

PSEN 4.2a/b/p/M12

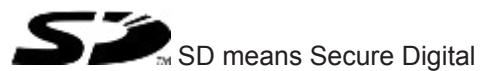
PSEN sensor technology

pilz

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Introduction

Validity of documentation

This documentation is valid for the product PSEN cs4.2a/b/p/M12. 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.

Retaining the documentation

This documentation is intended for instruction and should be retained for future reference.

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.

Safety switch PSEN cs4.2

The safety switch meets the requirements in accordance with:

- ▶ EN 60204-1 and IEC 60204-1
- ▶ EN 60947-5-3 with the actuator PSEN cs4.1
- ▶ EN 62061: SIL CL 3
- ▶ EN ISO 13849-1: PL e and Cat. 4

The safety switch may only be used with the corresponding actuator PSEN cs4.1.

The safety outputs must use 2-channel processing.

For your safety

- ▶ Only install and commission the unit if you have read and understood these operating instructions and are familiar with the applicable regulations for health and safety at work and accident prevention.
Ensure VDE and local regulations are met, especially those relating to safety.
- ▶ Any guarantee is rendered invalid if the housing is opened or unauthorised modifications are carried out.
- ▶ Do not remove the protective cap until you are just about to connect the unit.

Unit features

- ▶ Transponder technology
- ▶ Coding: uniquely coded
- ▶ Dual-channel operation
- ▶ 2 safety inputs for series connection of multiple safety switches
- ▶ 2 safety outputs
- ▶ 1 signal output
- ▶ LED for:
 - State of the actuator
 - State of the inputs
 - Supply voltage/fault
- ▶ 1 direction of actuation
- ▶ Connection types:
 - PSEN cs4.2a: Cable, 5 m
 - PSEN cs4.2b: Cable, 10 m
 - PSEN cs4.2p: 8 pin M8 connector
 - PSEN cs4.2 M12/8-0.15m: Connector 8 pin M12

Function description

There is a high signal or a low signal at the safety outputs, depending on the position of the actuator and the state of the inputs. The signal output Y32 signals the position of the actuator.

State of the inputs and outputs:

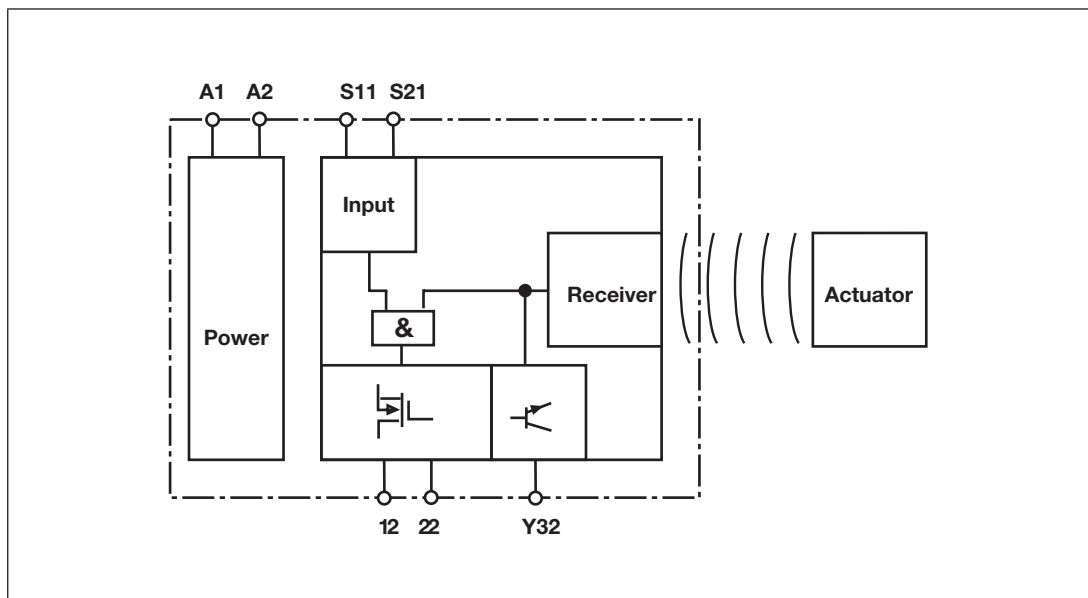
| Actuator in the response range | Input S11 | Input S21 | Safety output 12 | Safety output 22 | Signal output Y32 |
|--------------------------------|-----------|-----------|------------------|------------------|-------------------|
| Yes | High | Low | High | Low | High |
| Yes | Low | High | Low | High | High |
| Yes | High | High | High | High | High |
| Yes | Low | Low | Low | Low | High |
| No | x | x | Low | Low | Low |

x: High or low signal

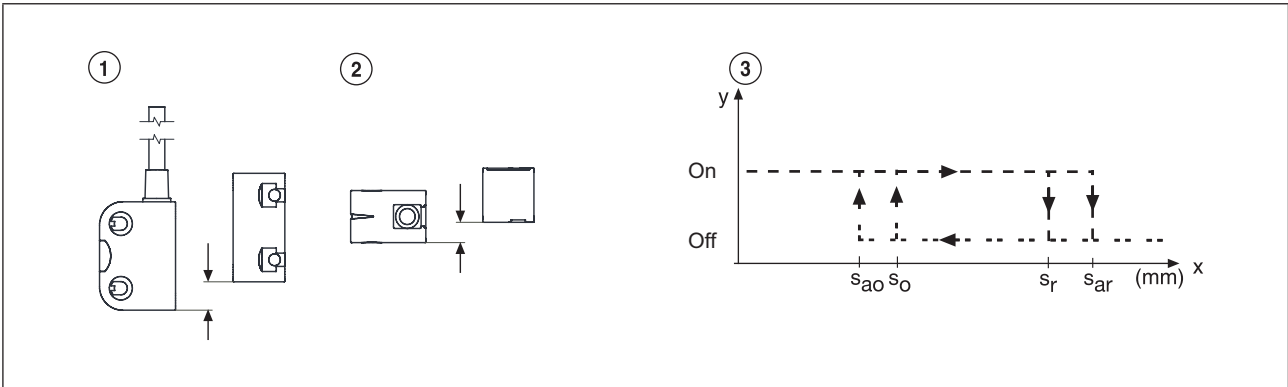
The outputs cannot be switched back on until there is a low signal at both inputs simultaneously.

Safety inputs S11 and S21 are monitored for feasibility. A high signal can be present at the inputs at offset times; the low signal must be present at both inputs simultaneously (partial operation lock).

Block diagram



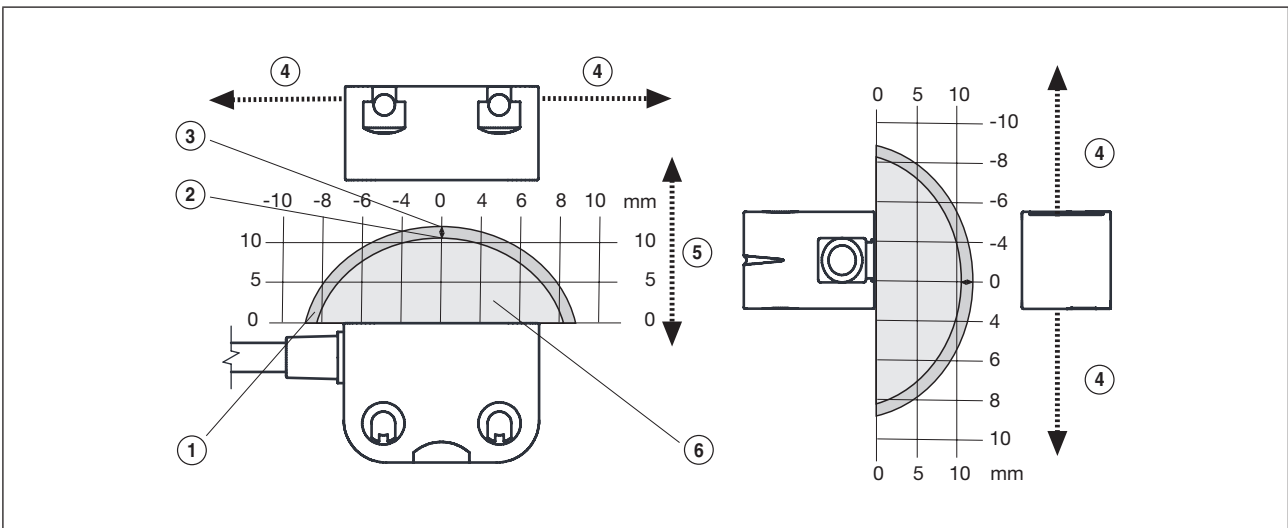
Operating distances



Legend:

- ▶ ①: Lateral offset
- ▶ ②: Vertical offset
- ▶ ③: Switch states (y-axis) dependent on operating distances (x-axis)
- ▶ S_{ao} : Assured operating distance: 8,0 mm
- ▶ S_o : Typical operating distance: 11,0 mm
- ▶ S_r : Typical release distance: 14,0 mm
- ▶ S_{ar} : Assured release distance: 20,0 mm

Lateral and vertical offset



Legend:

- ▶ ①: Hysteresis
- ▶ ②: Typical operating distance S_o
- ▶ ③: Typical release distance S_r
- ▶ ④: Offset in mm
- ▶ ⑤: Switching distance in mm
- ▶ ⑥: Response range

Wiring

Please note:

- ▶ Information given in the "Technical details" must be followed.
- ▶ Calculation of the max. cable length l_{max} in the input circuit:

$$l_{max} = \frac{R_{lmax}}{R_l / km}$$

R_{lmax} = Max. overall cable resistance (see [Technical details](#) [20])

R_l / km = cable resistance/km

Pin assignment, connector and cable

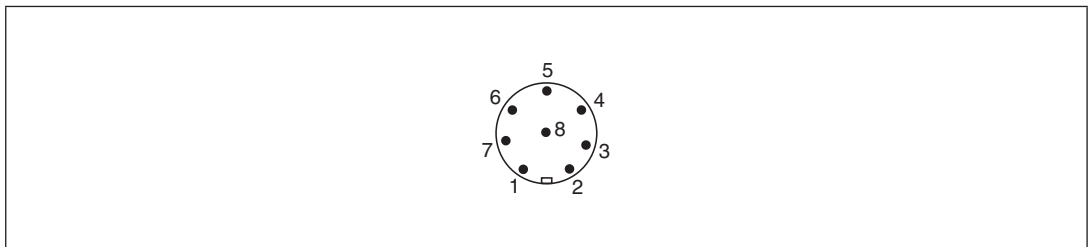


Fig.: 8 pin M8/M12 connector

| PIN | Pin designation | Function | Wire colour |
|-----|-----------------|-------------------|-------------|
| 1 | S21 | Input, channel 2 | White |
| 2 | A1 | +24 VUB | Brown |
| 3 | 12 | Output, channel 1 | Green |
| 4 | 22 | Output, channel 2 | Yellow |
| 5 | Y32 | Signal output | Grey |
| 6 | S11 | Input, channel 1 | Pink |
| 7 | A2 | 0 V UB | Blue |
| 8 | - | Do not connect | Red |

The wire colour also applies for the cable available from Pilz as an accessory.

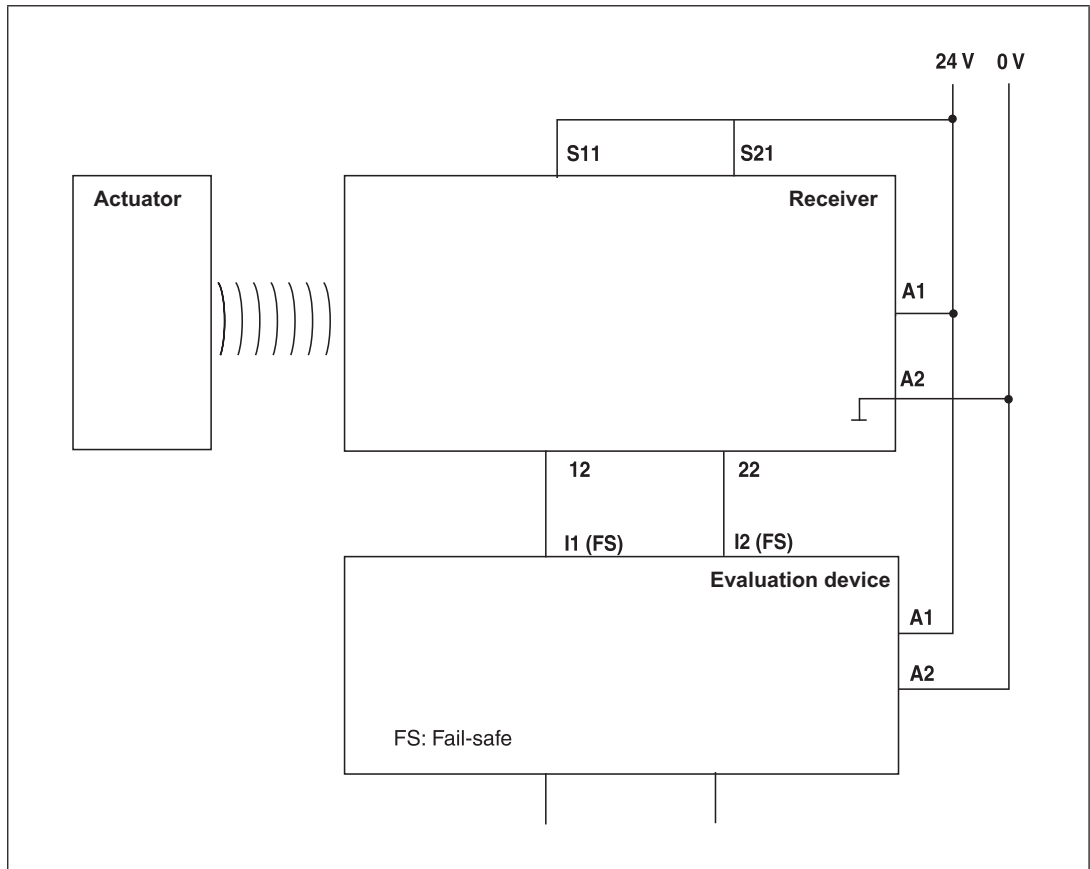
Connection to evaluation devices

Please note:

- ▶ The power supply must meet the regulations for extra low voltages with safe separation (SELV, PELV).
- ▶ The inputs and outputs of the safety switch must have a safe separation to voltages over 60 V AC.

CAUTION!
The safety outputs must use 2-channel processing.

Single connection



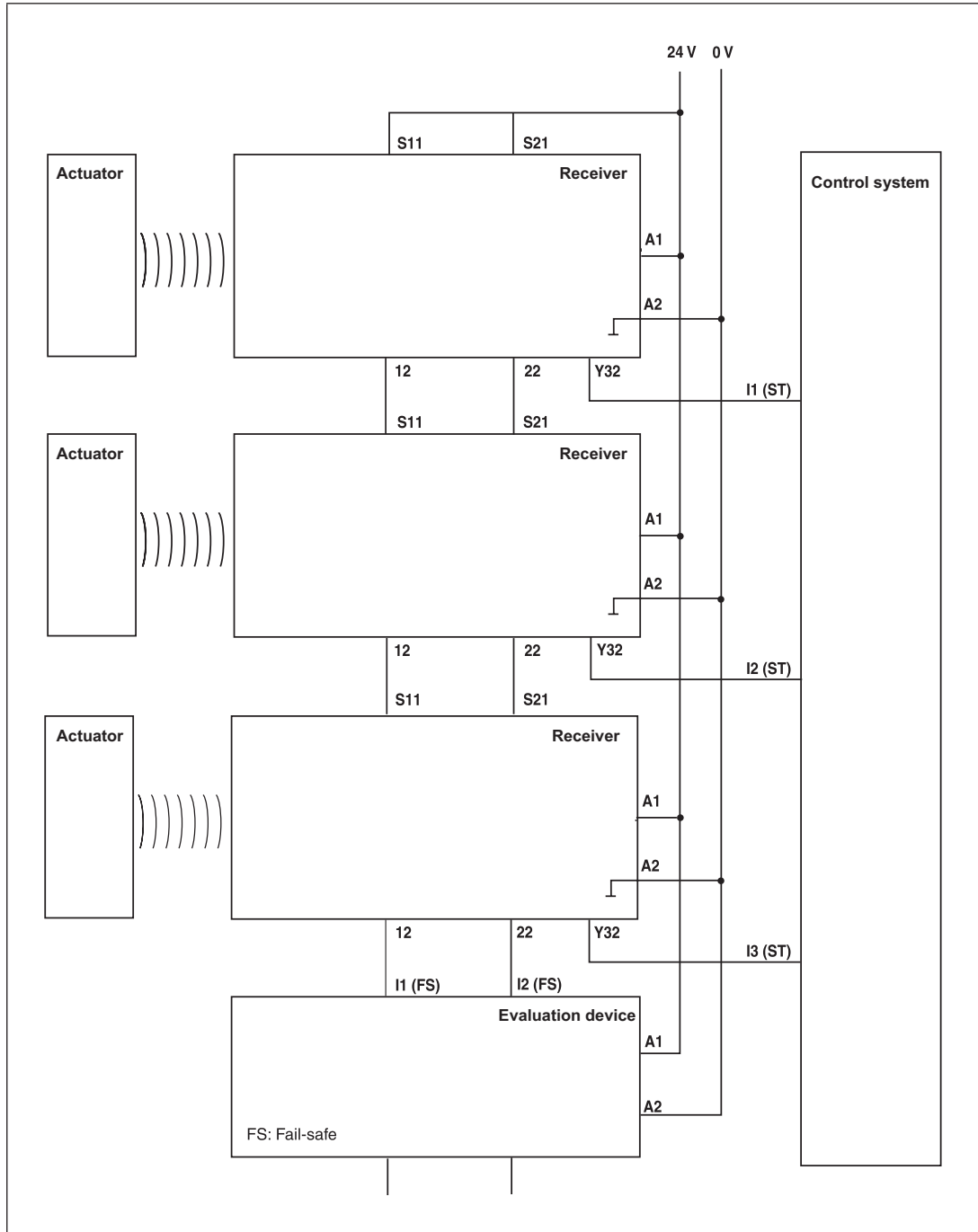
Series connection



CAUTION!

Extension of delay-on de-energisation

When several units are connected in series, the delay-on de-energisation time increases in direct proportion to the number of interconnected safety switches.



Connection to PNOZ X, PNOZpower, PNOZsigma, PNOZelog



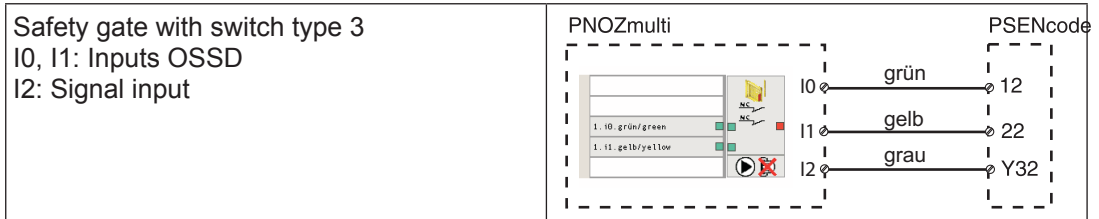
INFORMATION

Only use safety relays with a 24 VDC supply voltage. Safety relays with universal power supply or in AC unit versions have internal potential isolation and are not suitable as evaluation devices.

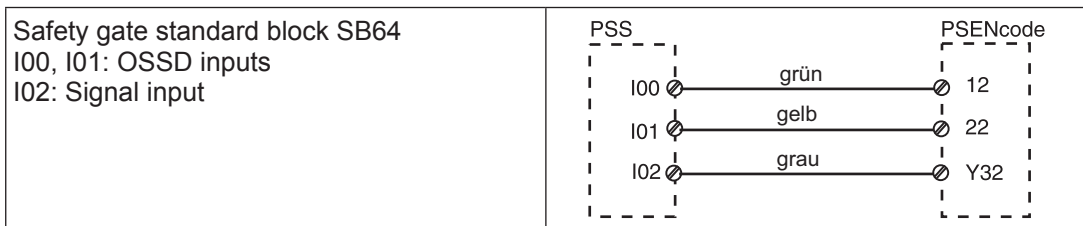
| | |
|--|--|
| <p>PNOZ X2.7P PNOZ X2.8P PNOZ X4 PNOZ X8P PNOZ X9P</p> | |
| <p>PNOZ X3P PNOZ X3.10P PNOZ XV3P PNOZ X3.1P</p> | |
| <p>PNOZ s3 PNOZ s4 PNOZ s4.1 PNOZ s5 PNOZ X5</p> | |

| | |
|--|--|
| <p>PNOZ X2.9P</p> | |
| <p>PNOZ X10.1 PNOZ X10.11P</p> | |
| <p>PNOZ e1.1p PNOZ e1vp PNOZ e6.1p PNOZ e6vp</p> | |
| <p>PNOZ e5.11p PNOZ e5.13p</p> | |

Connection to PNOZmulti



Connection to PSS



Teaching in the actuator

The **first** actuator detected by the safety switch PSEN cs4.1 is automatically taught in as soon as it is brought into the response range.



NOTICE

No other actuator may be taught in once this actuator has been taught.

Installation

- ▶ The safety switch and actuator should be installed opposite each other in parallel.



CAUTION!


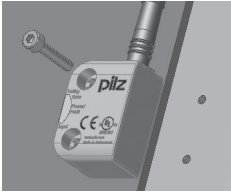
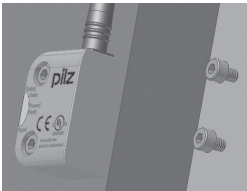
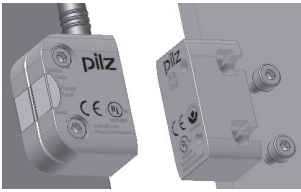
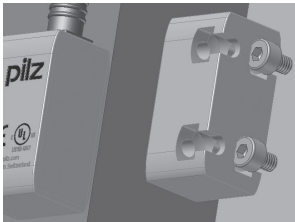
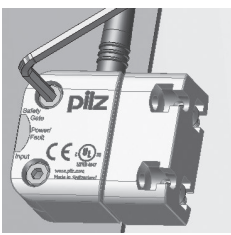
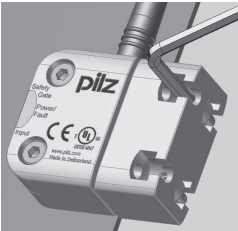
The unit's properties may be affected if installed in an environment containing electrically or magnetically conductive material. Please check the operating distances and the assured release distance.

- ▶ Safety switches and actuators should only be secured using M4 screws with a flat head (e.g. M4 cheese-head or pan head screws).
- ▶ The actuator should be protected from unauthorised removal and from contamination. Close the mounting holes using the seals provided.
- ▶ Torque setting: Max. 0.8 Nm.
- ▶ The distance between two safety switches must be maintained (see [Technical Details](#) [20]).

Safety switches and actuators

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

Parallel assembly

| | |
|---|--|
|  | <p>Drill holes in the mounting surface (see Dimensions [19]) and cut threads in the holes for M4 screws.</p> |
|  | <p>Use a screw to fix the safety switch in place.</p> |
|  | <ol style="list-style-type: none"> 1. Do not fully tighten the 2nd screw on the safety switch. 2. Attach the screws for the actuator, leaving a distance of 3 ... 6 mm between the screw head and plate. |
|  | <p>Slide the actuator on to the mounting surface. The inscribed area on the actuator (sensing face) should face the safety switch.</p> |
|  | <p>Slide the actuator on to the screws.</p> |
|  | <p>Align the safety switch and tighten the screws.</p> |
|  | <p>Align the actuator and tighten the screws.</p> |

| | |
|--|---|
| | <p>For the next steps you will need the seals as illustrated.</p> |
| | <p>Use the seals to close the screws' mounting holes on the actuator</p> <ul style="list-style-type: none"> ▶ (4): Without UL approval ▶ (1): For UL approval |
| | <p>Use the seals (2) to close the unused mounting holes on the actuator.</p> |
| | <p>Use the seals (3) to close the mounting holes on the sensing face of the safety switch.</p> |

Orthogonal assembly

| | |
|--|--|
| | <p>Drill holes in the mounting surface (see Dimensions [19]) and cut threads in the holes for M4 screws.</p> |
| | <p>Use a screw to fix the safety switch in place.</p> |

| | |
|--|--|
| | <ol style="list-style-type: none"> 1. Do not fully tighten the 2nd screw on the safety switch. 2. Attach the screws for the actuator, leaving a distance of 3 ... 6 mm between the screw head and plate. |
| | <p>For the next steps you will need the seals as illustrated.</p> |
| | <p>Use the seals (2) to close the unused mounting holes on the actuator.</p> |
| | <p>Slide the actuator on to the screws.</p> |
| | <p>Align the actuator and tighten the screws.</p> |
| | <p>Use the seals to close the screws' mounting holes on the actuator</p> <ul style="list-style-type: none"> ▶ (4): Without UL approval ▶ (1): For UL approval |
| | <p>Use the seals (3) to close the mounting holes on the sensing face of the safety switch.</p> |

Adjustment

- ▶ The stated operating distances (see [Technical details](#) [📖 20]) only apply when the safety switch and actuator are installed facing each other in parallel. Operating distances may deviate if other arrangements are used.
- ▶ Note the maximum permitted lateral and vertical offset (see [Operating distances](#) [📖 7] and [Lateral and vertical offset](#) [📖 7]).

Operation

Check the function of the safety switch before commissioning.

Status indicators:

- ▶ "POWER/Fault" LED lights up green: The unit is ready for operation
- ▶ "Safety Gate" LED lights up yellow: Actuator is within the response range
- ▶ "Input" LED lights up yellow: There is a high signal at both inputs.

Error display through periodic flashing:

- ▶ "Input" LED lights up yellow: the signal switches from high to low at one input, while a high signal remains on the other input (partial operation).
Remedy: Open both channels of the input circuit.
- ▶ "POWER/Fault" LED lights up red: Error message
Flashing codes for fault diagnostics are output to the "Safety Gate" and "Input" LEDs (see Error display through flashing codes).
Remedy: Rectify fault and interrupt power supply.

Please note the different switch-on delay after U_B is applied and after the recovery time of the sensor and evaluation device.

Error display through flashing codes

The "Safetygate" and "Input" LEDs send flash signals; an error code can be established from the number and sequence. The "Power/Fault" LED illuminates red.

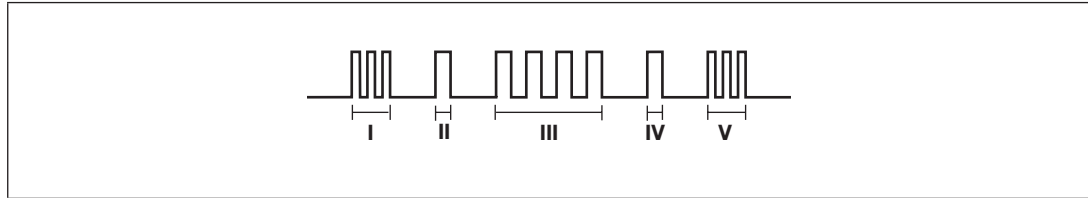
Each error code is indicated by three short flashes of the "Input" or "Safetygate" LED. After a longer pause, the LED will then flash at one second intervals. The number of LED flashes corresponds to a digit in the error code. The error code can consist of up to 4 digits. The digits are separated by a longer period without flashing. The entire sequence is constantly repeated.

| | |
|--------------------|--|
| Number of flashes | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 |
| Decimal error code | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0 |

Example:

Error code 1,4,1:

Flash frequency of the “Safetygate” or “Input” LED



Meaning of flash frequency:

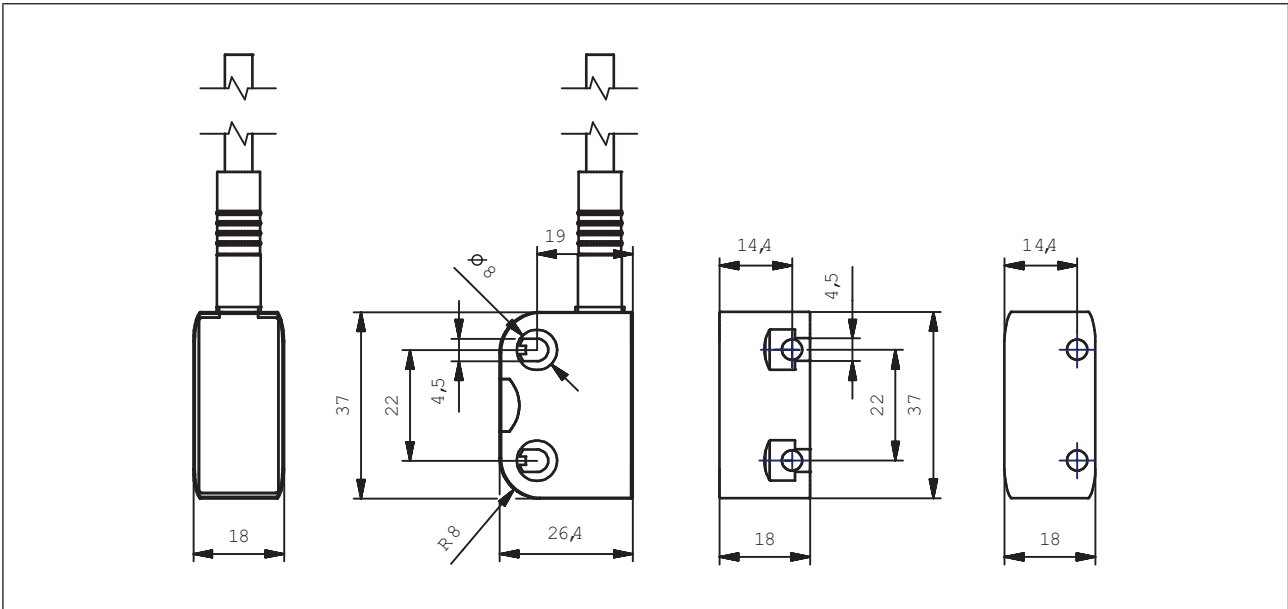
| | Flash frequency | Meaning |
|-----|------------------------------|---------------------------------|
| I | 3 times, short | Code for error message |
| II | Once for one second | Code for 1st digit |
| III | 4 times, for one second each | Code for 2nd digit |
| IV | Once for one second | Code for 3rd digit |
| V | 3 times, short | Code for error message repeated |

Table of error codes

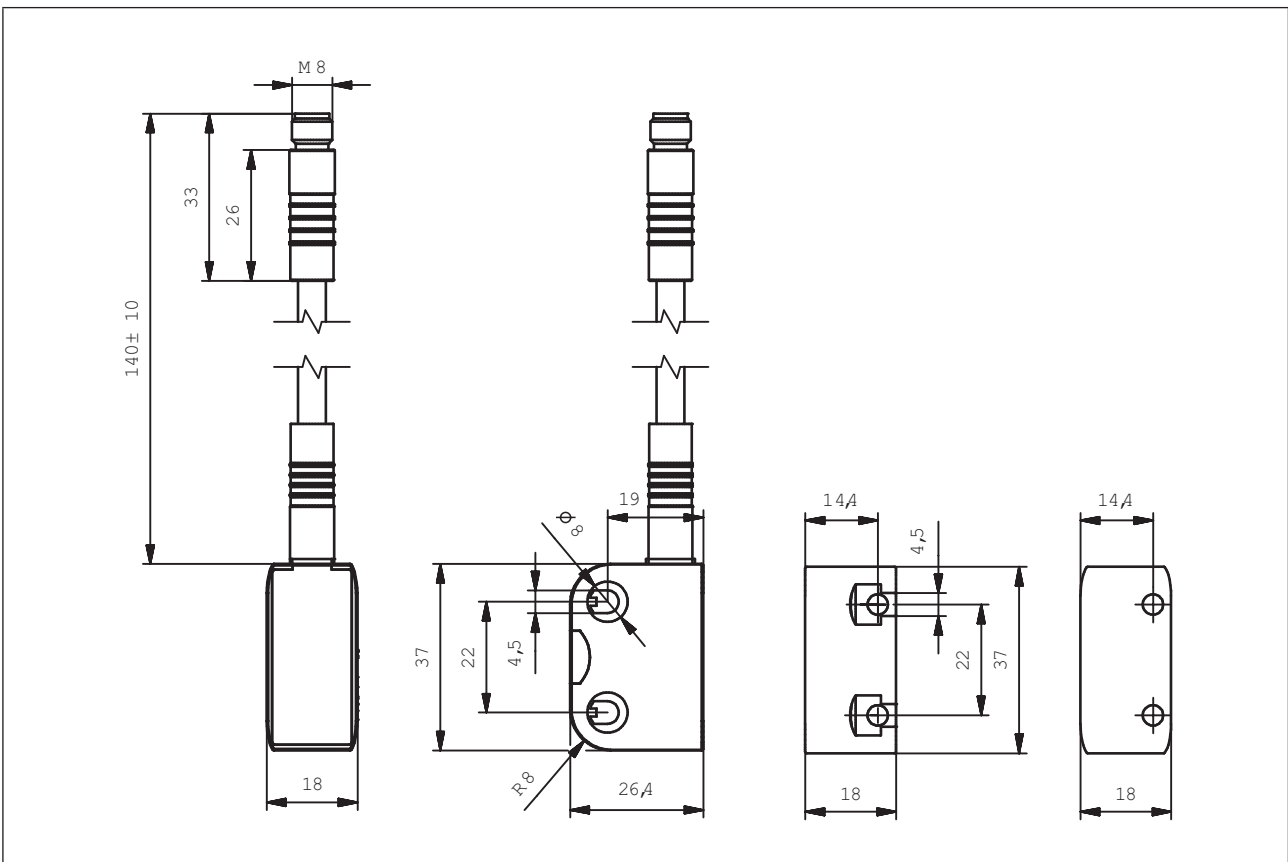
| Error code decimal | Number of flashes | Description | Remedy |
|--------------------|---|--|--|
| 1,4,1 | 3x short – 1x long – 4x long – 1x long – 3x short | At least one of the two safety outputs 12 and 22 have voltage applied during system run-up | Check the wiring of safety outputs 12 and 22, rectify the wiring error |
| 1,12 | 3x short – 1x long – 12x long – 3x short | During operation, short circuit between safety output 12 and 0 VDC | Rectify wiring error at safety output 12 |
| 1,13 | 3x short – 1x long – 13x long – 3x short | During operation, short circuit between safety output 22 and 0 VDC | Rectify wiring error at safety output 22 |
| 14 | 3x short – 14x long – 3x short | During operation, short circuit between safety output 12 and 24 VDC | Rectify wiring error at safety output 12 |
| 15 | 3x short – 15x long – 3x short | During operation, short circuit between safety output 22 and 24 VDC | Rectify wiring error at safety output 22 |

Dimensions in mm

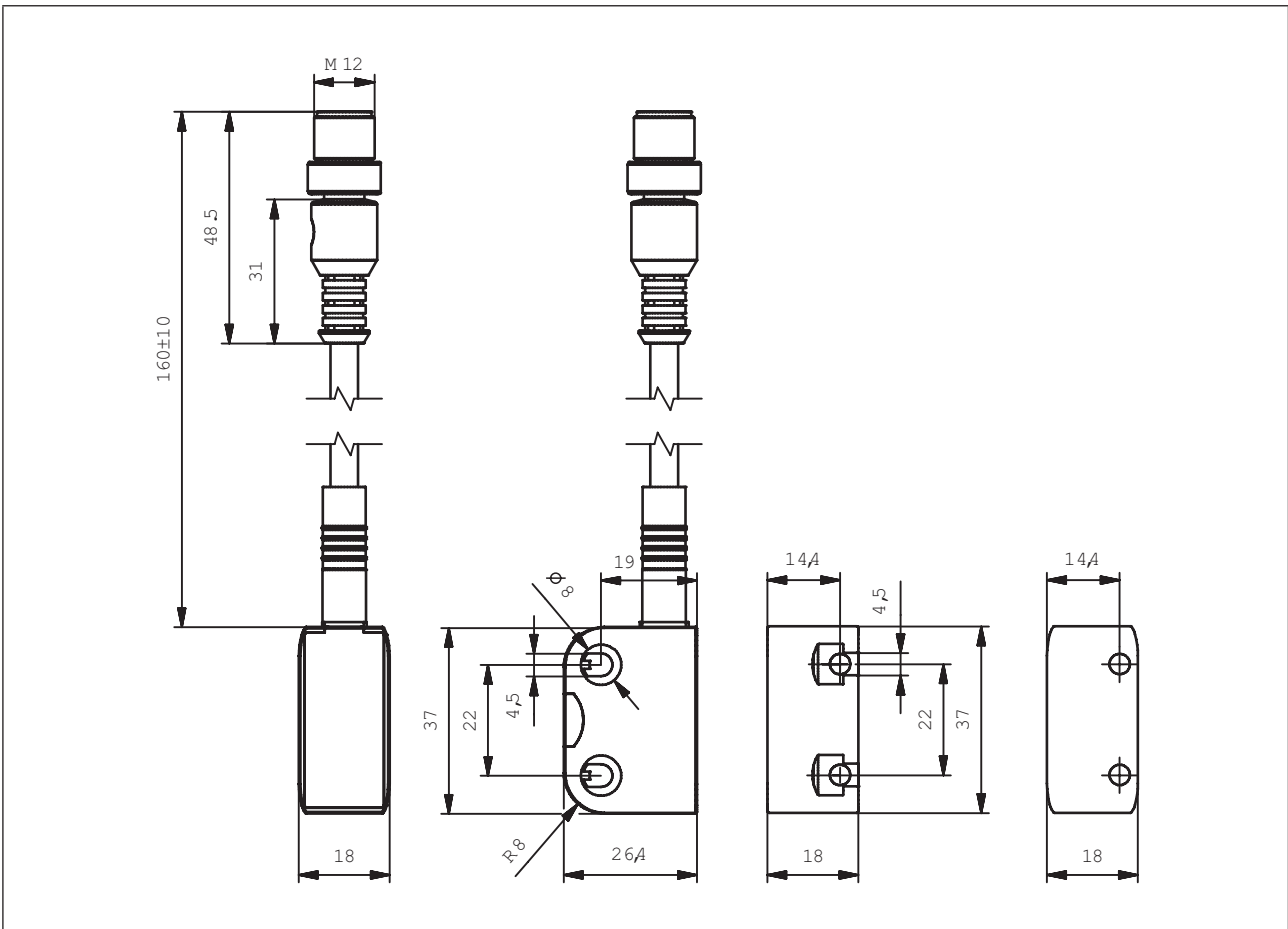
PSEN cs4.2a, PSEN cs4.2b



PSEN cs4.2p



PSEN cs4.2 M12/8-0.15m



Technical details

PSEN cs4.2a and PSEN cs4.2b

| General | 541211 | 541212 |
|--------------------------------------|-----------------------------|-----------------------------|
| Approvals | CE, GOST, TÜV, cULus Listed | CE, GOST, TÜV, cULus Listed |
| Sensor's mode of operation | Transponder | Transponder |
| Electrical data | 541211 | 541212 |
| Supply voltage | | |
| Voltage | 24 V | 24 V |
| Type | DC | DC |
| Voltage tolerance | -20 %/+20 % | -20 %/+20 % |
| Output of external power supply (DC) | 1,0 W | 1,0 W |
| Max. switching frequency | 3 Hz | 3 Hz |
| Switching current per output | 100 mA | 100 mA |
| Breaking capacity per output | 2,4 W | 2,4 W |

| Electrical data | 541211 | 541212 |
|---|------------------------|------------------------|
| Max. cable capacitance at the safety outputs | | |
| No-load, PNOZ with relay contacts | 400 nF | 400 nF |
| PNOZmulti, PNOZelog, PSS | 400 nF | 400 nF |
| Max. inrush current impulse | | |
| Current pulse, A1 | 0,58 A | 0,58 A |
| Pulse duration, A1 | 1,0000 ms | 1,0000 ms |
| Max. overall cable resistance RI-max | | |
| Single-channel at UB DC | 1000 Ohm | 1000 Ohm |
| Inputs | 541211 | 541212 |
| Number | 2 | 2 |
| Voltage at inputs | 24 V DC | 24 V DC |
| Input current range | 5,0 mA | 5,0 mA |
| Potential isolation between input and voltage for the internal module bus | No | No |
| Semiconductor outputs | 541211 | 541212 |
| OSSD safety outputs | 2 | 2 |
| Signal outputs | 1 | 1 |
| Potential isolation from system voltage | No | No |
| Short circuit-proof | Yes | Yes |
| Times | 541211 | 541212 |
| Test pulse duration, safety outputs | 450 µs | 450 µs |
| Switch-on delay | | |
| After UB is applied | 1,0 s | 1,0 s |
| Inputs typ. | 13 ms | 13 ms |
| Inputs max. | 20 ms | 20 ms |
| Actuator typ. | 45 ms | 45 ms |
| Actuator max. | 120 ms | 120 ms |
| Delay-on de-energisation | | |
| Inputs typ. | 15 ms | 15 ms |
| Inputs max. | 20 ms | 20 ms |
| Actuator typ. | 40 ms | 40 ms |
| Actuator max. | 260 ms | 260 ms |
| Supply interruption before de-energisation in the input circuit | 10,0 ms | 10,0 ms |
| Simultaneity, channel 1 and 2 | ∞ | ∞ |
| Environmental data | 541211 | 541212 |
| Ambient temperature | | |
| In accordance with the standard | EN 60068-2-14 | EN 60068-2-14 |
| Temperature range | -25 - 70 °C | -25 - 70 °C |
| Storage temperature | | |
| In accordance with the standard | EN 60068-2-1/-2 | EN 60068-2-1/-2 |
| Temperature range | -25 - 70 °C | -25 - 70 °C |

| Environmental data | 541211 | 541212 |
|---|-------------------------------------|-------------------------------------|
| Climatic suitability | | |
| In accordance with the standard | EN 60068-2-78 | EN 60068-2-78 |
| Humidity | 93 % r. h. at 40 °C | 93 % r. h. at 40 °C |
| EMC | | |
| | EN 60947-5-3 | EN 60947-5-3 |
| Vibration | | |
| In accordance with the standard | EN 60947-5-2 | EN 60947-5-2 |
| Frequency | 10,0 - 55,0 Hz | 10,0 - 55,0 Hz |
| Amplitude | 1,00 mm | 1,00 mm |
| Shock stress | | |
| In accordance with the standard | EN 60947-5-2 | EN 60947-5-2 |
| Acceleration | 30g | 30g |
| Duration | 18 ms | 18 ms |
| Airgap creepage | | |
| Overvoltage category | III | III |
| Pollution degree | 3 | 3 |
| Rated insulation voltage | 75 V | 75 V |
| Rated impulse withstand voltage | 0,80 kV | 0,80 kV |
| Protection type | | |
| Housing | IP6K9K | IP6K9K |
| Mechanical data | 541211 | 541212 |
| Change of switching distance with fluctuations in temperature | +0,01mm/°C | +0,01mm/°C |
| Actuator 1 | PSEN cs4.1 | PSEN cs4.1 |
| Typ. hysteresis | 2,0 mm | 2,0 mm |
| Operating distances | | |
| Assured operating distance Sao | 8,0 mm | 8,0 mm |
| Typical operating distance So | 11,0 mm | 11,0 mm |
| Assured release distance Sar | 20,0 mm | 20,0 mm |
| Typical release distance Sr | 14,0 mm | 14,0 mm |
| Min. distance between safety switches | 100 mm | 100 mm |
| Connection type | 5 m cable | 10 m cable |
| Cable | LiYY 8 x 0.14 mm² | LiYY 8 x 0.14 mm² |
| Material | | |
| Top | PBT | PBT |
| Dimensions | | |
| Height | 37,0 mm | 37,0 mm |
| Width | 26,0 mm | 26,0 mm |
| Depth | 18,0 mm | 18,0 mm |
| Actuator dimensions | | |
| Height | 37,0 mm | 37,0 mm |
| Width | 18,0 mm | 18,0 mm |
| Depth | 18,0 mm | 18,0 mm |
| Weight of safety switch | 205 g | 380 g |
| Weight of actuator | 10 g | 10 g |
| Weight | 215 g | 390 g |

PSEN cs4.2 M12 and PSEN cs4.2p

| General | 541209 | 541210 |
|---|-----------------------------|-----------------------------|
| Approvals | CE, GOST, TÜV, cULus Listed | CE, GOST, TÜV, cULus Listed |
| Sensor's mode of operation | Transponder | Transponder |
| Electrical data | 541209 | 541210 |
| Supply voltage | | |
| Voltage | 24 V | 24 V |
| Type | DC | DC |
| Voltage tolerance | -20 %/+20 % | -20 %/+20 % |
| Output of external power supply (DC) | 1,0 W | 1,0 W |
| Max. switching frequency | 3 Hz | 3 Hz |
| Switching current per output | 100 mA | 100 mA |
| Breaking capacity per output | 2,4 W | 2,4 W |
| Max. cable capacitance at the safety outputs | | |
| No-load, PNOZ with relay contacts | 400 nF | 400 nF |
| PNOZmulti, PNOZelog, PSS | 400 nF | 400 nF |
| Max. inrush current impulse | | |
| Current pulse, A1 | 0,58 A | 0,58 A |
| Pulse duration, A1 | 1,0000 ms | 1,0000 ms |
| Max. overall cable resistance R _{I-max} | | |
| Single-channel at UB DC | 1000 Ohm | 1000 Ohm |
| Inputs | 541209 | 541210 |
| Number | 2 | 2 |
| Voltage at inputs | 24 V DC | 24 V DC |
| Input current range | 5,0 mA | 5,0 mA |
| Potential isolation between input and voltage for the internal module bus | No | No |
| Semiconductor outputs | 541209 | 541210 |
| OSSD safety outputs | 2 | 2 |
| Signal outputs | 1 | 1 |
| Potential isolation from system voltage | No | No |
| Short circuit-proof | Yes | Yes |
| Times | 541209 | 541210 |
| Test pulse duration, safety outputs | 450 µs | 450 µs |
| Switch-on delay | | |
| After UB is applied | 1,0 s | 1,0 s |
| Inputs typ. | 13 ms | 13 ms |
| Inputs max. | 20 ms | 20 ms |
| Actuator typ. | 45 ms | 45 ms |
| Actuator max. | 120 ms | 120 ms |

| Times | 541209 | 541210 |
|---|---------------------|---------------------|
| Delay-on de-energisation | | |
| Inputs typ. | 15 ms | 15 ms |
| Inputs max. | 20 ms | 20 ms |
| Actuator typ. | 40 ms | 40 ms |
| Actuator max. | 260 ms | 260 ms |
| Supply interruption before de-energisation in the input circuit | | |
| | 10,0 ms | 10,0 ms |
| Simultaneity, channel 1 and 2 | | |
| | ∞ | ∞ |
| Environmental data | 541209 | 541210 |
| Ambient temperature | | |
| In accordance with the standard | EN 60068-2-14 | EN 60068-2-14 |
| Temperature range | -25 - 70 °C | -25 - 70 °C |
| Storage temperature | | |
| In accordance with the standard | EN 60068-2-1/-2 | EN 60068-2-1/-2 |
| Temperature range | -25 - 70 °C | -25 - 70 °C |
| Climatic suitability | | |
| In accordance with the standard | EN 60068-2-78 | EN 60068-2-78 |
| Humidity | 93 % r. h. at 40 °C | 93 % r. h. at 40 °C |
| EMC | | |
| | EN 60947-5-3 | EN 60947-5-3 |
| Vibration | | |
| In accordance with the standard | EN 60947-5-2 | EN 60947-5-2 |
| Frequency | 10,0 - 55,0 Hz | 10,0 - 55,0 Hz |
| Amplitude | 1,00 mm | 1,00 mm |
| Shock stress | | |
| In accordance with the standard | EN 60947-5-2 | EN 60947-5-2 |
| Acceleration | 30g | 30g |
| Duration | 18 ms | 18 ms |
| Airgap creepage | | |
| Overvoltage category | III | III |
| Pollution degree | 3 | 3 |
| Rated insulation voltage | | |
| | 75 V | 75 V |
| Rated impulse withstand voltage | | |
| | 0,80 kV | 0,80 kV |
| Protection type | | |
| Housing | IP67 | IP67 |
| Mechanical data | 541209 | 541210 |
| Change of switching distance with fluctuations in temperature | | |
| | +0,01mm/°C | +0,01mm/°C |
| Actuator 1 | | |
| | PSEN cs4.1 | PSEN cs4.1 |
| Typ. hysteresis | | |
| | 2,0 mm | 2,0 mm |
| Operating distances | | |
| Assured operating distance Sao | 8,0 mm | 8,0 mm |
| Typical operating distance So | 11,0 mm | 11,0 mm |
| Assured release distance Sar | 20,0 mm | 20,0 mm |
| Typical release distance Sr | 14,0 mm | 14,0 mm |
| Min. distance between safety switches | | |
| | 100 mm | 100 mm |

| Mechanical data | 541209 | 541210 |
|-------------------------|-------------------------------------|-------------------------------------|
| Connection type | M12, 8-pin male connector | M8, 8-pin male connector |
| Cable | LiYY 8 x 0.14 mm² | LiYY 8 x 0.14 mm² |
| Material | | |
| Top | PBT | PBT |
| Dimensions | | |
| Height | 37,0 mm | 37,0 mm |
| Width | 26,0 mm | 26,0 mm |
| Depth | 18,0 mm | 18,0 mm |
| Actuator dimensions | | |
| Height | 37,0 mm | 37,0 mm |
| Width | 18,0 mm | 18,0 mm |
| Depth | 18,0 mm | 18,0 mm |
| Weight of safety switch | 40 g | 35 g |
| Weight of actuator | 10 g | 10 g |
| Weight | 50 g | 45 g |

The standards current on 2009-01 apply.

Safety characteristic data

| Operating mode | EN ISO 13849-1: 2008 | EN ISO 13849-1: 2008 | EN IEC 62061 | EN IEC 62061 | IEC 61511 | IEC 61511 | EN ISO 13849-1: 2008 |
|-----------------------|-----------------------------|-----------------------------|---------------------|------------------------------|------------------|------------------|-----------------------------|
| | PL | Category | SIL CL | PFH_D [1/h] | SIL | PFD | T_M [year] |
| 2-ch. OSSD | PL e | Cat. 4 | SIL CL 3 | 2,62E-09 | SIL 3 | 7,68E-05 | 20 |

All the units used within a safety function must be considered when calculating the safety characteristic data.



INFORMATION

A safety function's SIL/PL values are **not** identical to the SIL/PL values of the units that are used and may be different. We recommend that you use the PAScal software tool to calculate the safety function's SIL/PL values.

Order reference

| Product type | Features | Connection type | Order no. |
|---------------------------------------|------------------------------------|---------------------|-----------|
| PSEN cs4.2 M12/8-0.15m/ PSEN cs4.1 | Safety gate system, uniquely coded | 8-pin M12 connector | 541 209 |
| PSEN cs4.2p/PSEN cs4.1 | Safety gate system, uniquely coded | 8-pin M8 connector | 541 210 |
| PSEN cs4.2a/PSEN cs4.1 | Safety gate system, uniquely coded | Cable, 5 m | 541 211 |
| PSEN cs4.2b/PSEN cs4.1 | Safety gate system, uniquely coded | Cable, 10 m | 541 212 |
| PSEN cs4.2 M12/8-0.15m (switch) | Safety switch, uniquely coded | 8-pin M12 connector | 541 259 |
| PSEN cs4.2p (switch) | Safety switch, uniquely coded | 8-pin M8 connector | 541 260 |
| PSEN cs4.2a (switch) | Safety switch, uniquely coded | Cable, 5 m | 541 261 |
| PSEN cs4.2b (switch) | Safety switch, uniquely coded | Cable, 10 m | 541 262 |
| PSEN cs4.1 | Actuator, coded | | 541 180 |



► ...
In many countries we are represented by our subsidiaries and sales partners.

Please refer to our homepage for further details or contact our headquarters.

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