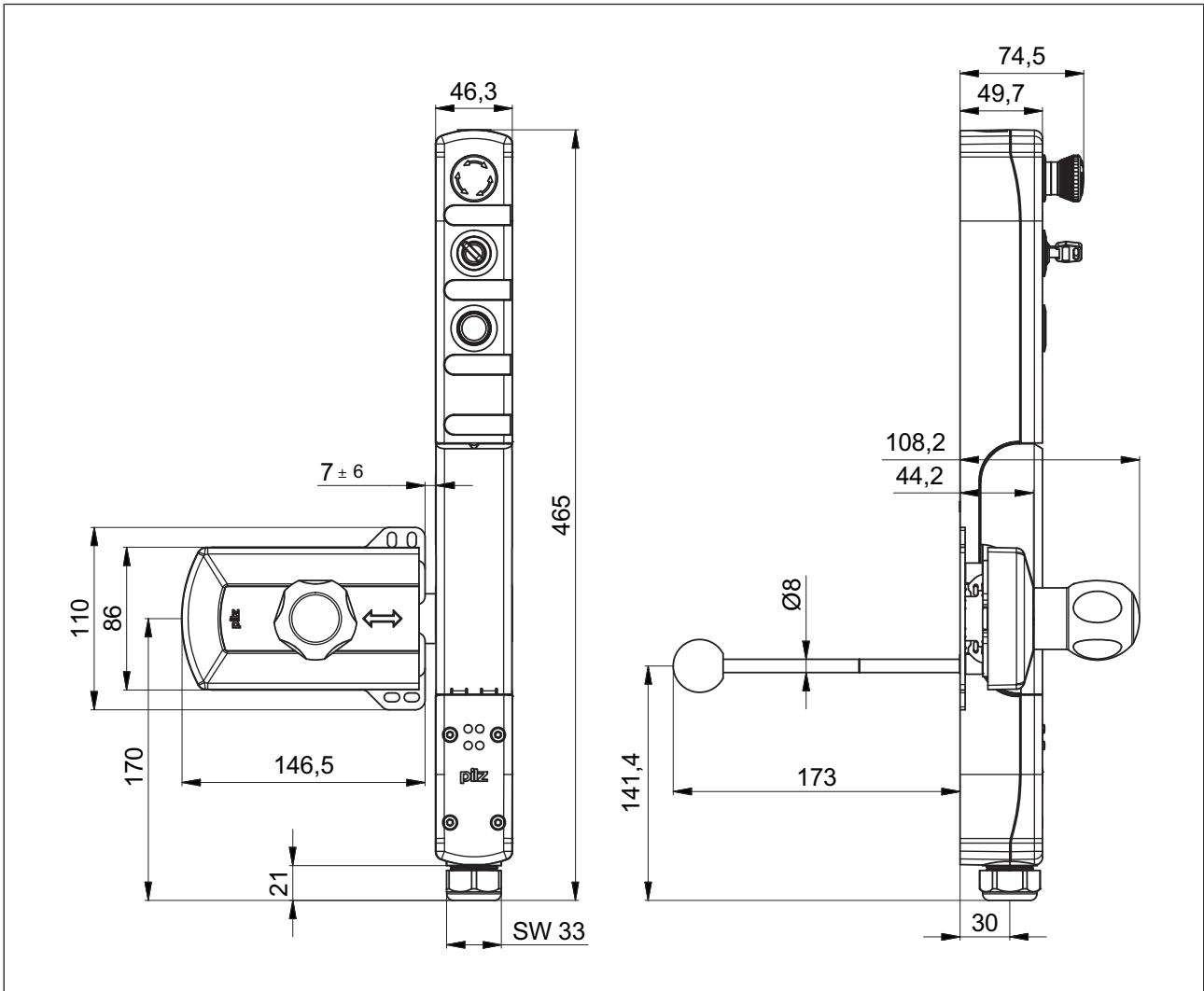
6.5.1 Drill holes



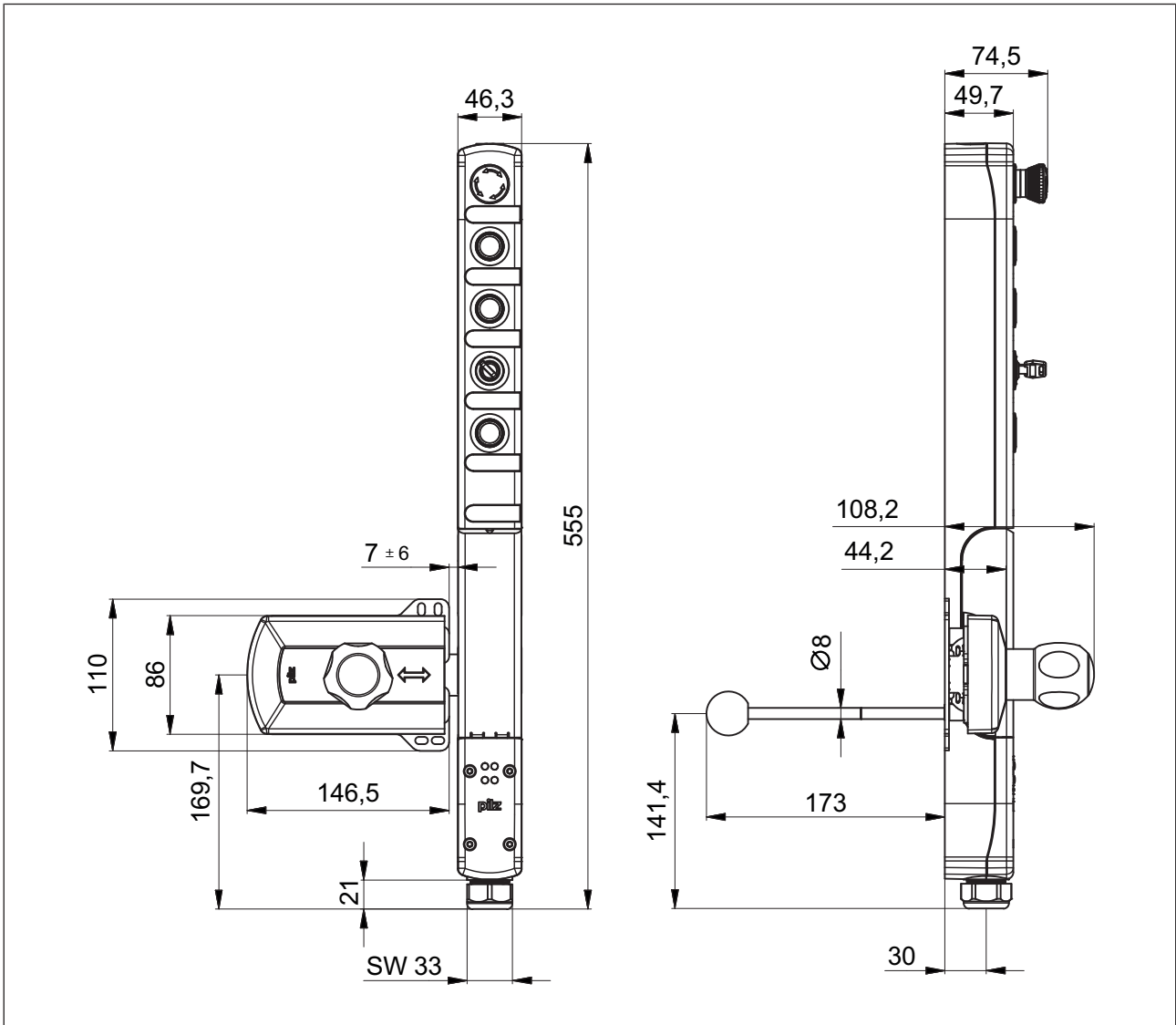
The bore diameter for all drill holes = M5.

Exception: Drill hole for the escape release (see value stated in the drawing).

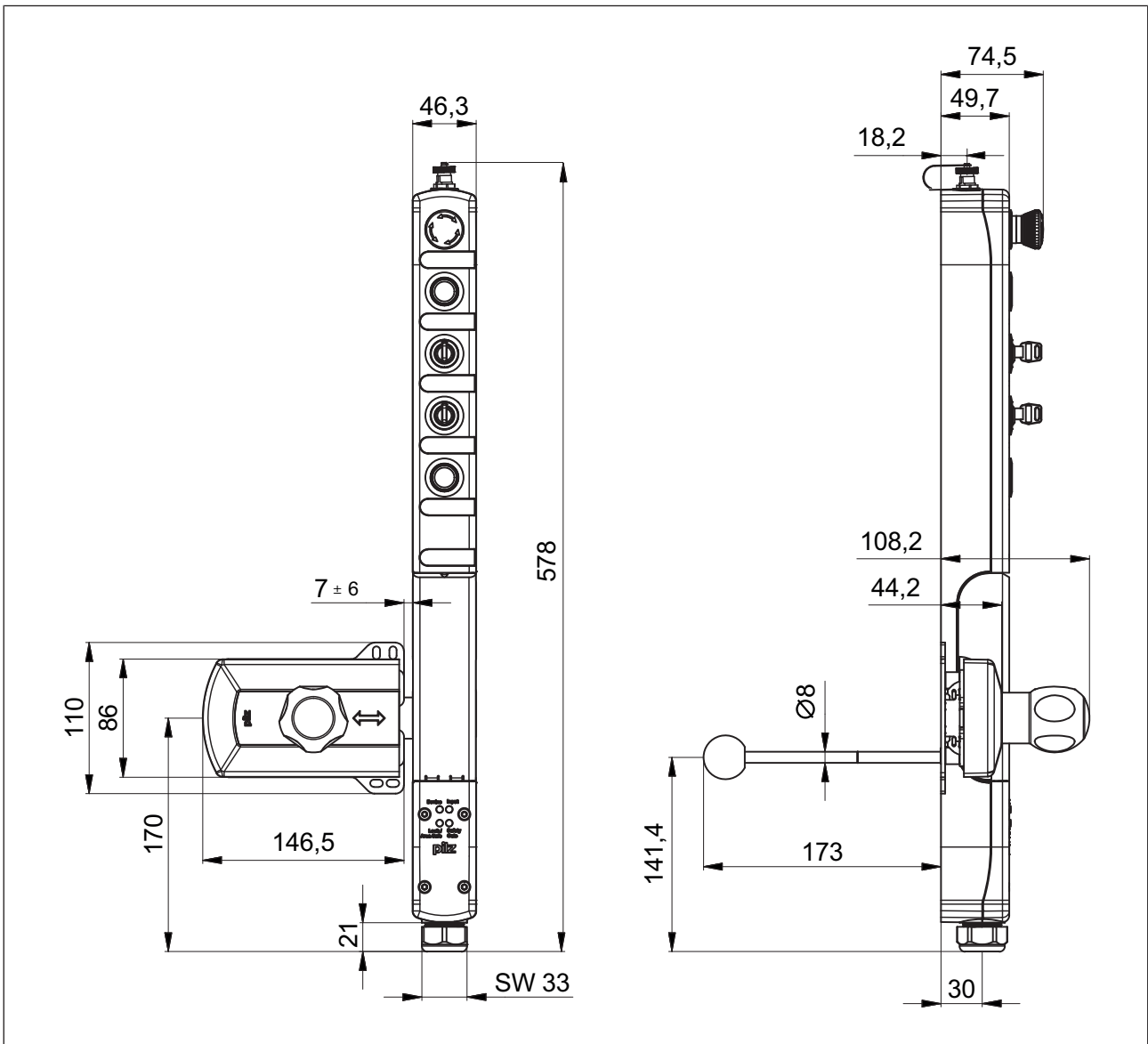
6.5.2 PSEN sg2c-3xxx



6.5.3 PSEN sg2c-5xxxxx

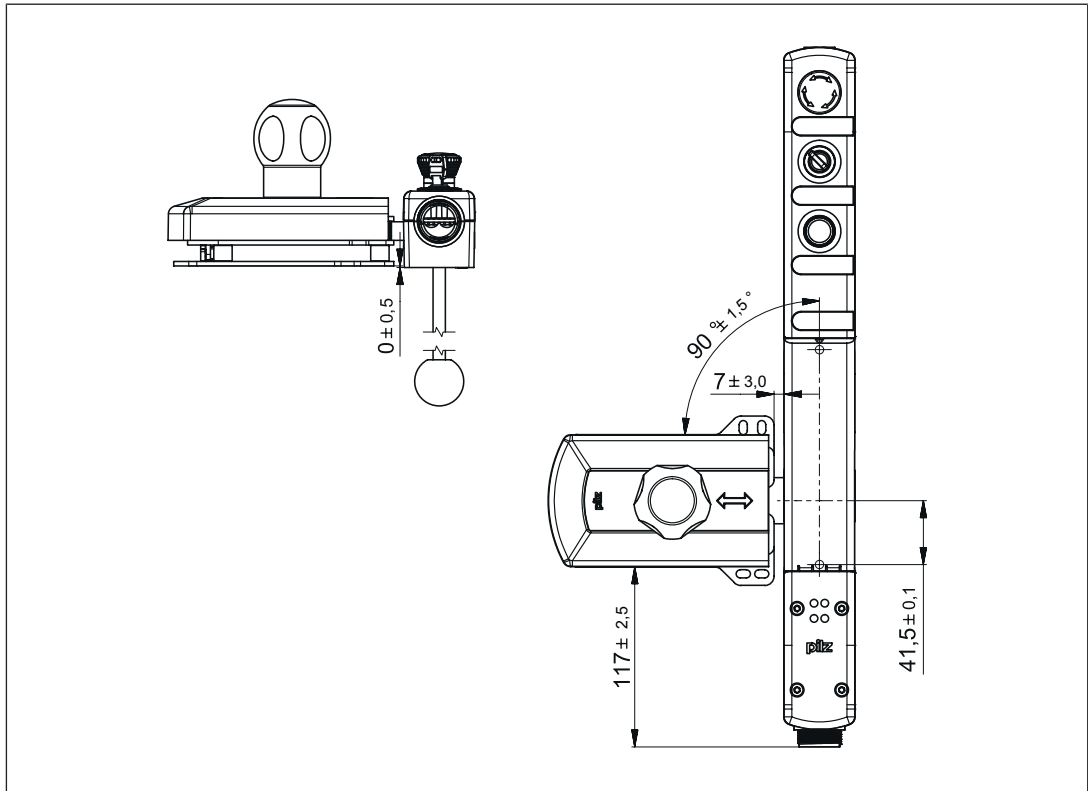


6.5.4 PSEN sg2c-5xxxx-M12/5



7 Adjustment

- ▶ Make sure that the safety switch and handle unit with actuator are aligned correctly and that the distances are maintained, as stated in the drawing, otherwise the correct functionality is not guaranteed.
- ▶ Always check the function of the safety switch in conjunction with the handle unit with actuator, using one of the approved evaluation devices.



8 Maintenance

Maintenance of the escape release:

- ▶ Check the correct functionality of the escape release at least every once per month. When dust, humidity, chemical or dirt exposure is high we recommend that you keep to shorter intervals.
Please note that the cover of the escape release must also be checked for damage and then re-installed.
- ▶ Clean the escape release and the bolt tongue and test their mobility.
- ▶ If there are signs of wear on the safety switch or the mechanics are sluggish, check that the handle unit with actuator is correctly aligned with the switch. If necessary, re-adjust the handle unit with actuator.

Otherwise no maintenance work needs to be performed on the interlocking and guard locking system PSEN sg2c. Please return any faulty devices to Pilz.

9 Operation



NOTICE

The safety function should be checked after initial commissioning and each time the plant/machine is changed. The safety functions may only be checked by qualified personnel.

Teaching in the actuator

- ▶ PSEN sg2c-xxx (coded version)

Any corresponding Pilz actuator (see Technical details) is detected as soon as it is brought into the response range.

- ▶ PSEN sg2c-xxx 2.2 (uniquely coded version)

The first corresponding actuator to be detected by the safety switch (see Technical details) is taught in automatically as soon as it is brought into the response range.

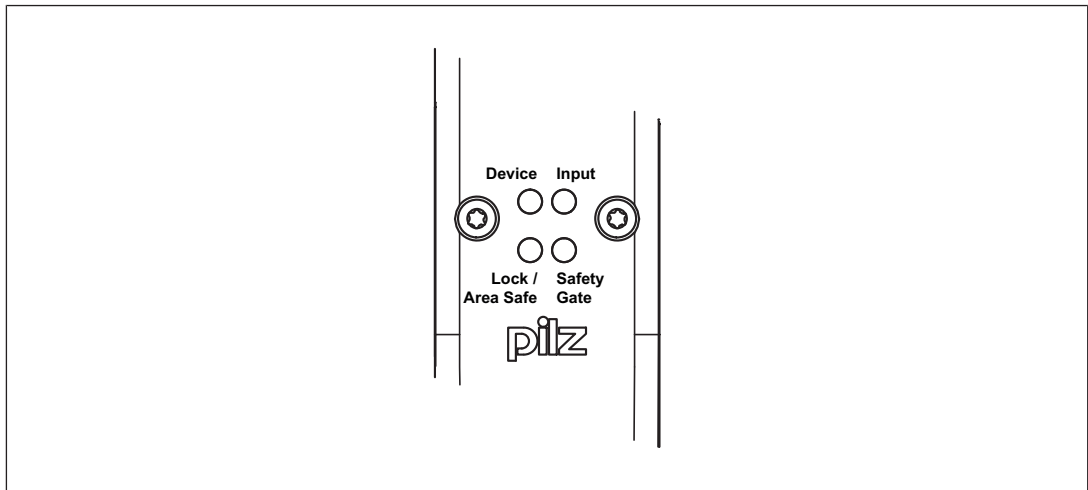


NOTICE

Please note: No other actuator may be taught in once an actuator has been taught.

Status indicators

- ▶ "Device" LED illuminates green: The unit is ready for operation
- ▶ "Safety Gate" LED lights up yellow: Bolt tongue is engaged
- ▶ "Input" LED lights up yellow: Input circuits are closed or a HIGH signal is present
- ▶ "Lock / Area safe" LED illuminates blue: The guard locking element is engaged in the bolt tongue, guard locking is active. Signals X1-6 and X1-7 (or X2-6 and X2-7) are present.
- ▶ "Lock / Area safe" LED illuminates green: The guard locking element is engaged in the bolt tongue, guard locking is active. Signals X1-6 and X1-7 (or X2-6 and X2-7) are not present.
- ▶ "Lock / Area safe" LED flashes green and blue: Pushbutton 2 for access requirement was confirmed and the machine stop was requested.



Pushbutton status indicators

(for details of the various pushbuttons see [Device types](#) [ 17])

- ▶ Pushbutton LED [1] is illuminated: The guard locking element is engaged in the bolt tongue, guard locking is active. Signals X1-6 and X1-7 (or X2-6 and X2-7) are not present.

Pushbuttons 3 and 4 can be used depending on the requirement and device version.

- ▶ Pushbutton LED [3] can be used depending on the application. It is operated via the input (see Terminal assignment) by applying an external +24 VDC.
- ▶ Pushbutton LED [4] can be used depending on the application. It is operated via the input (see Terminal assignment) by applying an external +24 VDC.

9.1 Status table

This table shows the change of states of the inputs and outputs and the LEDs when switching from the "Lock" operating mode to the "Interlock" operating mode.

Operating mode		Mode	Gate closed	Bolt tongue engaged	Guard locking element engaged	Inputs X2-3 and X2-4	Safety outputs X1-3 and X1-4	Pushbutton 1 operated	Pushbutton 2 operated	Output X1-5	Signal output X1-9	Solenoid operation X1-6	Solenoid operation X1-6	Input X1-8*	"Device" LED	LED Input	LED Lock / Area safe	LED Safety Gate	LED button 1
Lock	Power on		---	---	---	0 V	0 V	---	---		0 V	0 V	0 V	---		●	●	●	●
			---	---	---	24 V	0 V	---	---		0 V	24 V	0 V	---			●	●	●
		✓	✓	---	24 V	0 V	---	---		24 V	24 V	0 V	---	---			●		●
		✓	✓	✓	24 V	24 V	✓	---		24 V	24 V	24 V	24 V	---					●
Locking	Normal	✓	✓	✓	24 V	24 V	---	✓	24 V	24 V	0 V	0 V	---						
		✓	---	---	24 V	0 V	---	✓	24 V	0 V	24 V	24 V	---			●	●	●	
	Unlock	✓	---	---	24 V	0 V	---	---		0 V	24 V	24 V	---	---			●	●	●
		---	---	---	24 V	0 V	---	---		0 V	24 V	24 V	---	---			●	●	●

* The guard locking element can be engaged either by pressing the pushbutton key for activating the guard locking of the safety gate or by operating the input X 1-8.

Legend

- LED on
- LED flashes
- LED off

9.2 Toggle normal/unlock mode

The device is in normal mode when delivered.

Normal mode

In this mode, the guard locking element is not disengaged from the bolt tongue until pushbutton 2 for access request is operated, when there is a high signal at X1-6 and X1-7 or at X2-6 and X2-7 (solenoid operation).

Unlock mode

In this mode, the guard locking element is disengaged from the bolt tongue when a high signal is present at X1-6 and X1-7 or at X2-6 and X2-7 (solenoid operation).

Switching between normal mode and unlock mode

- ▶ Switch off supply voltage
- ▶ Press and hold the pushbutton 2 for access request and the pushbutton 1 for activating the guard locking simultaneously
- ▶ Switch on the supply voltage and hold both pushbuttons until "Device" LED lights up blue. Then release the pushbuttons.
- ▶ The active mode is signalled by quick flashing of one of the LEDs:
 - Normal mode: LED of pushbutton 1 for activating the guard locking and LED "Safety Gate" are flashing
 - Unlock mode: "Input" LED flashes
- ▶ To switch to the required mode, press pushbutton 1 for normal mode or pushbutton 2 for unlock mode. The "Device" LED will quickly light up green again and the device is ready for operation.

Reset function

After an error that was signalled by the red "Device" LED the device can be restarted by a reset:

- ▶ Rectify the error.
- ▶ Press the pushbutton for access request [2] and hold the pushbutton for at least 5 seconds.

9.3 Remedy

Fault conditions are indicated by flashing the LEDs. Some errors are displayed through periodic flashing (see table); with other errors it is possible to establish an error code through the number of flashes.

Error	Cause	Remedy
Safety switch does not react, LED "Device" does not light	Supply voltage missing/too low	▶ Check supply voltage and apply 24 V
"Safety Gate" LED flashes a code and "Device" LED flashes red	See section on Error codes	▶ See section on Error codes
"Device" LED illuminates red	Internal error	▶ Please contact Pilz
"Input" LED flashes yellow, only one safety output switches	Only one channel of the input circuit is open (partial operation)	▶ Open both channels of the input circuit and close them again
Only one safety output switches	Only one channel of the input circuit is open, wiring error	▶ Check wiring of terminals X2-3 and X2-4
Signal output does not switch when actuator is engaged, "SafetyGate" LED does not light up	Actuator not detected	▶ Insert actuator as far as it will go
Solenoid does not switch	Supply voltage or voltage for solenoid operation is too low, error in the wiring	▶ Check voltages and apply 24 V, check wiring, ▶ Increase voltage for solenoid to increase tolerance, ▶ reduce cable run, ▶ Use cable with a greater conductor cross section
Solenoid does not switch, "SafetyGate" LED does not light up	Actuator not detected	▶ Insert actuator as far as it will go
Safety outputs fail to switch, "Lock /Area Safe" LED flashes red	Escape or auxiliary release pin is not correctly in position	▶ Position the escape or auxiliary release pin as far as it will go ▶ Perform reset
"Device" and "Lock/Area safe" LEDs flash red	Guard locking is active, 24V is present at inputs X2-3 and X2-4, escape or auxiliary release pin has been operated	▶ Position the escape or auxiliary release pin as far as it will go ▶ Perform reset
"Safety Gate" LED lights up and guard locking element is engaged, but the outputs are not switching.	Wrong actuator, e.g. 1.1-coded actuators with 2.2-coded safety switch	▶ Insert correct actuator

Error	Cause	Remedy
When pushbutton 1 or 2 is operated, all LEDs go out and the system starts up again	Supply voltage or voltage for solenoid operation is too low or wiring error	<ul style="list-style-type: none"> ▶ Check voltages and apply 24 V, check wiring, ▶ reduce cable run, ▶ Use cable with a greater conductor cross section

Error codes

Error codes are issued after 90 seconds at the latest at the "Safety Gate" LED. The number of LED flashes corresponds to the error code. The error code consists of one digit. (4 x flashing: error code 4). The flashing sequence is constantly repeated and separated from each other by longer periods.

Error code	Description	Remedy
1	Short circuit to 0 V DC on at least one of the two safety outputs X1-3 and X1-4	Check the wiring of terminals X1-3 and X1-4, rectify the wiring error, then reset
2	During operation, short circuit between safety output X1-3 and 24 V DC	Rectify wiring error at terminal X1-3, then reset
3	During operation, short circuit between safety output X1-4 and 24 V DC	Rectify wiring error at terminal X1-4, then reset
4	At least one of the two safety outputs X1-3 and X1-4 have voltage applied during system run-up	Check the wiring of terminals X1-3 and X1-4, rectify the wiring error, then reset

10 Technical Details Order No. 570800-570804

General	570800	570802	570804
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570800	570802	570804
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570800	570802	570804
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
E-STOP	570800	570802	570804
Number of N/C contacts	2	2	–
E-STOP release type	Turn release	Turn release	–

E-STOP	570800	570802	570804
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	–
Contacts, AC15 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Contacts, DC13 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Mechanical life	6050 cycles	6050 cycles	–
Signal output			
Output voltage	24 V	24 V	–
Max. current	100 mA	100 mA	–
Section stop	570800	570802	570804
Number of N/C contacts	–	–	2
Release type	–	–	Turn release
Utilisation category			
In accordance with the standard	–	–	EN 60947-5-1
Contacts, AC15 at	–	–	24 V
Max. current	–	–	1,5 A
Contacts, DC13 at	–	–	24 V
Max. current	–	–	1,5 A
Mechanical life	–	–	6050 cycles
Signal output			
Output voltage	–	–	24 V
Max. current	–	–	100 mA
Semiconductor outputs	570800	570802	570804
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570800	570802	570804
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi

Times	570800	570802	570804
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570800	570802	570804
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms

Environmental data	570800	570802	570804
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570800	570802	570804
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+/-0,01mm/°C	+/-0,01mm/°C	+/-0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	465 mm	465 mm	465 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm

Mechanical data	570800	570802	570804
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.570 g	2.570 g	2.570 g

Where standards are undated, the 2013 latest editions shall apply.

11 Technical Details Order No. 570806-570810

General	570806	570808	570810
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570806	570808	570810
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570806	570808	570810
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
Section stop	570806	570808	570810
Number of N/C contacts	2	–	–
Release type	Turn release	–	–

Section stop	570806	570808	570810
Utilisation category			
In accordance with the standard	EN 60947-5-1	–	–
Contacts, AC15 at	24 V	–	–
Max. current	1,5 A	–	–
Contacts, DC13 at	24 V	–	–
Max. current	1,5 A	–	–
Mechanical life	6050 cycles	–	–
Signal output			
Output voltage	24 V	–	–
Max. current	100 mA	–	–
Semiconductor outputs	570806	570808	570810
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570806	570808	570810
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi
Times	570806	570808	570810
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms

Times	570806	570808	570810
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570806	570808	570810
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570806	570808	570810
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N

Mechanical data	570806	570808	570810
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+0,01mm/°C	+0,01mm/°C	+0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	465 mm	465 mm	465 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.570 g	2.570 g	2.570 g

Where standards are undated, the 2013 latest editions shall apply.

12 Technical Details Order No. 570812-570816

General	570812	570814	570816
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570812	570814	570816
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570812	570814	570816
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
E-STOP	570812	570814	570816
Number of N/C contacts	2	2	–
E-STOP release type	Turn release	Turn release	–

E-STOP	570812	570814	570816
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	–
Contacts, AC15 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Contacts, DC13 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Mechanical life	6050 cycles	6050 cycles	–
Signal output			
Output voltage	24 V	24 V	–
Max. current	100 mA	100 mA	–
Section stop	570812	570814	570816
Number of N/C contacts	–	–	2
Release type	–	–	Turn release
Utilisation category			
In accordance with the standard	–	–	EN 60947-5-1
Contacts, AC15 at	–	–	24 V
Max. current	–	–	1,5 A
Contacts, DC13 at	–	–	24 V
Max. current	–	–	1,5 A
Mechanical life	–	–	6050 cycles
Signal output			
Output voltage	–	–	24 V
Max. current	–	–	100 mA
Semiconductor outputs	570812	570814	570816
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570812	570814	570816
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi

Times	570812	570814	570816
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570812	570814	570816
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms

Environmental data	570812	570814	570816
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570812	570814	570816
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+/-0,01mm/°C	+/-0,01mm/°C	+/-0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	555 mm	555 mm	555 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm

Mechanical data	570812	570814	570816
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.670 g	2.670 g	2.670 g

Where standards are undated, the 2013 latest editions shall apply.

13 Technical Details Order No. 570818-570822

General	570818	570820	570822
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570818	570820	570822
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570818	570820	570822
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
E-STOP	570818	570820	570822
Number of N/C contacts	–	–	2
Section stop	570818	570820	570822
Number of N/C contacts	2	–	–
Release type	Turn release	–	–

Section stop	570818	570820	570822
Utilisation category			
In accordance with the standard	EN 60947-5-1	–	–
Contacts, AC15 at	24 V	–	–
Max. current	1,5 A	–	–
Contacts, DC13 at	24 V	–	–
Max. current	1,5 A	–	–
Mechanical life	6050 cycles	–	–
Signal output			
Output voltage	24 V	–	–
Max. current	100 mA	–	–
Semiconductor outputs	570818	570820	570822
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570818	570820	570822
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi
Times	570818	570820	570822
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms

Times	570818	570820	570822
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570818	570820	570822
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570818	570820	570822
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N

Mechanical data	570818	570820	570822
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+0,01mm/°C	+0,01mm/°C	+0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	555 mm	555 mm	555 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.670 g	2.670 g	2.670 g

Where standards are undated, the 2013 latest editions shall apply.

14 Technical Details Order No. 570824-570828

General	570824	570826	570828
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570824	570826	570828
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570824	570826	570828
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
E-STOP	570824	570826	570828
Number of N/C contacts	2	2	–
E-STOP release type	Turn release	Turn release	–

E-STOP	570824	570826	570828
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	–
Contacts, AC15 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Contacts, DC13 at	24 V	24 V	–
Current	1,5 A	1,5 A	–
Mechanical life	6050 cycles	6050 cycles	–
Signal output			
Output voltage	24 V	24 V	–
Max. current	100 mA	100 mA	–
Section stop	570824	570826	570828
Number of N/C contacts	–	–	2
Release type	–	–	Turn release
Utilisation category			
In accordance with the standard	–	–	EN 60947-5-1
Contacts, AC15 at	–	–	24 V
Max. current	–	–	1,5 A
Contacts, DC13 at	–	–	24 V
Max. current	–	–	1,5 A
Mechanical life	–	–	6050 cycles
Signal output			
Output voltage	–	–	24 V
Max. current	–	–	100 mA
Semiconductor outputs	570824	570826	570828
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570824	570826	570828
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi

Times	570824	570826	570828
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570824	570826	570828
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms

Environmental data	570824	570826	570828
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570824	570826	570828
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+/-0,01mm/°C	+/-0,01mm/°C	+/-0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	568 mm	568 mm	568 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm

Mechanical data	570824	570826	570828
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.690 g	2.690 g	2.690 g

Where standards are undated, the 2013 latest editions shall apply.

15 Technical Details Order No. 570830-570834

General	570830	570832	570834
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	Low	Low	Low
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	Coded	Coded	Coded
Electrical data	570830	570832	570834
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570830	570832	570834
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
Section stop	570830	570832	570834
Number of N/C contacts	2	–	–
Release type	Turn release	–	–

Section stop	570830	570832	570834
Utilisation category			
In accordance with the standard	EN 60947-5-1	–	–
Contacts, AC15 at	24 V	–	–
Max. current	1,5 A	–	–
Contacts, DC13 at	24 V	–	–
Max. current	1,5 A	–	–
Mechanical life	6050 cycles	–	–
Signal output			
Output voltage	24 V	–	–
Max. current	100 mA	–	–
Semiconductor outputs	570830	570832	570834
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570830	570832	570834
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi
Times	570830	570832	570834
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms

Times	570830	570832	570834
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570830	570832	570834
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570830	570832	570834
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N

Mechanical data	570830	570832	570834
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator	PSEN sg2 actuator	PSEN sg2 actuator
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+0,01mm/°C	+0,01mm/°C	+0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	568 mm	568 mm	568 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.690 g	2.690 g	2.690 g

Where standards are undated, the 2013 latest editions shall apply.

16 Technical Details Order No. 570880-570884

General	570880	570882	570884
Approvals	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL	CE, FCC, TÜV, UL/cUL
Sensor's mode of operation	Transponder	Transponder	Transponder
Coding level in accordance with EN ISO 14119	High	High	High
Design in accordance with EN ISO 14119	4	4	4
Pilz coding type	uniquely coded	uniquely coded	uniquely coded
Electrical data	570880	570882	570884
Supply voltage			
Voltage	24 V	24 V	24 V
Kind	DC	DC	DC
Voltage tolerance	-15 %/+10 %	-15 %/+10 %	-15 %/+10 %
Output of external power supply (DC)	2 W	2 W	2 W
Max. inrush current at UB	5 A	5 A	5 A
Max. switching frequency	1 Hz	1 Hz	1 Hz
Magnet. supply voltage	24 V	24 V	24 V
Max. solenoid current t <150 ms	1,5 A	1,5 A	1,5 A
Max. cable capacitance at the safety outputs			
No-load, PNOZ with relay contacts	40 nF	40 nF	40 nF
PNOZmulti, PNOZelog, PSS	70 nF	70 nF	70 nF
Max. inrush current impulse			
Current pulse, A1	5 A	5 A	5 A
Pulse duration, A1	0,0002 ms	0,0002 ms	0,0002 ms
Max. unit fuse protection in accordance with UL	3 A	3 A	3 A
Inputs	570880	570882	570884
Number	2	2	2
Voltage at inputs	24 V DC	24 V DC	24 V DC
Input current range	5 mA	5 mA	5 mA
E-STOP	570880	570882	570884
Number of N/C contacts	2	2	2
E-STOP release type	Turn release	Turn release	Turn release

E-STOP	570880	570882	570884
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC15 at	24 V	24 V	24 V
Current	1,5 A	1,5 A	1,5 A
Contacts, DC13 at	24 V	24 V	24 V
Current	1,5 A	1,5 A	1,5 A
Mechanical life	6050 cycles	6050 cycles	6050 cycles
Signal output			
Output voltage	24 V	24 V	24 V
Max. current	100 mA	100 mA	100 mA
Semiconductor outputs	570880	570882	570884
OSSD safety outputs	2	2	2
Signal outputs	2	2	2
Switching current per output	500 mA	500 mA	500 mA
Breaking capacity per output	12 W	12 W	12 W
Residual current at "0" signal	0,5 mA	0,5 mA	0,5 mA
Short circuit-proof	yes	yes	yes
Pushbuttons	570880	570882	570884
Utilisation category			
In accordance with the standard	EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Contacts, AC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Contacts, DC12 at	24 V	24 V	24 V
Max. current	0,1 A	0,1 A	0,1 A
Electrical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Mechanical life	1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Contact material	AgNi	AgNi	AgNi
Times	570880	570882	570884
Test pulse duration, safety outputs	450 µs	450 µs	450 µs
Switch-on delay			
after UB is applied	1,1 s	1,1 s	1,1 s
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	90 ms	90 ms	90 ms
Actuator max.	120 ms	120 ms	120 ms
Delay-on de-energisation			
Inputs typ.	15 ms	15 ms	15 ms
Inputs max.	20 ms	20 ms	20 ms
Actuator typ.	30 ms	30 ms	30 ms
Actuator max.	260 ms	260 ms	260 ms

Times	570880	570882	570884
Supply interruption before de-energisation	20 ms	20 ms	20 ms
Simultaneity, channel 1 and 2 max.	7 ms	7 ms	7 ms
Environmental data	570880	570882	570884
Temperature of metal surface at ambient temperature: 25 °C	40 °C	40 °C	40 °C
Ambient temperature			
In accordance with the standard	EN 60068-2-14	EN 60068-2-14	EN 60068-2-14
Temperature range	-20 - 55 °C	-20 - 55 °C	-20 - 55 °C
Storage temperature			
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 70 °C	-25 - 70 °C	-25 - 70 °C
Climatic suitability			
In accordance with the standard	EN 60068-2-78	EN 60068-2-78	EN 60068-2-78
Humidity	93 % r. h. at 40 °C	93 % r. h. at 40 °C	93 % r. h. at 40 °C
EMC	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	EN 55011: class A, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8
Vibration			
In accordance with the standard	EN 60068-2-6	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 55 Hz	10 - 55 Hz	10 - 55 Hz
Amplitude	1 mm	1 mm	1 mm
Shock stress			
In accordance with the standard	EN 60068-2-27	EN 60068-2-27	EN 60068-2-27
Acceleration	30g	30g	30g
Duration	11 ms	11 ms	11 ms
Airgap creepage			
Overvoltage category	III	III	III
Pollution degree	3	3	3
Rated insulation voltage	30 V	30 V	30 V
Rated impulse withstand voltage	1 kV	1 kV	1 kV
Protection type			
Housing	IP54	IP54	IP54
Mechanical data	570880	570882	570884
Escape release available	yes	yes	yes
Mechanical life	200,000 cycles	200,000 cycles	200,000 cycles
Max. holding force in closing direction	1000 N	1000 N	1000 N

Mechanical data	570880	570882	570884
Max. holding force in pan direction	2000 N	2000 N	2000 N
Max. vertical offset	+/-2,5 mm	+/-2,5 mm	+/-2,5 mm
Max. lateral offset	+/-3,0 mm	+/-3,0 mm	+/-3,0 mm
Max. angular offset	+/-1,5 deg	+/-1,5 deg	+/-1,5 deg
Max. retract speed of actuator	0,5 m/s	0,5 m/s	0,5 m/s
Actuator 1	PSEN sg2 actuator 2.2	PSEN sg2 actuator 2.2	PSEN sg2 actuator 2.2
Operating distances			
Assured operating distance Sao	2 mm	2 mm	2 mm
Min. operating distance Somin	3 mm	3 mm	3 mm
Typical operating distance So	3 mm	3 mm	3 mm
Assured release distance Sar	4 mm	4 mm	4 mm
Change of operating distance with temperature changes	+0,01mm/°C	+0,01mm/°C	+0,01mm/°C
Typ. Hysteresis	0,1 mm	0,1 mm	0,1 mm
Connection type	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in	Spring-loaded terminal, plug-in
Cable	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2	LiYY 24 x 0.5 mm2
Material			
Top	Valox 553	Valox 553	Valox 553
Actuator	Stainless steel 1.4301	Stainless steel 1.4301	Stainless steel 1.4301
Dimensions			
Height	465 mm	555 mm	568 mm
Width	200 mm	200 mm	200 mm
Depth	108 mm	108 mm	108 mm
Actuator dimensions			
Height	110 mm	110 mm	110 mm
Width	195 mm	195 mm	195 mm
Depth	108 mm	108 mm	108 mm
Weight of actuator	1.390 g	1.390 g	1.390 g
Weight	2.570 g	2.670 g	2.690 g

Where standards are undated, the 2013 latest editions shall apply.

17 Safety characteristic data

Operating mode	EN ISO 13849-1: 2008 PL	EN ISO 13849-1: 2008 Category	EN IEC 62061 SIL CL	EN IEC 62061 PFH _D [1/h]	Lambda d/ Lambda	EN ISO 13849-1 2006, EN IEC B10D	EN ISO 13849-1: 2008 T _M [year]	Mechan. service life [cycles]
1-ch. guard locking	PL d	Cat. 2	SIL CL 2	1,83E-09	–	–	20	200,000 cycles
2-ch. guard locking	PL e	Cat. 4	SIL CL 3	3,80E-10	–	–	20	200,000 cycles
E-STOP	–	–	–	–	0,20	75.000	–	6050 cycles
2-ch. OSSD	PL e	Cat. 4	SIL CL 3	2,08E-09	–	–	20	200,000 cycles



NOTICE

Be sure that you observe the mechanical life. The safety characteristic data are only valid as long as the values of mechanical life are met.

18 Order reference

18.1 Unit

Product type	Features	Order No.
PSEN sg2c-3LPE unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton	570 800
PSEN sg2c-3LBE unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1, key-operated pushbutton, 1 E-STOP pushbutton	570 802
PSEN sg2c-3LPS unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 section stop pushbutton	570 804
PSEN sg2c-3LBS unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1 key-operated pushbutton, 1 section stop pushbutton	570 806
PSEN sg2c-3LPC unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1 pushbutton unilluminated	570 808
PSEN sg2c-3LBC unit	Safety gate system (transponder technology) with safe interlock and guard locking, 1 pushbutton illuminated, 1 key-operated pushbutton	570 810
PSEN sg2c-5LPLLE unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton	570 812
PSEN sg2c-5LBLLE unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1, key-operated pushbutton, 1 E-STOP pushbutton	570 814
PSEN sg2c-5LPLLS unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 section stop pushbutton	570 816
PSEN sg2c-5LBLLS unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1 key-operated pushbutton, 1 section stop pushbutton	570 818
PSEN sg2c-5LPLLC unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1 pushbutton unilluminated	570 820
PSEN sg2c-5LBLLC unit	Safety gate system (transponder technology) with safe interlock and guard locking, 3 pushbuttons illuminated, 1 key-operated pushbutton	570 822
PSEN sg2c-5LPKLE-M12/5 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key switch, 1 pushbutton unilluminated, 1 E-STOP pushbutton, connection for enabling switch	570 824
PSEN sg2c-5LBKLE-M12/5 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 key switch, 1 E-STOP pushbutton, connection for enabling switch	570 826

Product type	Features	Order No.
PSEN sg2c-5LPKLS-M12/5 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key switch, 1 pushbutton unilluminated, 1 section stop pushbutton, connection for enabling switch	570 828
PSEN sg2c-5LBKLS-M12/5 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 key switch, 1 E-STOP pushbutton, connection for enabling switch	570 830
PSEN sg2c-5LPKLC-M12/5 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons unilluminated, 1 key switch, 1 pushbutton unilluminated, connection for enabling switch	570 832
PSEN sg2c-5LBKLC-M12/5 UNIT	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 key switch, connection for enabling switch	570 834
PSEN sg2c-3PLE 2.2 UNIT	Safety gate system (transponder technology) with safe interlocking and guard locking, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 880
PSEN sg2c-5LPLLE 2.2 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 882
PSEN sg2c-5LPKLE-M12/5 2.2 unit	Safety gate system (transponder technology) with safe interlocking and guard locking, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 884

18.2 Safety switch

Product type	Features	Order No.
PSEN sg2c-3LPE switch	Safety switch, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton	570 801
PSEN sg2c-3LBE switch	Safety switch, 1 pushbutton illuminated, 1 key-operated pushbutton, 1 E-STOP pushbutton	570 803
PSEN sg2c-3LPS switch	Safety switch, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 section stop pushbutton	570 805
PSEN sg2c-3LBS switch	Safety switch, 1 pushbutton illuminated, 1 key-operated pushbutton, 1 section stop pushbutton	570 807
PSEN sg2c-3LPC switch	Safety switch, 1 pushbutton illuminated, 1 pushbutton unilluminated	570 809
PSEN sg2c-3LBC switch	Safety switch, 1 pushbutton illuminated, 1 key-operated pushbutton	570 811
PSEN sg2c-5LPLLE switch	Safety switch, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton	570 813
PSEN sg2c-5LBLLE switch	Safety switch, 3 pushbuttons illuminated, 1 key-operated pushbutton, 1 E-STOP pushbutton	570 815
PSEN sg2c-5LPLLS switch	Safety switch, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 section stop pushbutton	570 817

Product type	Features	Order No.
PSEN sg2c-5LBLLS switch	Safety switch, 3 pushbuttons illuminated, 1 key-operated pushbutton, 1 section stop pushbutton	570 819
PSEN sg2c-5LPLLC switch	Safety switch, 3 pushbuttons illuminated, 1 pushbutton unilluminated	570 821
PSEN sg2c-5LBLLC switch	Safety switch, 3 pushbutton illuminated, 1 key-operated pushbutton	570 823
PSEN sg2c-5LPKLE-M12/5 switch	Safety switch, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 pushbutton unilluminated, 1 E-STOP pushbutton, connection for enabling switch	570 825
PSEN sg2c-5LBKLE-M12/5 switch	Safety switch, 2 pushbuttons illuminated, 2 key-operated pushbuttons, 1 E-STOP pushbutton, connection for enabling switch	570 827
PSEN sg2c-5LPKLS-M12/5 switch	Safety switch, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 pushbutton unilluminated, 1 section stop pushbutton, connection for enabling switch	570 829
PSEN sg2c-5LBKLS-M12/5 SWITCH	Safety switch, 2 pushbuttons illuminated, 2 key-operated pushbuttons, 1 section stop pushbutton, connection for enabling switch	570 831
PSEN sg2c-5LPKLC-M12/5 switch	Safety switch, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 pushbutton unilluminated, connection for enabling switch	570 833
PSEN sg2c-5LBKLC-M12/5 switch	Safety switch, 2 pushbuttons illuminated, 2 key-operated pushbuttons, connection for enabling switch	570 835
PSEN sg2c-3PLE 2.2 switch	Safety switch, 1 pushbutton illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 881
PSEN sg2c-5LPLLE 2.2 switch	Safety switch, 3 pushbuttons illuminated, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 883
PSEN sg2c-5LPKLE-M12/5 2.2 switch	Safety switch, 2 pushbuttons illuminated, 1 key-operated pushbutton, 1 pushbutton unilluminated, 1 E-STOP pushbutton, uniquely coded	570 885

18.3 Handle unit with actuator

Product type	Features	Order No.
PSEN sg2c actuator	Handle unit with actuator	570 890
PSEN sg2c actuator 2.2	Handle unit with uniquely coded actuator	570 891


18.4 Accessories

Product type	Features	Order No.
PSEN sg2 cover	Escape release cover	570 773
PSEN sg2c Set spring loaded terminals	Connection terminals, rubber seal, pressure screw	570 777
PSEN sg escape release pin	Pin for escape release	570 870

Product type	Features	Order No.
PSEN sg auxiliary release pin	Pin for auxiliary release	570 871
PSEN sg color covers (pushbutton)	Colour covers for illuminated buttons	570 875

19 Supplementary data

19.1 Radio approval

USA/Canada
 FCC ID: VT8-PSENSG IC: 7482A-PSENSG
FCC/IC-Requirements: This product complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standards. Operation is subject to the following two conditions: 1) this product may not cause harmful interference, and 2) this product must accept any interference received, including interference that may cause undesired operation. Changes or modifications made to this product not expressly approved by Pilz may void the FCC authorization to operate this equipment. NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Le présent produit est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) le produit ne doit pas produire de brouillage, et (2) l'utilisateur de le produit doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

19.2 EC declaration of conformity

This product/these products meet the requirements of the directive 2006/42/EC for machinery of the European Parliament and of the Council. The complete EC Declaration of Conformity is available on the Internet at www.pilz.com/downloads.

Representative: Norbert Fröhlich, Pilz GmbH & Co. KG, Felix-Wankel-Str. 2, 73760 Ostfildern, Germany

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