



Sensor technology PSEN®

pitz

- Safe proximity switches
- Safe rope pull switches
- Safety switches
- Safety bolts
- Safe hinge switches
- Safety gate systems
- Safety light beams/curtains/grids
- Camera-based protection and measuring systems
- Safe camera systems

Your safe solution: Sensor technology plus control system.

the spirit of safety



► Business activities

Components			
Sensor technology	<ul style="list-style-type: none"> ▶ Safe proximity switches ▶ Safe rope pull switches ▶ Safety switches ▶ Safety bolts ▶ Safe hinge switches ▶ Safety gate systems ▶ Safety light beams/curtains/grids ▶ Camera-based protection and measuring systems ▶ Safe camera systems 		
Control technology	<ul style="list-style-type: none"> ▶ Relays for electrical safety ▶ Relays for functional safety ▶ Configurable control systems ▶ Compact programmable control systems ▶ Modular programmable control systems ▶ Decentralized periphery 		
Networks	<ul style="list-style-type: none"> ▶ Network components ▶ Industrial communication 		
Drive technology	<ul style="list-style-type: none"> ▶ Motion control systems ▶ Servo amplifiers ▶ Motors 		
Operator and visualization systems	<ul style="list-style-type: none"> ▶ Control and signal devices ▶ Operator terminals 		
Software	<ul style="list-style-type: none"> ▶ System software and tools ▶ Application software 		
Systems			
Automation system PSS 4000	<ul style="list-style-type: none"> ▶ Control systems ▶ Real-time Ethernet ▶ Software platform 	 	
Services			
Consulting and engineering	<ul style="list-style-type: none"> ▶ Risk Assessment ▶ Safety Concept ▶ Safety Design ▶ System Implementation ▶ Safety Validation 	<ul style="list-style-type: none"> ▶ CE Marking ▶ International Compliance Services ▶ Plant Assessment ▶ Inspection of ESPE 	
Training	<ul style="list-style-type: none"> ▶ Seminars ▶ Courses 		



Support

Technical help round the clock!

Technical support is available from Pilz round the clock. This service is provided free of charge beyond standard business hours.

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▶ Pilz – Complete automation

Total customer proximity

Pilz has a tradition as a family-run company stretching back over 60 years. Real proximity to customers is visible in all areas, instilling confidence through individual consultation, total flexibility and reliable service. Worldwide, round the clock, in 24 subsidiaries and branch offices.

Benefit-oriented innovations

Our customer proximity is the basis for our innovative strength. We are always oriented towards current market requirements, which is why we can offer innovative automation solutions in every case. Market leadership in safe automation secures our leadership in research and technology. Customer proximity and innovation belong together and are mutually dependent.

All our experience and knowledge go into individual products and sophisticated system solutions.

- ▶ Sensor technology
- ▶ Control technology
- ▶ Networks
- ▶ Drive technology
- ▶ Operator and visualization systems
- ▶ Software
- ▶ Automation system PSS 4000
- ▶ Consulting and engineering
- ▶ Training

Overall solutions

Pilz is your solution supplier for all automation functions. Including standard control functions. Pilz developments protect man, machine and the environment. Our automation solutions incorporate our knowledge and experience from the stringent demands of safety technology, as well as the sum of our knowledge gained from over 60 years' experience of general automation technology.

the spirit of safety

With their knowledge, enthusiasm, creativity and courage to take the unconventional route, our staff have made us what we are today: one of the leading brands in automation technology.

More than 1 300 staff, each one of them an ambassador for safety, make sure that your company's most valuable asset – your staff – can work safely and free from injury.





Safe sensor technology PSEN®

Plant and machinery have to be efficient and economical. They are becoming ever more complex due to the high level of automation, but they are still expected to be easy for users to operate.

Safety sensors are absolutely essential for the highest level of cost effectiveness and process safety. They provide effective personal security and industrial safety.

Such a challenge makes modern safety sensors indispensable. Used in conjunction with Pilz safe control technology, PSEN sensor technology provides cost efficient protection for man and machine, in compliance with the standards – for your success.

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► The safe, complete solution – Sensor and co



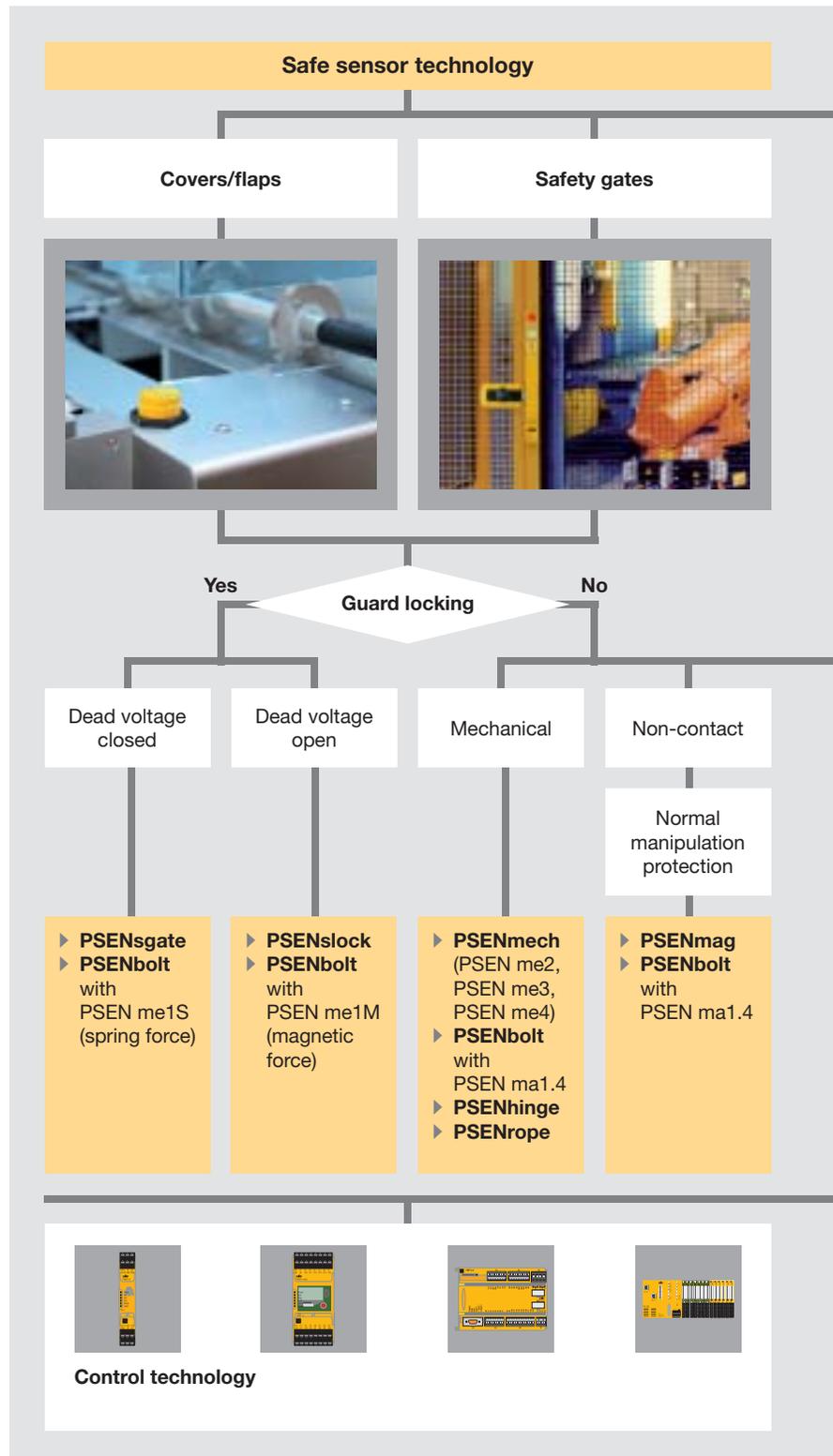
Pilz offers a universal concept for solutions that can be applied right across industry. Whether you need a single product or a total solution: with Pilz you will definitely find a solution for your automation function.

A ready-to-install system offers high potential savings in project configuration, design, documentation, purchasing and installation.

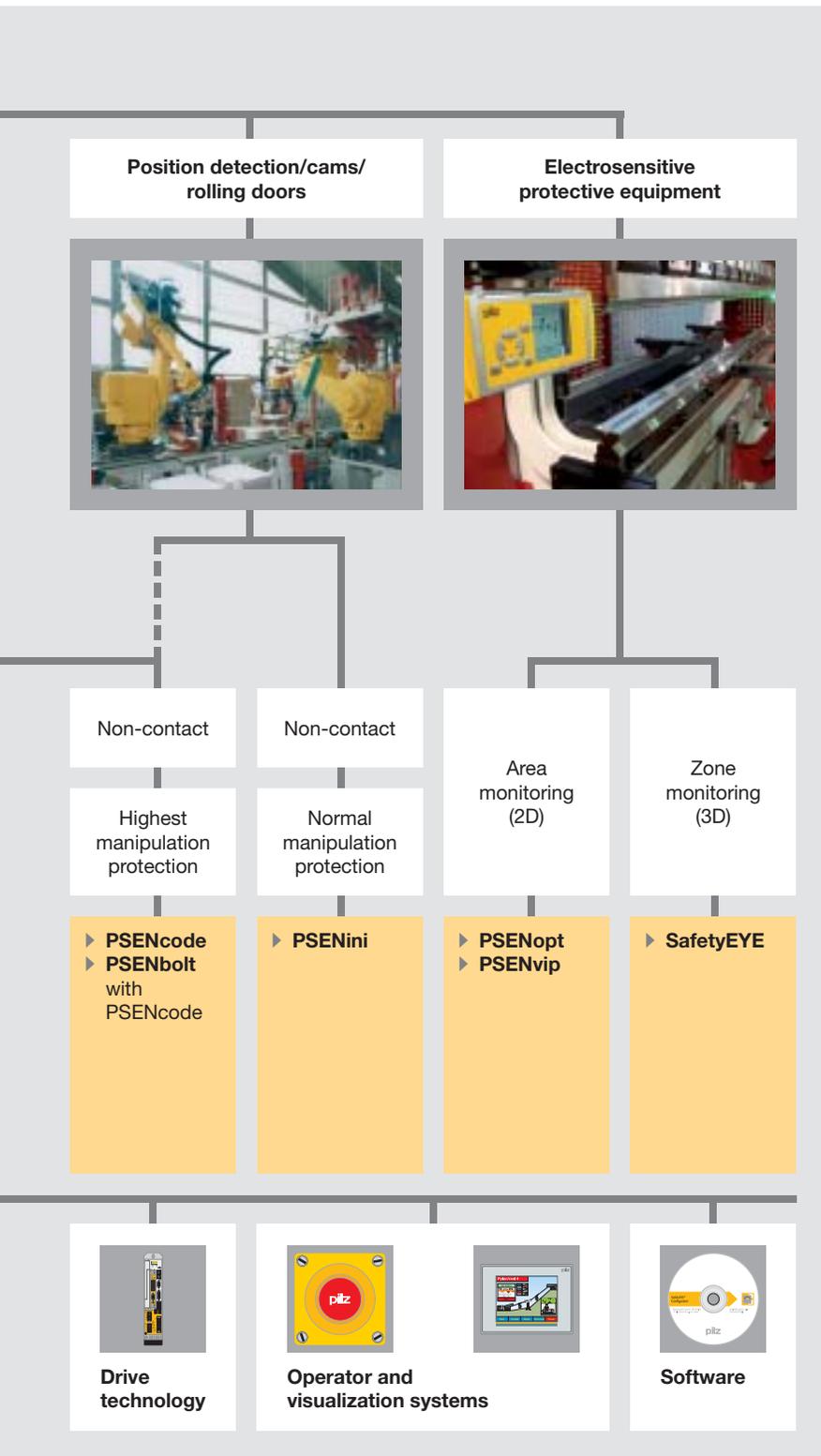
Enjoy the benefits of approved, coordinated, complete solutions, such as sensor plus control technology from Pilz. That's the only way to save time and money in the implementation of all components, including certified safety.

The optimum solution for every requirement

Our comprehensive product range covers the whole spectrum of safety requirements. Just assemble your own individual system solution, selecting the safety-related components that best suit your requirements.



Control technology from Pilz



Solution suppliers for safety and standard

Our sensor technology portfolio is supplemented by control technology, drive technology, operator and visualization systems, plus software.

Quality guarantee plus certified safety

Pilz is certified to EN ISO 9001. Our products comply with international standards and have been tested and approved by international certification bodies.

Services from the safety professionals

Pilz is there beside you, acting as your competent partner during all phases of the machine's life: from the risk assessment and production of safety concepts through to implementation and validation. We can also offer CE-marking and other compliance services.

Keep up-to-date on:

► Products

Webcode 0326

► Services

Webcode 0427

Dialog with Pilz:

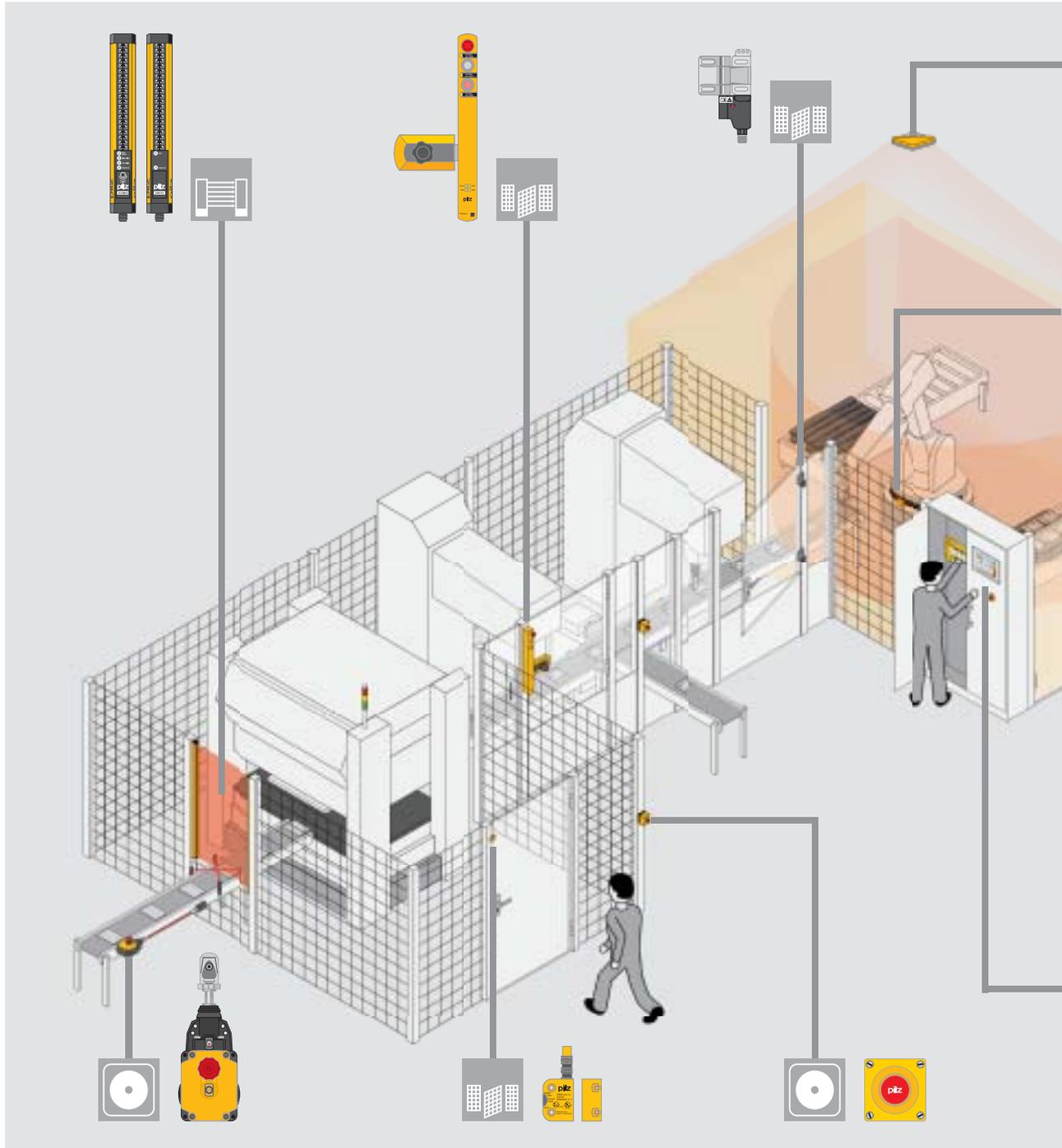
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Webcode 0627

Online information at www.pilz.com

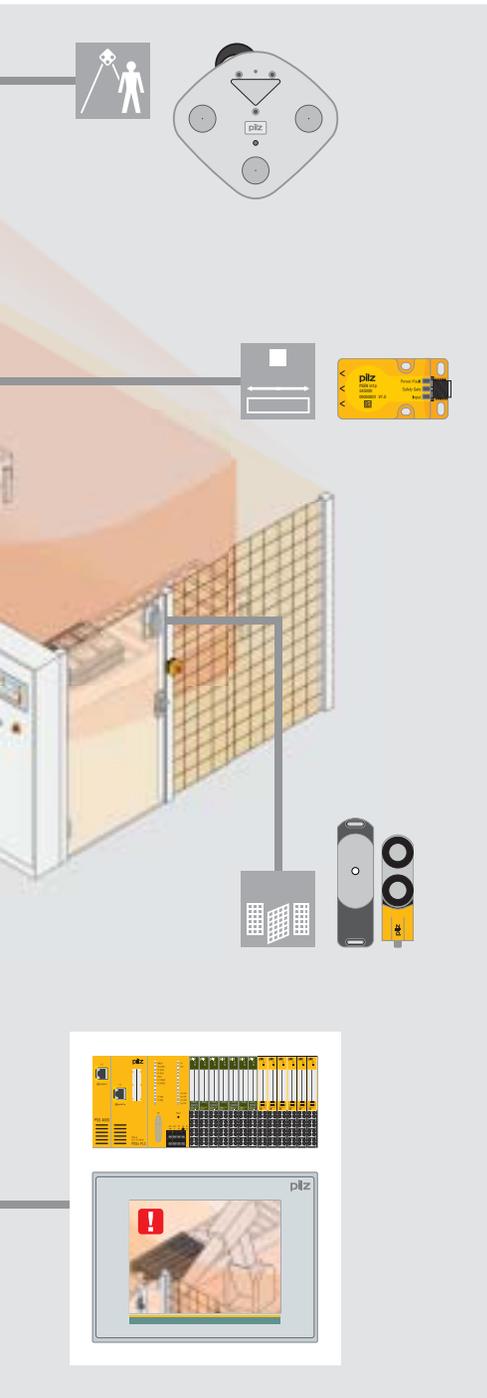


► The comprehensive product range for indivi



The complete, one-stop solution that's safe and economical: Sensor and control technology from Pilz.

dual solutions – Sensor technology PSEN®



The best solution for every requirement

When the protection of man, machine and the environment is at stake in an industrial scenario, plants need to be efficient: from commissioning right through to high availability when operation is running. Here Pilz can offer a safe, complete, one-stop solution.

Free choice – for your application

Our components for both sensor and control technology are totally compatible and have been approved as a safe, overall system. For your tailor-made solution, just select the appropriate safe sensors:

- ▶ Proximity switches – from page 8
- ▶ Rope pull switches – from page 10
- ▶ Switches – from page 12
- ▶ Bolts (incl. safety switches) – from page 28
- ▶ Hinge switches – from page 30
- ▶ Safety gate systems – from page 32
- ▶ Light beams/curtains/grids – from page 40
- ▶ Camera-based protection and measuring systems – from page 52
- ▶ Camera systems – from page 56

Protection for your investment

Our products are also compatible with products and interfaces from other manufacturers.

They fit perfectly into your plant environment and also enable Pilz components to be retrofitted to your plant or machine.

We place great value on performance, robustness, quality and ease of operation. With PSEN sensors, your investments are assured over many years because our systems are flexible to adapt to new requirements and are constantly undergoing development.

Keep up-to-date on:

▶ Sensor technology PSEN

Webcode 0219

▶ Control technology

Page 62

Webcode 0196

Online information at www.pilz.com



▶ Safe proximity switches PSENiNi



PSENi in1p

... safe monitoring without actuators

Safe proximity switches PSENiNi detect the approach of metallic objects without the use of contacts. They supply the necessary safe signals via positions and end limits. They can also generate the pulse for counting tasks or for speed detection.

Applications for PSENiNi:

- ▶ Cam
- ▶ Rolling doors
- ▶ Pulse generator for counting tasks or detecting rotational movements

High productivity and long service life

Compared with mechanical switches, PSENiNi provide the ideal prerequisites for high productivity and a long service life: non-contact, non-wearing operation, plus high switching frequencies and switching precision.

They are also insensitive to vibration, shock and humidity.

High savings potential in series

Take advantage of the high savings potential of PSENiNi, even with the very highest safety requirements, because PSENiNi can also be connected in series with safety switches PSENiCode and safety gate systems PSENiSlock and PSENiSgate.



Type code for PSENiNi

PSENi in1p

Product area
Pilz SENSors

Product range in – PSENiNi

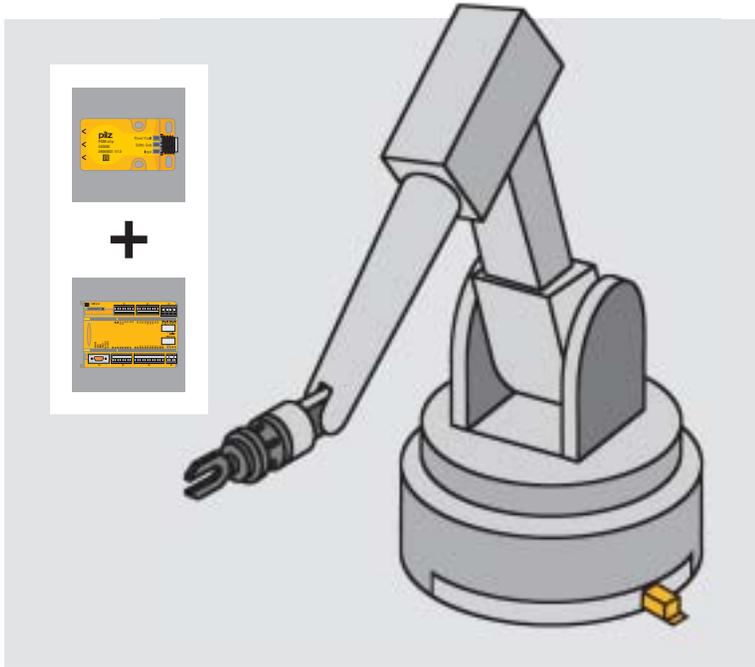
Operation
Non-contact,
inductive

Series

1 Series 1

Connection type

p Connector, M12, 8-pin
n Connector, M12, 5-pin



The optimum solution: Position monitoring on the cam with proximity switch PSENiNi and control system PNOZmulti.

Your benefits at a glance

- ▶ The safe, complete solution: we provide the appropriate evaluation device for PSENiNi
- ▶ Protection for your investment: PSENiNi are open to interfaces from other manufacturers and so can easily be retrofitted into your plant.
- ▶ Good diagnostics via LEDs
- ▶ Scalable and flexible: take advantage of the savings potential from series connection, even with the very highest safety requirements
- ▶ Simple project configuration, as the unit is highly versatile:
 - Insensitive to shock and vibration
 - With heavy soiling and strict hygiene regulations (IP67)



Further information and technical documentation on safe proximity switches PSENiNi:

Webcode 1953

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

Selection guide – Safe proximity switches PSENiNi



PSENi in1p

Type	Features
PSENi in1p Order number: 545 000	<ul style="list-style-type: none"> ▶ Highest level of safety up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1 ▶ Highest level of safety, even in series with PSENiNi, PSENiNlock, PSENiNsgate and PSENiNcode ▶ Typical operating distance: 15 mm ▶ Directions of actuation: 1 ▶ Approach directions: 5 ▶ Diagnostic interface: 3 LEDs (status of actuator, status of inputs, supply voltage/error) ▶ Connection type: <ul style="list-style-type: none"> - PSENi in1p: Connector, M12, 8-pin - PSENi in1n: Connector, M12, 5-pin ▶ Outputs: 2 safety outputs and 1 signal output ▶ Inputs: 2 safety inputs
PSENi in1n Order number: 545 003	



► Safe rope pull switches PSENrope



PSEN rs1.0



PSEN rs2.0

... greater safety on the production line

Whether on the assembly line or machine – where safety in the production area is concerned, safe rope pull switches PSENrope are a proven, reliable solution.

PSENrope switch off functional processes through manual operation. PSENrope provide maximum safety when it matters: the emergency stop function can be triggered at any point along the rope.

Optimum safety solution is as simple as that

PSENrope are flexible to use, easy to install and simple to operate. Whether it's a first-time installation or upgrade: safe rope pull switches PSENrope simplify installation with their sophisticated technical details.

Durable – even under extreme conditions

As the operating range of rope pull switches is limited only by the length of the rope, even large plants can be safeguarded using PSENrope.

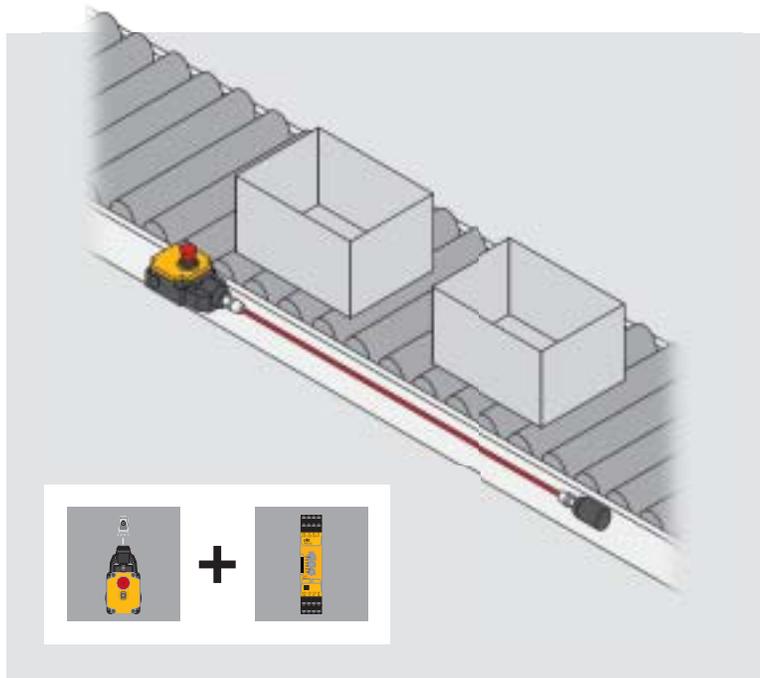
PSENrope provide a reliable service, even under extreme environmental conditions. This is mainly due to the rugged finish.



Type code for PSENrope

PSEN rs1.0-300

Product area Pilz SENsors	Housing material	Contacts	Max. spring force to tension the rope
Product range rs – PSENrope	1 Al die cast 2 Plastic	0 2 NC, 2 NO	175 175 N 300 300 N
Operation Mechanical			



The optimum solution: Rapid emergency stop with rope pull switch PSENrope in conjunction with safety relay PNOZsigma.

Your benefits at a glance

- ▶ High level of safety:
 - Safe from manipulation
 - Wiring space physically separate from mechanics
 - Dual function mushroom-type pushbutton: emergency stop and pull-to-release
- ▶ Whether it's a first-time installation or upgrade: PSENrope simplify installation
- ▶ Suitable for indoor and outdoor use thanks to rugged, hard-wearing metal or plastic housing



Technical documentation on safe rope pull switches PSENrope:

Webcode 6000

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

Selection guide – Safe rope pull switches PSENrope

Type	Housing material	Maximum rigging length	Order number
PSEN rs1.0-175	Al die cast	37.5 m	570301
PSEN rs1.0-300	Al die cast	75.0 m	570300
PSEN rs2.0-175	Plastic	37.5 m	570303
PSEN rs2.0-300	Plastic	75.0 m	570302



PSEN rs1.0-175



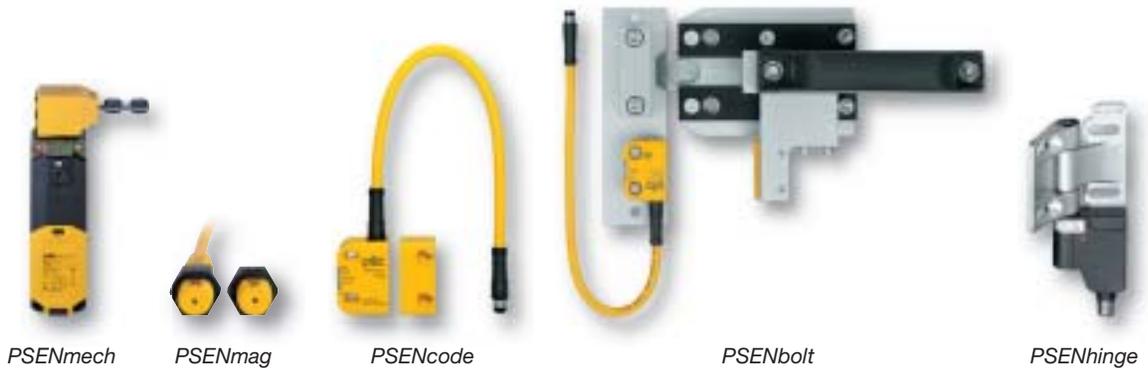
PSEN rs2.0-300

Common features

- ▶ Suitable for applications up to:
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Category 4 of EN 954-1 (with additional measures)
- ▶ Integrated emergency stop pushbutton
- ▶ Contacts: 2 NC, 2 NO
- ▶ Protection type: IP67
- ▶ Ambient temperature:
 - PSEN rs1.0: -30 ... +80 °C
 - PSEN rs2.0: -25 ... +70 °C
- ▶ Dimensions (H x W x D):
 - PSEN rs1.0: 237 x 90.0 x 88 mm
 - PSEN rs2.0: 294 x 42.5 x 88 mm



► Safety switches, safety bolts and safe hinge



... for safety gate and position monitoring

Pilz safety gate components are particularly economical in meeting the requirements of EN 1088. They are suitable for applications in mechanical engineering as well as in the packaging or pharmaceutical industry and many other sectors.

Safety switches – for safety gate and position monitoring at optimum cost

Safety switches are effective and optimized for cost. They are available with various designs and operating principles and can be used under difficult environmental conditions. Additional costs can be saved when connected in series.

Choose the optimum switch for your application:

- Mechanical – using increased extraction force on the actuator the PSENmech can prevent the safety gates from being opened unintentionally
- Non-contact, magnetic – the magnetic operation of the PSENmag is ideal for applications with the highest safety requirements
- Non-contact, coded – PSENcode offers the highest level of safety and manipulation protection with integrated evaluation in the smallest space possible



switches

Safety bolts – the robust, cost-effective solution for a rugged industrial environment

PSENbolt safety bolts are the ideal solution for safety gates that are difficult to adjust or are used in areas where safety gates are often opened and closed. What you get is a complete, economical package comprising safety switch, handle and bolt, for a rugged industrial environment.

Safe hinge switches – packaged hinge and safety switch

For hinged safeguards, safe hinge switches PSEnhinge are a safe complete solution, comprising hinge and safety switch. Designed as one functional and installation unit, they offer a high level of flexibility in installation, connection and adjustment.



Selection guide – Safety switches, safety bolts and safe hinge switches

Type	Safety switches PSENmech	Safety switches PSENmag	Safety switches PSENcode	Safety bolts PSENbolt	Hinge switches PSEnhinge
Operation	Mechanical	Non-contact, magnetic	Non-contact, coded	Mechanical	Mechanical
Application on guards					
Covers	◆	◆	◆	◆	
Flaps	◆	◆	◆	◆	◆
Hinged safety gates	◆	◆	◆	◆	◆
Sliding safety gates	◆	◆	◆	◆	
Rolling doors		◆	◆		
Position detection		◆	◆		
Manipulation protection	Normal	Normal	High	High ¹⁾	High
Guard locking	With/without	None	None	With ²⁾	None
IP protection type	Up to IP65/IP67	IP67/IP69K	IP67	³⁾	IP67
Harsh environmental conditions	Suitable	Very suitable	Very suitable	Very suitable	Very suitable

Keep up-to-date on safety switches, safety bolts and safe hinge switches:

Webcode 0307

Online information at www.pilz.com

¹⁾ When using non-contact, coded safety switches PSENcode

²⁾ When using mechanical safety switches PSEN me1 with guard locking

³⁾ Depending on the safety switch that is used



► Mechanical safety switches PSENmech



PSEN me1



PSEN me2



PSEN me3



PSEN me4

... and the gate stays closed

PSENmech mechanical safety switches are suitable for safe monitoring of a movable guard. They are triggered if the guards are opened and the hazardous machine movement is stopped via a Pilz evaluation device.

Guard locking until the risk is averted

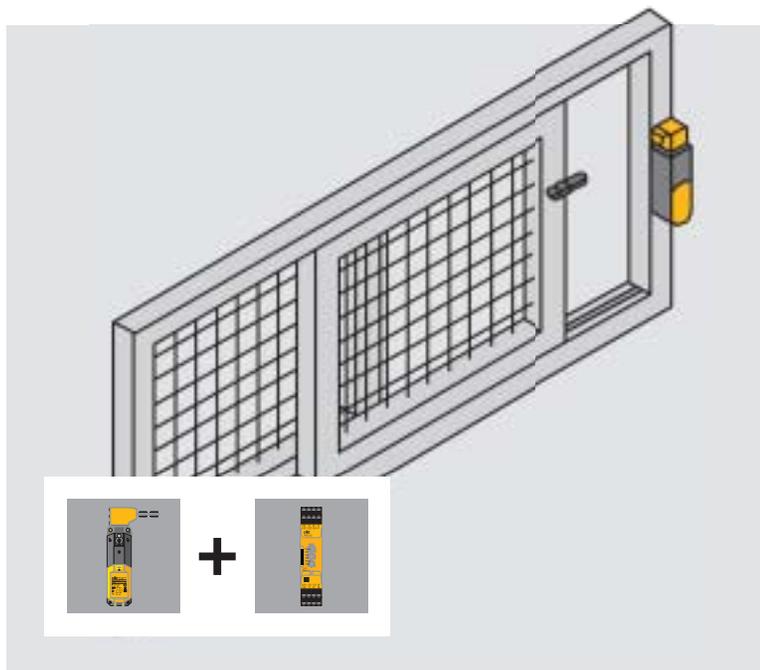
Using increased extraction force on the actuator, PSENmech safety switches prevent the safety gate from being opened unintentionally. They comply with the standard EN 1088 (protection against defeat) due to their coded actuators.

PSENmech safety switches with guard locking ensure that the safety gate is interlocked (guard locking) until the hazardous production process is complete. They can also prevent production from being interrupted as a result of unauthorized access.

Type code for PSENmech

PSEN me1.2S/1AR

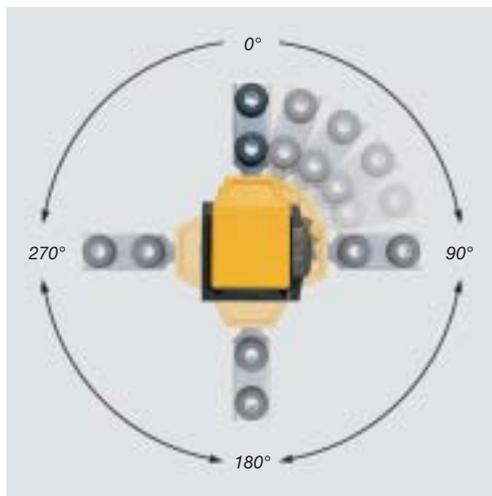
Product area Pilz SENSors	Product series	Series 1: Interlock principle/supply voltage	Series/actuator type
Product range me – PSENmech	1 With guard locking, dimensions: 170 x 42.5 x 51 mm	S Spring force, 24 VAC/DC .2S Spring force, 110, 230 VAC M Magnetic force, 24 VAC/DC	1AS Standard, Series 1 1AR Radius, Series 1
Operation Mechanical	2 Without guard locking, dimensions: 75 x 52 x 33 mm	Series 2: Contacts	2AS Standard, Series 2 and 3
	3 Without guard locking, dimensions: 90 x 52 x 33 mm	– 1 NC	2AR Radius, Series 2 and 3
	4 Without guard locking, dimensions: 100 x 31 x 30.5 mm	Series 3: Contacts	4AS Standard, Series 4
		– 1 NC, 1 NO .1 2 NC .2 2 NC, 1 NO	
		Series 4: Contacts/extraction force	
		– 1 NC, 1 NO .01 1 NC, 1 NO, 50 N extraction force .1 2 NC .11 2 NC, 50 N extraction force .2 2 NC, 1 NO .21 2 NC, 1 NO, 50 N extraction force	



The optimum solution: Monitoring sliding gates using the PSENmech safety switch and PNOZsigma safety relay.

Your benefits at a glance

- ▶ Safe, complete solution in conjunction with Pilz evaluation devices for applications with high safety requirements
- ▶ Flexibility and speed during installation due to:
 - Compact design
 - Radius or standard actuator
 - Up to four horizontal and four vertical approach directions
 - Innovative connection technology
- ▶ Long product service life due to the robust design and high mechanical load capacity
- ▶ Suitable for a variety of applications due to the wide operating temperature range
- ▶ Housing is insensitive to dirt, dust-tight and waterproof



Universal actuation directions provide flexibility during installation.



Keep up-to-date on mechanical safety switches PSENmech:

Webcode 0314

Online information at www.pilz.com



► Selection guide – PSENmech

Common features

- ▶ Safety switches for monitoring the position of movable guards in accordance with EN 60947-5-3
- ▶ Suitable for applications up to:
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Category 4 of EN 954-1 (with additional measures)
- ▶ Can be connected to all Pilz evaluation devices
- ▶ Directions of actuation:
 - PSEN me1: eight
 - PSEN me2: four
 - PSEN me3: four
 - PSEN me4: eight
- ▶ Contact load PSEN me1:
 - Utilization category: AC-15: 230 V/2.5 A
 - Conv. thermal current: 2.5 A
- ▶ Dimensions (H x W x D, excl. actuator):
 - PSEN me1: 170 x 42.5 x 51 mm
 - PSEN me2: 75 x 52 x 33 mm
 - PSEN me3: 90 x 52 x 33 mm
 - PSEN me4: 100 x 31 x 30.5 mm
- ▶ Ambient temperature:
 - PSEN me1: -25 ... +70°C/-13 ... +158 F
 - PSEN me2, me3, me4: -30 ... +80°C/-22 ... +176 F
- ▶ Connection terminals:
 - PSEN me1: Spring-loaded terminals
 - PSEN me2, me3, me4: Screw terminals
- ▶ Protection type:
 - PSEN me1: IP67
 - PSEN me2, me3, me4: IP65
- ▶ Plastic-bodied design

Mechanical safety switches PSENmech with separate actuator and



PSEN me1S/1AS

Type	Interlock principle
PSEN me1S/1AS	Spring force
PSEN me1.2S/1AS	Spring force
PSEN me1S/1AR	Spring force
PSEN me1.2S/1AR	Spring force
PSEN me1M/1AS	Magnetic powered
PSEN me1M/1AR	Magnetic powered

Mechanical safety switches PSENmech with separate actuator, PSEN



PSEN me2/2AS



PSEN me3/2AR



PSEN me4/4AS

Type	Actuator type
PSEN me2/2AS	Standard
PSEN me2/2AR	Radius
PSEN me3/2AS	Standard
PSEN me3/2AR	Radius
PSEN me3.1/2AS	Standard
PSEN me3.1/2AR	Radius
PSEN me3.2/2AS	Standard
PSEN me3.2/2AR	Radius
PSEN me4/4AS	Standard
PSEN me4.01/4AS	Standard
PSEN me4.1/4AS	Standard
PSEN me4.11/4AS	Standard
PSEN me4.2/4AS	Standard
PSEN me4.21/4AS	Standard

guard locking, PSEN me1 series

Actuator type	Contacts	Supply voltage	Auxiliary release	Holding force	Extraction force	Order number ¹⁾
Standard		24 VAC/DC	◆	1,500 N	min. 27 N	570000
Standard		110 ... 230 VAC	◆	1,500 N	min. 27 N	570006
Radius		24 VAC/DC	◆	1,500 N	min. 27 N	570001
Radius		110 ... 230 VAC	◆	1,500 N	min. 27 N	570007
Standard		24 VAC/DC		1,500 N	min. 27 N	570004
Radius		24 VAC/DC		1,500 N	min. 27 N	570005



me2, PSEN me3, PSEN me4 series

	Contacts	Contact load		Extraction force	Order number ¹⁾
		Utilization category AC-15	Conventional thermal current		
		240 V/1.5 A	5 A	10 N	570200
		240 V/1.5 A	5 A	10 N	570201
		240 V/3.0 A	10 A	10 N	570210
		240 V/3.0 A	10 A	10 N	570212
		240 V/3.0 A	10 A	10 N	570220
		240 V/3.0 A	10 A	10 N	570222
		240 V/1.5 A	5 A	10 N	570230
		240 V/1.5 A	5 A	10 N	570232
		240 V/3.0 A	10 A	10 N	570240
		240 V/3.0 A	10 A	50 N	570241
		240 V/3.0 A	10 A	10 N	570245
		240 V/3.0 A	10 A	50 N	570246
		240 V/1.5 A	5 A	10 N	570251
		240 V/1.5 A	5 A	50 N	570250

Technical documentation on mechanical safety switches PSENmech:

Webcode 0314

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

¹⁾ Order number for safety switch and actuator (one unit)

★ Recommended type for the majority of applications



► Non-contact magnetic safety switches PSEN



PSEN ma1.4a



PSEN ma1.4p



PSEN 1.2p



PSEN ma1.3a

... highest level of safety at a low price

Non-contact, magnetic safety switches are used to monitor the position of guards in accordance with EN 60947-5-3 and also for general position monitoring.

PSENmag gives you a cost-optimized system comprising Pilz sensor and control system, including approval.

Maximum freedom for installation

The compact design of the PSENmag saves installation space. Connector and cable for all mounting and approach directions, plus an assured operating distance of 3 or 8/10 mm, enable flexible assembly and rapid, simple installation.

High requirements – implemented economically

PSENmag switches can be used where a high category is specified, where there is heavy soiling or where strict hygiene regulations need to be met.

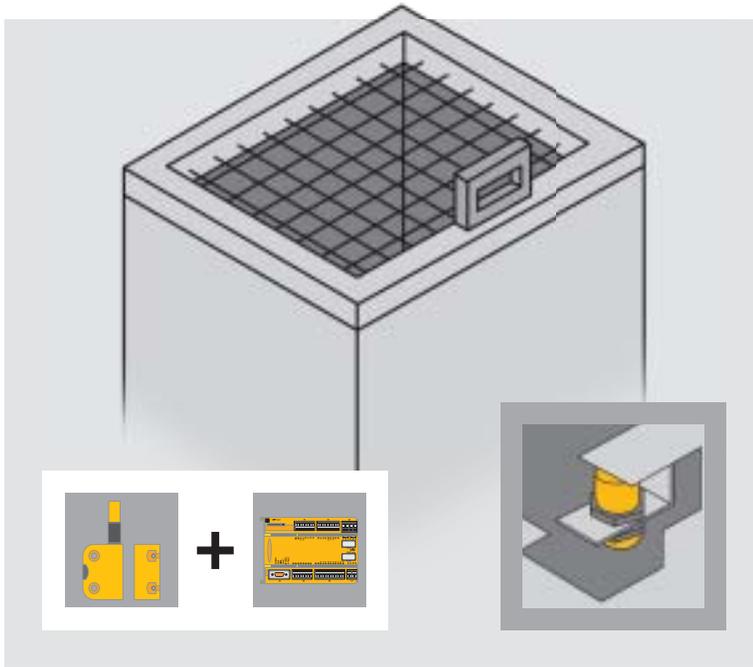
The low wear and tear of the rugged, fully encapsulated housing, in conjunction with the non-contact, magnetic operating principle, guarantees a long product service life.

Type code for PSENmag

PSEN ma1.4a-50

Product area Pilz SENSors	Contacts	Design	Connection type	Operating distance	LED/ATEX/Series connection
Product range ma – PSENmag Operation Non-contact, magnetic	1 NO/NO 2 NC/NO	1 Square, dimensions: 36 x 26 x 13 mm 2 Round, M30 3 Round, M12 with signal contact 4 Square, dimensions: 37 x 26.4 x 18 mm	a Cable, 5 m b Cable, 10 m n Connector, M12, 5-pin p Connector, M8: - 4-pin - 8-pin	1 3 mm 2 8 mm/12 mm ¹⁾ 3 6 mm 4 4 mm 5 3 mm/10 mm ¹⁾	0 Without LED 1 With LED 2 Only with PSEN ix1 ²⁾ 3 ATEX, without LED 4 ATEX, with LED 5 ATEX, without LED, only with PSEN ix1 ²⁾ 6 ATEX, without LED 7 Only with PSEN ix1 ²⁾ 8 ATEX, with LED, only with PSEN ix1 ²⁾ 9 Special types

mag



The optimum solution: Monitoring a cover using PSEnmag safety switches and the control system PNOZmulti.

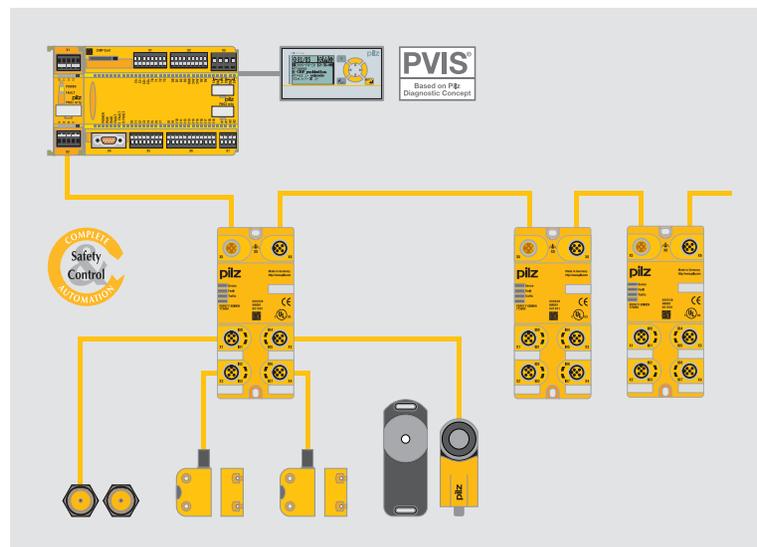
Your benefits at a glance

- ▶ Safe, complete solution with BG certification for the highest category applications
- ▶ Economical thanks to:
 - Space and time-saving installation
 - Series connection
 - Long product service life as it is mechanically non-wearing
 - User-friendly diagnostics via an additional signal contact and LED
- ▶ Insensitive to shock and vibration
- ▶ High level of safety, even in potentially explosive areas

Highest level of safety in series

Save time and costs! The decentralized periphery device PDP67 can be used to connect PSEnmag and other sensors to the configurable control system PNOZmulti. Short, standard plug-in sensor cables provide fast, economical installation.

The IP67 housing also saves you space in the control cabinet. The high diagnostic capability of the PDP67 in conjunction with the configurable control system PNOZmulti provides efficient operation in an emergency.



Keep up-to-date on non-contact, magnetic safety switches PSEnmag:

Webcode 0357

Online information at www.pilz.com



► Selection guide – PSENmag

Non-contact magnetic safety switches PSENmag – Square design

Common features

- ▶ Safety switches for monitoring the position of movable guards in accordance with EN 60947-5-3
- ▶ Approved for applications up to Performance Level e of EN ISO 13849-1 and SIL CL 3 of IEC 62061 or up to Category 4 of EN 954-1 in conjunction with:
 - Safety relays PNOZsigma: PNOZ s3, PNOZ s4, PNOZ s5
 - Configurable safety systems PNOZmulti: All evaluation devices
 - Programmable control systems PSS, with or without SafetyBUS p interface: All evaluation devices
- ▶ Connected directly, via PDP67 or via the interface PSEN ix1, see accessories, page 66
- ▶ Protection type:
 - Cable versions: IP69K
 - Connector versions: IP67



PSEN ma1.4a



PSEN ma1.4p



PSEN 1.1p



Type	Assured switching distance
PSEN ma1.4a-50/PSEN ma1.4-10	10 mm
PSEN ma1.4a-51/PSEN ma1.4-10	10 mm
PSEN ma1.4a-52/PSEN ma1.4-10	10 mm
PSEN ma1.4p-50/PSEN ma1.4-10	10 mm
PSEN ma1.4p-51/PSEN ma1.4-10	10 mm
PSEN ma1.4p-52/PSEN ma1.4-10	10 mm
PSEN ma1.4n-50/PSEN ma1.4-10	10 mm
PSEN ma1.4n-51/PSEN ma1.4-10	10 mm
PSEN 1.1a-20/PSEN 1.1-20	8 mm
PSEN 1.1a-22/PSEN 1.1-20	8 mm
PSEN 2.1a-20/PSEN 2.1-20	8 mm
PSEN 2.1b-20/PSEN 2.1-20	8 mm
PSEN 1.1p-20/PSEN 1.1-20	8 mm
PSEN 1.1p-22/PSEN 1.1-20	8 mm
PSEN 2.1p-20/PSEN 2.1-20	8 mm
PSEN 2.1p-21/PSEN 2.1-20	8 mm
PSEN 1.1b-23/PSEN 1.1-20	8 mm
PSEN 1.1p-23/PSEN 1.1-20	8 mm
PSEN 1.1p-25/PSEN 1.1-20	8 mm
PSEN ma1.4a-50/PSEN ma1.4-03	3 mm
PSEN ma1.4a-51/PSEN ma1.4-03	3 mm
PSEN ma1.4a-52/PSEN ma1.4-03	3 mm
PSEN ma1.4p-50/PSEN ma1.4-03	3 mm
PSEN ma1.4p-51/PSEN ma1.4-03	3 mm
PSEN ma1.4p-52/PSEN ma1.4-03	3 mm
PSEN ma1.4n-50/PSEN ma1.4-03	3 mm
PSEN ma1.4n-51/PSEN ma1.4-03	3 mm
PSEN 1.1p-10/PSEN 1.1-10	3 mm
PSEN 1.1p-12/PSEN 1.1-10	3 mm

Contacts	Single connection	Series via	LED	ATEX	Connection type Cable/connector	Order number ¹⁾
	◆	-			5 m	506322
	◆	-	◆		5 m	506326
		PSEN ix1			5 m	506323
	◆	-			M8, 4-pin, pigtail, 25 cm	506334
	◆	-	◆		M8, 8-pin, pigtail, 25 cm	506338
		PSEN ix1			M8, 4-pin, pigtail, 25 cm	506335
	◆	PDP67			M12, 5-pin, pigtail, 25 cm	506342
	◆	PDP67	◆		M12, 5-pin, pigtail, 25 cm	506343
	◆	-			5 m	504226
		PSEN ix1			5 m	504228
	◆	-			5 m	502226
	◆	-			10 m	502227
	◆	-			M8, 4-pin	504220
		PSEN ix1			M8, 4-pin	504222
	◆	-			M8, 4-pin	502220
	◆	-	◆		M8, 4-pin	502221
	◆	-		◆	10 m	504250
	◆	-		◆	M8, 4-pin	504223
		PSEN ix1		◆	M8, 4-pin	504225
	◆	-			5 m	506320
	◆	-	◆		5 m	506324
		PSEN ix1			5 m	506321
	◆	-			M8, 4-pin, pigtail, 25 cm	506332
	◆	-	◆		M8, 8-pin, pigtail, 25 cm	506336
		PSEN ix1			M8, 4-pin, pigtail, 25 cm	506333
	◆	PDP67			M12, 5-pin, pigtail, 25 cm	506340
	◆	PDP67			M12, 5-pin, pigtail, 25 cm	506341
	◆	-			M8, 4-pin	504210
		PSEN ix1			M8, 4-pin	504212



Technical documentation on non-contact, magnetic safety switches PSENmag:

Webcode 0357

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

¹⁾ Order number for safety switch and actuator (one unit)

★ Recommended type for the majority of applications



▶ Selection guide – PSENmag

Non-contact magnetic safety switches PSENmag – Round design

Common features

- ▶ Safety switches for monitoring the position of movable guards in accordance with EN 60947-5-3
- ▶ Approved for safe applications up to Performance Level e of EN ISO 13849-1 and SIL CL 3 of IEC 62061 or up to Category 4 of EN 954-1 in conjunction with:
 - Configurable safety systems PNOZmulti: All evaluation devices
 - Programmable control systems PSS/SafetyBUS p: All, in conjunction with standard function block SB066 for safety gate monitoring
- ▶ Connected directly, via PDP67 or via the interface PSEN ix1, see accessories, page 66
- ▶ Protection type:
 - Cable versions: IP69K
 - Connector versions: IP67



PSEN ma1.3



PSEN 1.2p



Type	Operating distance
▶ M12 housing	
PSEN ma1.3a-20/PSEN ma1.3-08	8 mm
PSEN ma1.3a-22/PSEN ma1.3-08	8 mm
PSEN ma1.3b-20/PSEN ma1.3-08	8 mm
PSEN ma1.3b-22/PSEN ma1.3-08	8 mm
PSEN ma1.3p-20/PSEN ma1.3-08	8 mm
PSEN ma1.3n-20/PSEN ma1.3-08	8 mm
PSEN ma1.3p-22/PSEN ma1.3-08	8 mm
PSEN ma1.3a-20/PSEN ma1.3-12	12 mm
PSEN ma1.3a-22/PSEN ma1.3-12	12 mm
PSEN ma1.3b-20/PSEN ma1.3-12	12 mm
PSEN ma1.3b-22/PSEN ma1.3-12	12 mm
PSEN ma1.3p-20/PSEN ma1.3-12	12 mm
PSEN ma1.3n-20/PSEN ma1.3-12	12 mm
PSEN ma1.3p-22/PSEN ma1.3-12	12 mm
PSEN ma1.3b-23/PSEN ma1.3-08	8 mm
PSEN ma1.3b-25/PSEN ma1.3-08	8 mm
PSEN ma1.3b-23/PSEN ma1.3-12	12 mm
PSEN ma1.3b-25/PSEN ma1.3-12	12 mm
▶ M30 housing	
PSEN 1.2p-20	8 mm
PSEN 1.2p-22	8 mm
PSEN 2.2p-20	8 mm
PSEN 2.2p-21	8 mm
PSEN 1.2p-23	8 mm
PSEN 1.2p-25	8 mm
PSEN 2.2p-24	8 mm

Contacts	Single connection	Series via	LED	ATEX	Connection type Cable/connector	Order number ¹⁾
	◆	-	◆		5 m	506220
		PSEN ix1	◆		5 m	506221
	◆	-	◆		10 m	506222
		PSEN ix1	◆		10 m	506223
	◆	-	◆		M8, 8-pin, pigtail, 25 cm	506226
	◆	PDP67	◆		M12, 5-pin, pigtail, 25 cm	506228
		PSEN ix1	◆		M8, 8-pin, pigtail, 25 cm	506227
	◆	-	◆		5 m	506230
		PSEN ix1	◆		5 m	506231
	◆	-	◆		10 m	506232
		PSEN ix1	◆		10 m	506233
	◆	-	◆		M8, 8-pin, pigtail, 25 cm	506236
	◆	PDP67	◆		M12, 5-pin, pigtail, 25 cm	506238
		PSEN ix1	◆		M8, 8-pin, pigtail, 25 cm	506237
	◆	-	◆	◆	10 m	506224
		PSEN ix1	◆	◆	10 m	506225
	◆	-	◆	◆	10 m	506234
		PSEN ix1	◆	◆	10 m	506235
	◆	-			M8, 4-pin	505220
		PSEN ix1			M8, 4-pin	505222
	◆	-			M8, 4-pin	503220
	◆	-	◆		M8, 4-pin	503221
	◆	-		◆	M8, 4-pin	505223
		PSEN ix1		◆	M8, 4-pin	505225
	◆	-	◆	◆	M8, 4-pin	503224



Technical documentation on non-contact, magnetic safety switches PSENmag:

Webcode 0357

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

¹⁾ Order number for safety switch and actuator (one unit)

★ Recommended type for the majority of applications



▶ Non-contact, coded safety switches PSEN



PSEN cs3.1a



PSEN cs4.1p



PSEN cs1.1p

... Highest level of manipulation protection in the smallest space

PSENcode are used to monitor the position of guards in accordance with EN 60947-5-3 and also for general position monitoring.

With PSENcode you have the smallest, coded safety switch with integrated evaluation and built-in manipulation protection.

PSENcode achieves the highest level of manipulation protection by transmitting a unique code from the actuator to the switch (key lock principle).

Simple implementation saves time and money

Save costs, from project configuration through to commissioning: Used in conjunction with Pilz control technology, PSENcode provide a complete, co-ordinated solution that's economical and safe.

Thanks to integrated evaluation and standard interfaces, PSENcode are open to products from other manufacturers. They fit perfectly into your environment and can be used to upgrade your plant.

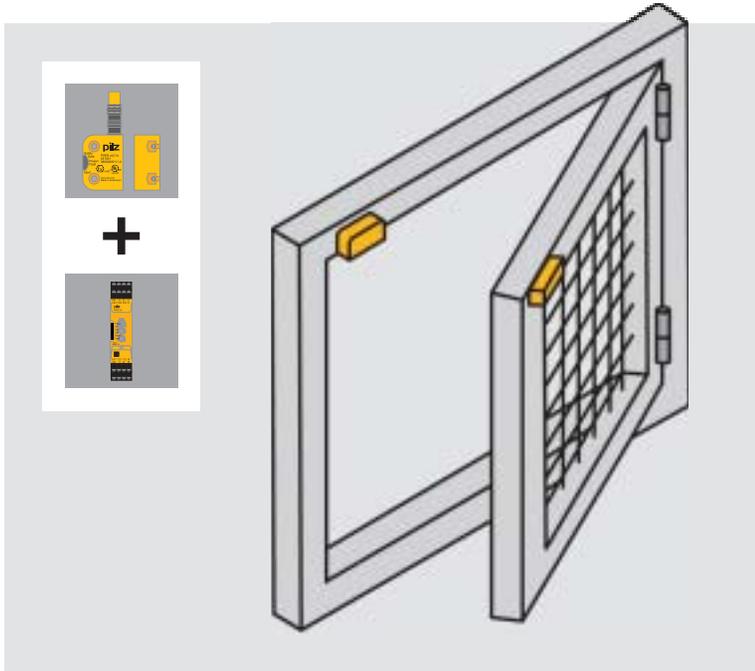


Type code for PSENcode

PSEN cs2.13p

Product area Pilz SENSors	Coding/design	ATEX	Connection/design
Product range cs – PSENcode Operation <ul style="list-style-type: none"> ▶ Non-contact, coded ▶ Transponder (RFID) ▶ With safe semiconductor outputs 	1.1 Coded, large design 2.1 Fully coded, large design 2.2 Unique, fully coded, large design 3.1 Coded, compact design 4.1 Fully coded, compact design 4.2 Unique, fully coded, compact design	_ Without ATEX 3 With ATEX	a ▶ Large design: Not available ▶ Compact design: Cable, 5 m b ▶ Large design: Not available ▶ Compact design: Cable, 10 m n ▶ Large design: Connector, M12, 5-pin ▶ Compact design: Connector, M12, 5-pin p ▶ Large design: Connector, M12, 8-pin ▶ Compact design: Connector, M8, 8-pin

code



The optimum solution: Monitoring swing gates using the PSENcode safety switch and PNOZsigma safety relay.

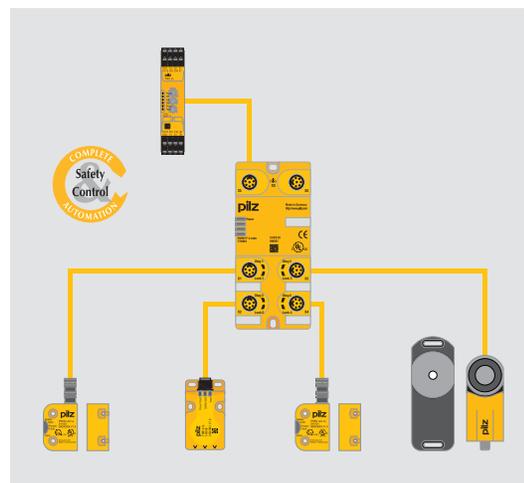
Your benefits at a glance

- ▶ Highest level of safety and plant availability
- ▶ Highest level of manipulation protection in the smallest space
- ▶ System comprises sensor and control system and is optimized for monitoring safeguards
- ▶ Simple project configuration, as the unit is highly versatile:
 - Insensitive to shock and vibration
 - Can be used with heavy soiling and strict hygiene regulations (IP67)
 - Flexible installation
- ▶ Economical:
 - Space-saving installation due to the compact housing
 - Highest level of safety, even in series with PSENcode, PSENIini, PSENslock and PSENsgate

Highest level of safety in series

Save time and costs! The PSENcode can be connected to PNOZsigma safety relays and all other control systems via the passive junction PDP67. This complete solution can be used for applications up to PL e of EN ISO 13849-1 and up to SIL CL 3 of EN/IEC 62061.

Short, standard plug-in sensor cables provide fast, economical installation. The IP67 housing also saves you space in the control cabinet.



Keep up-to-date on non-contact, coded safety switches PSENcode:

Webcode 0365

Online information at www.pitz.com



▶ Selection guide – PSENcode

Selection guide – Non-contact coded safety switches PSENcode

Common features

- ▶ Safety switches for monitoring the position of movable guards
- ▶ Approved for applications up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1
- ▶ Integrated evaluation and standard interfaces for connection to evaluation devices from Pilz or other manufacturers
- ▶ Series connection with PSENcode, PSEnini, PSEnlock, PSEnsgate via PDP67 approved up to PL e of EN ISO 13849-1, up to SIL CL 3 of EN/IEC 62061 or up to Cat. 4 of EN 954-1
- ▶ Protection type IP67/IP69K
- ▶ Diagnostic interface with 3 LEDs
- ▶ Typical operating distance:
 - PSEN cs1/PSEN cs2: 21 mm
 - PSEN cs3/PSEN cs4: 10 mm
- ▶ Outputs: 2 safety outputs and 1 signal output
- ▶ Inputs: 2 safety inputs



PSEN cs3.1a



PSEN cs4.1p



PSEN cs1.1p

Type	Type of coding
PSEN cs3.1a/PSEN cs3.1	Coded ²⁾
PSEN cs3.1b/PSEN cs3.1	Coded ²⁾
PSEN cs3.1p/PSEN cs3.1	Coded ²⁾
PSEN cs3.1n/PSEN cs3.1	Coded ²⁾
PSEN cs3.1 M12/8-1.5m	Coded ²⁾
PSEN cs4.1a/PSEN cs4.1	Fully coded ³⁾
PSEN cs4.1b/PSEN cs4.1	Fully coded ³⁾
PSEN cs4.1p/PSEN cs4.1	Fully coded ³⁾
PSEN cs4.1n/PSEN cs4.1	Fully coded ³⁾
PSEN cs4.2a/PSEN cs4.1	Unique, fully coded ⁴⁾
PSEN cs4.2b/PSEN cs4.1	Unique, fully coded ⁴⁾
PSEN cs4.2p/PSEN cs4.1	Unique, fully coded ⁴⁾
PSEN cs4.2n/PSEN cs4.1	Unique, fully coded ⁴⁾
PSEN cs1.1p/PSEN cs1.1	Coded ²⁾
PSEN cs2.1p/PSEN cs2.1	Fully coded ³⁾
PSEN cs2.2p/PSEN cs2.1	Unique, fully coded ⁴⁾
PSEN cs1.13p/PSEN cs1.1	Coded ²⁾
PSEN cs2.13p/PSEN cs2.1	Fully coded ³⁾

Size	ATEX	Connection type	Number of directions		Order number ¹⁾
			actuation	approach	
Compact		Cable, 5 m	1	4	541 001
Compact		Cable, 10 m	1	4	541 002
Compact		Connector, M8, 8-pin, pigtail, 25 cm	1	4	541 000
Compact		Connector, M12, 5-pin, pigtail, 25 cm	1	4	541 003
Compact		Connector, M12, 8-pin, pigtail, 150 cm	1	4	541 004
Compact		Cable, 5 m	1	4	541 101
Compact		Cable, 10 m	1	4	541 102
Compact		Connector, M8, 8-pin, pigtail, 25 cm	1	4	541 100
Compact		Connector, M12, 5-pin, pigtail, 25 cm	1	4	541 103
Compact		Cable, 5 m	1	4	541 201
Compact		Cable, 10 m	1	4	541 202
Compact		Connector, M8, 8-pin, pigtail, 25 cm	1	4	541 200
Compact		Connector, M12, 5-pin, pigtail, 25 cm	1	4	541 203
Large		Connector, M12, 8-pin	5	4	540 000
Large		Connector, M12, 8-pin	5	4	540 100
Large		Connector, M12, 8-pin	5	4	540 200
Large	◆	Connector, M12, 8-pin	5	4	540 005
Large	◆	Connector, M12, 8-pin	5	4	540 105

¹⁾ Order number for safety switch and actuator (one unit)

²⁾ Coded = Switch accepts any PSENcode actuator

³⁾ Fully coded = Switch accepts only one PSENcode actuator, teach-in up to 8 times

⁴⁾ Unique, fully coded = Switch accepts only one PSENcode actuator, no teach-in facility

★ Recommended type for the majority of applications



Technical documentation on non-contact, coded safety switches PSENcode:

Webcode 0365

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com



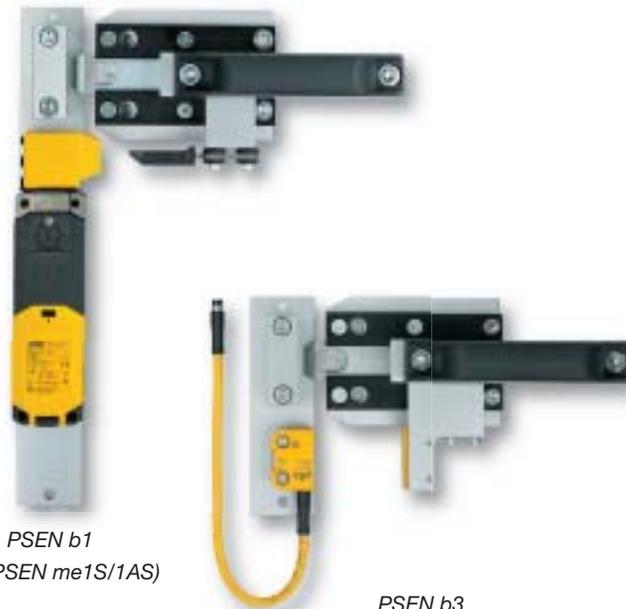
► Safety bolts PSEnbolt



with PSEN me1



with PSENcode



PSEN b1
(with PSEN me1S/1AS)

PSEN b3
(with PSEN cs4.1p)

... for safety gates in a rugged industrial environment

Save the cost of expensive in-house engineering! In conjunction with Pilz safe control technology, PSEnbolt safety bolts offer you the safe, complete solution comprising safety switch, handle and bolt.

PSEnbolt are particularly suitable for safety gates that are difficult to adjust or in areas where safety gates are often opened and closed, as a long material service life is guaranteed as well as providing protection against defeat and manipulation.

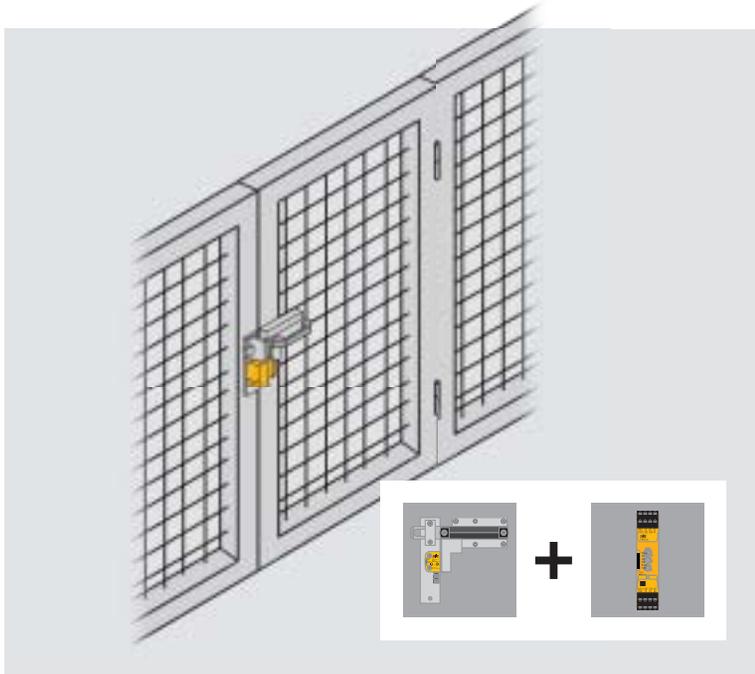
Longer service life for the integrated safety switch

The actuator is mechanically guided into the actuator head of the safety switch. This guarantees that the actuator is inserted correctly into the safety switch when the guard is closed. At the same time it provides mechanical protection for the switch.

Type code for PSEnbolt

PSEN b4.1

Product area Pilz SENSors	Escape release/ locking pin	Can be combined with
Product range b – PSEnbolt Operation Depends on the selected safety switch: ▶ Mechanical ▶ Magnetic ▶ Coded	1 Without escape release, without locking pin	▶ Mechanical safety switches PSENmech with guard locking (PSEN me1 series) ▶ Non-contact, coded safety switches PSENcode (PSEN cs1, PSEN cs2 series)
	2 With escape release, with locking pin, can be deactivated	
	2.1 With escape release, with locking pin, cannot be deactivated	
	3 Without escape release, without locking pin	▶ Non-contact, magnetic safety switches PSENmag (PSEN ma1.4 series) ▶ Non-contact, coded safety switches PSENcode (PSEN cs3, PSEN cs4 series)
4 With escape release, with locking pin, can be deactivated		
	4.1 With escape release, with locking pin, cannot be deactivated	



The optimum solution: Monitoring swing gates using the safety bolt PSEnbolt and PNOZsigma safety relay.

Your benefits at a glance

- ▶ Cost-optimized solution comprising safety switch, handle and bolt:
 - Save time and money in creating your own safety bolts
 - Reduce the effort involved in logistics and ordering
 - Compact design saves space
 - Long-lasting thanks to mechanical protection for safety switch
- ▶ High availability for your plant:
 - Highest protection against manipulation and defeat with safety switches PSENcode (coding)
 - Locking pin protects the bolt from closing unintentionally
 - Emergency release available as an option

Latest information and technical documentation on safety bolts PSEnbolt:

Webcode 0913

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

Selection guide – PSEnbolt safety bolt



Type	Can be combined with	Escape release	Locking pin	Order number ³⁾
PSEN b1	▶ PSEN me1 ▶ PSEN cs1			540 010
PSEN b2	▶ PSEN cs2	◆	◆ ¹⁾	540 020
PSEN b2.1		◆	◆ ²⁾	540 021
PSEN b3	▶ PSEN ma1.4 ▶ PSEN cs3			540 030
PSEN b4	▶ PSEN cs4	◆	◆ ¹⁾	540 040
PSEN b4.1		◆	◆ ²⁾	540 041

¹⁾ Can be deactivated ²⁾ Cannot be deactivated

³⁾ Order number for handle and bolt

Approvals depend on the selected safety switch



▶ Safe hinge switches PSEnhinge



PSEN hs1.1p

... for guards

Safe hinge switches PSEnhinge provide a safe, complete solution for guards, comprising hinge and safety switch. Enjoy the benefits of a safe, complete solution in conjunction with Pilz control technology.

PSEnhinge are suitable for rotatable and hinged gates as well as flaps. Users benefit from higher plant availability because PSEnhinge are manipulation-proof, as they are concealed within the safeguard.

Safe hinge switches from Pilz can also be used where there are strict hygiene regulations or heavy soiling, as they provide IP67 protection.

With adjustable switching point

Designed as one functional and installation unit, PSEnhinge offer a high level of flexibility in installation, connection and adjustment. They allow systems to be attached to the right or left, for optimum cable feed at a switching point between 0° and 270°.

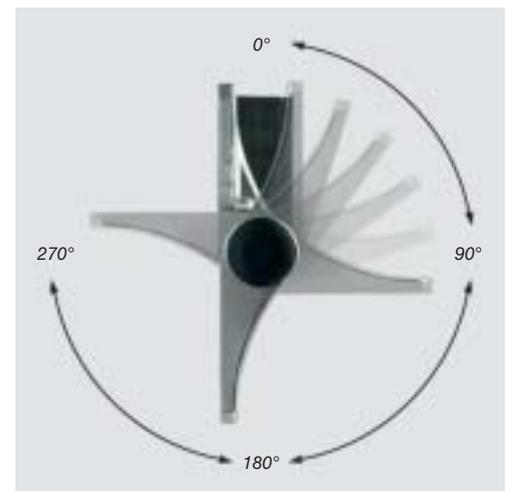
Maximum flexibility

Even after setting the switching point, the user can still correct the setting of the hinge with the integrated precision adjustment system. In this way, the user can employ a change kit to redefine the switching point, even when upgrading the plant.

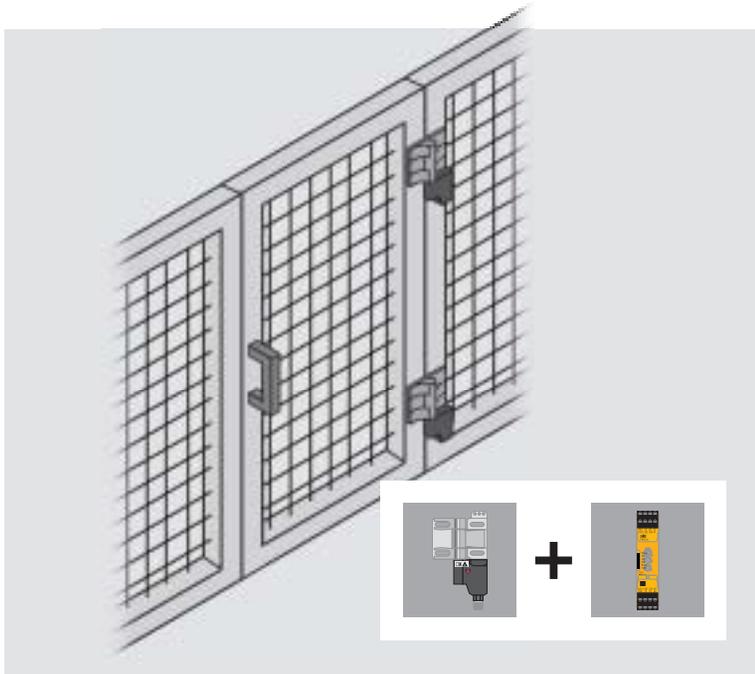
Type code for PSEnhinge

PSEN hs1.1p

Product area Pilz SENSors	Contacts	Door stop	Connection
Product range hs – PSEnhinge	1 NC/NC	1 Right 2 Left	p Connector, M12, 4-pin
Operation Mechanical			



High level of flexibility for the design:
the switching point on PSEnhinge
can be set between 0° and 270°.



The optimum solution: Monitoring swing gates safely using the hinge switches PSEnhinge and PNOZsigma safety relay.

Selection guide – Safe hinge switches PSEnhinge



PSEnhinge hs1.1p

Type	Door stop	Order number ¹⁾
PSEnhinge hs1.1p	Right	570270
PSEnhinge hs1.2p	Left	570271

¹⁾ Order number for hinge and safety switch

Common features

- ▶ Hinge switches for monitoring the position of movable guards in accordance with EN 60947-5-3
- ▶ Can be used in applications up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1 (with additional measures)
- ▶ Connection type: Connector, M12, 4-pin
- ▶ Contacts: 2 NC
- ▶ Protection type: IP67
- ▶ Plastic-bodied design

Your benefits at a glance

- ▶ Safe, complete solution for rotatable/hinged guards, comprising hinge and safety switch
- ▶ In conjunction with Pilz control systems, can be used for applications with high safety requirements
- ▶ Manipulation-proof and space-saving, as it's integrated directly into the safeguard
- ▶ Highest flexibility in installation, connection and adjustment:
 - Switching point is free to set from 0° to 270° and is readjustable
 - Protection type IP67
- ▶ User-friendly:
 - Slot fastening for mounting on profiles
 - Simple readjustment by means of integrated precision adjustment system
 - Systems can be attached to right and left
- ▶ Low maintenance:
 - Rugged version for high mechanical loads
 - Resistant to soiling



Latest information and technical documentation on safe hinge switches PSEnhinge:

Webcode 5575

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com



► Safety gate systems



PSEN sl-0.5p



PSEN sl-1.0p



PSEN sg1c-2/1

... for protecting guards

When a guard is opened, hazardous machine movements must be stopped in accordance with EN 1088 and a restart must be prevented. It must not be possible to either defeat or manipulate the guards.

Pilz safety gate systems are particularly effective in meeting this requirement and incorporate additional functionalities for greater economy:

- ▶ PSENslock – Safety gate monitoring with process guarding
- ▶ PSENsgate – Safety gate monitoring, safe guard locking and control elements



Application overview and distinction between safety gate systems

Type	PSENSlock	PSENSgate
Application on guards		
Covers	◆	
Flaps	◆	
Hinged safety gates	◆	◆
Sliding safety gates	◆	(◆) ¹⁾
Operating principle	<ul style="list-style-type: none"> ▶ Non-contact, coded ▶ Transponder technology 	<ul style="list-style-type: none"> ▶ Mechanical, coded ▶ Transponder technology
Manipulation protection	Very high	Very high
Safe position monitoring	Yes	Yes
Guard locking	Process guard locking (magnetic interlock)	Safe guard locking up to <ul style="list-style-type: none"> ▶ PL e of EN ISO 13849-1 ▶ SIL CL 3 of EN/IEC 62061
Auxiliary/escape release	No	Integrated
Emergency stop pushbutton	No	Integrated
Illuminated button for request and reset	No	2 or 2+2 additional pushbuttons
Additional functions	<ul style="list-style-type: none"> ▶ Series connection possible with PSENIini, PSENCcode, PSENSlock, PSENSgate 	<ul style="list-style-type: none"> ▶ Series connection possible with PSENIini, PSENCcode, PSENSlock, PSENSgate ▶ Broken pin and broken bolt are safely detected ▶ Closing lock (padlock on the bolt) ▶ Enabling switch can be connected

¹⁾ Limited suitability, without escape release

Keep up-to-date on safety gate systems:

Webcode 4901

Online information at www.pilz.com



► Safety gate systems PSENSlock



PSEN sl-0.5p

PSEN sl-1.0p

... safe position monitoring with process guarding in one system

Safety gate systems PSENSlock provide secure safety gate monitoring with a non-contact magnetic interlock of 500 N or 1,000 N (BG GS-ET 19) within one system.

With this combination of safe position monitoring and process guarding, PSENSlock are designed for the highest category applications.

Stringent protection of man and machine

PSENSlock are a safe alternative to existing mechanical technology. Highest possible manipulation protection and low wear and tear ensure a long service life and protect your investment.

Combined with Pilz control technology, you receive a safe, complete solution for guard monitoring.

Save time and costs during commissioning

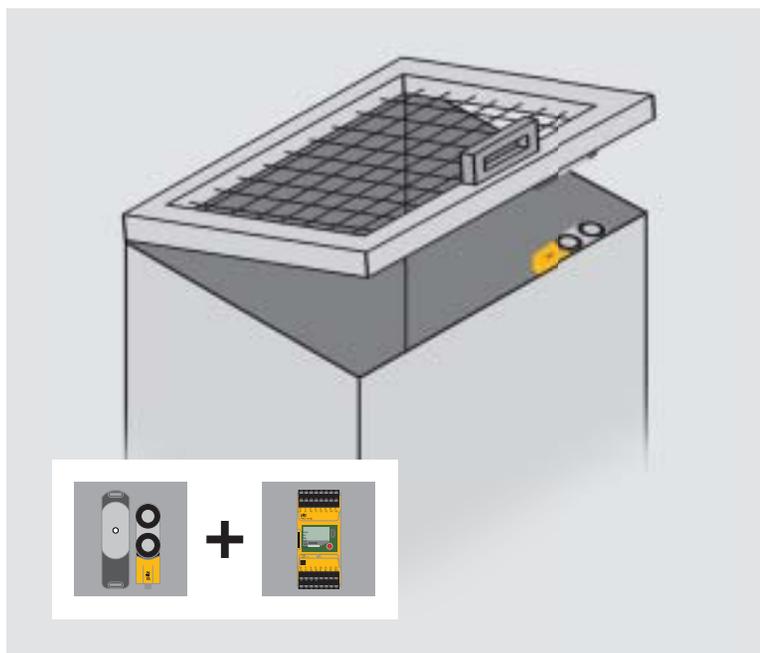
Thanks to its flexible connections, PSENSlock can be installed and commissioned quickly and easily. They are optimized for mounting on the popular 45 mm profiles.

You can also save time and costs through series connection, even with the very highest safety requirements.

Type code for PSENSlock

PSEN sl-1.0p 2.2

Product area Pilz SENSors	Magnetic powered	Connection	Coding
Product range sl – PSENSlock	0.5 500 N 1.0 1,000 N	n Connector, M12, 5-pin p Connector, M12, 8-pin	1.1 Coded 2.1 Fully coded 2.2 Unique, fully coded
Operation			
<ul style="list-style-type: none"> ▶ Non-contact, coded ▶ Transponder (RFID) ▶ With safe semiconductor outputs 			



The optimum solution: Guard locking on the flap using the safety gate system PSEnslock, evaluated using the safety relay PNOZmulti Mini.

Your benefits at a glance

- ▶ System optimized for safe position monitoring with process guarding
- ▶ High availability for your plant:
 - Suitable for the highest safety requirements
 - Highest level of manipulation protection (coding)
 - Process protection via magnetic guard locking
- ▶ Fast commissioning:
 - Four assembly directions
 - Tolerant to gate misalignment
 - Flexible connection via connector
- ▶ User-friendly diagnostics via double-sided LED display
- ▶ Save power, as the magnet on PSEnslock is optimized for energy efficiency

Selection guide

The product selection guide can be found on page 38–39.



Keep up-to-date on safety gate systems PSEnslock:

 Webcode 4898

Online information at www.pilz.com



► Safety gate systems PSENsgate



PSEN sg1c-2/1

... the integrated system for safety gate monitoring

PSENsgate combine secure safety gate monitoring, safe guard locking and control elements in just one system. And that includes additional functions such as emergency stop and escape release.

Connected in series with other PSENsgate, PSENIini, PSENcode and/or PSENSlock sensors, and in conjunction with Pilz control technology, what you get is a safe, complete solution to suit all categories.

Save time and components

You can benefit from a high savings potential: use just one ready-to-install system and all your safety functions and control elements are integrated.

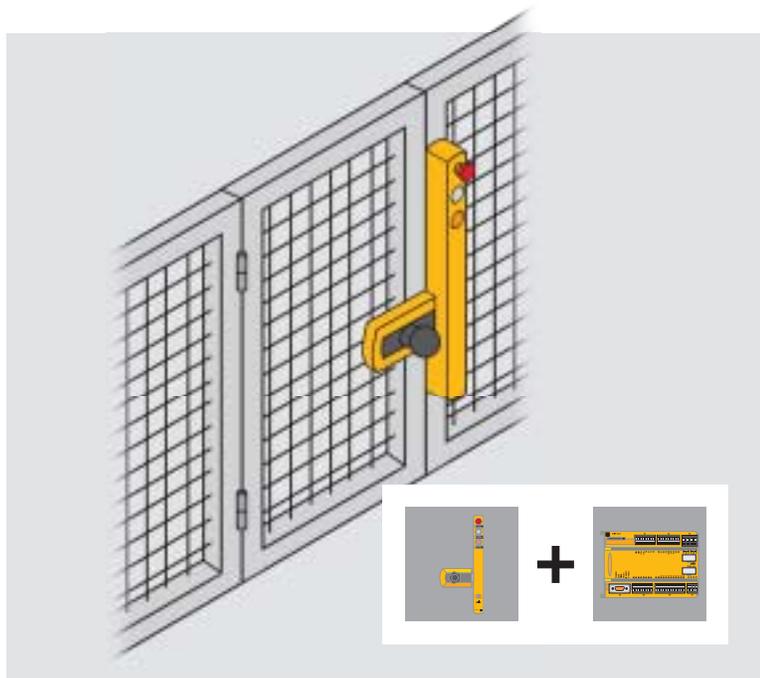
With PSENsgate you save time and money during configuration, design, documentation, purchasing and installation.

So we can help you achieve an efficient time-to-market.

Type code for PSENsgate

PSEN sg1c-4/1

Product area Pilz SENSors	Type	Connection via	Number of request or reset buttons	Number of emergency stop devices
Product range sg – PSENsgate Operation ▶ Mechanical, coded ▶ Transponder (RFID) ▶ With safe semiconductor outputs	1 With safe guard locking and safety gate monitoring	c Spring-loaded terminal, plug in	2 2 illuminated buttons 4 4 illuminated buttons	1 1 emergency stop device



The optimum solution: Monitoring a safety gate using the safety gate system PSENsgate and the control system PNOZmulti.



Your benefits at a glance

- ▶ Combination of safety gate monitoring, safe guard locking and broken bolt monitoring all in one system – including emergency stop devices and control elements
- ▶ Reduced installation and wiring effort due to integrated control elements and the ability for series connection
- ▶ Highest category with just one switch per safety gate: for protection of personnel and plant
- ▶ Unit width of 45 mm = suitable for 45 mm profiles
- ▶ Diagnostics enable fast reaction times to status changes
- ▶ Integrated emergency stop removes the need for an evaluation device and expansion modules
- ▶ Safe, complete solution when combined with Pilz control technology
- ▶ Save power, PSENsgate is optimized for energy efficiency

Keep up-to-date
on safety gate
systems PSENsgate:

 Webcode 5546

Online information
at www.pilz.com



► Selection guide – Safety gate systems

Common features

- Safety gate systems for monitoring the position of movable guards in accordance with EN 60947-5-3
- Suitable for applications up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1
- Series connection in combination with PSENslock, PSENs gate, PSENi ni, PSENi code up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1

Safety gate systems PSENslock



Type	Type of coding
PSENs sl-0.5p 1.1/PSENs sl-0.5	Coded ³⁾
PSENs sl-0.5n 1.1/PSENs sl-0.5	Coded ³⁾
PSENs sl-0.5p 2.1/PSENs sl-0.5	Fully coded ⁴⁾
PSENs sl-0.5n 2.1/PSENs sl-0.5	Fully coded ⁴⁾
PSENs sl-0.5p 2.2/PSENs sl-0.5	Unique, fully coded ⁵⁾
PSENs sl-0.5n 2.2/PSENs sl-0.5	Unique, fully coded ⁵⁾
PSENs sl-1.0p 1.1/PSENs sl-1.0	Coded ³⁾
PSENs sl-1.0p 1.1 VA/PSENs sl-1.0	Coded ³⁾
PSENs sl-1.0n 1.1/PSENs sl-1.0	Coded ³⁾
PSENs sl-1.0p 2.1/PSENs sl-1.0	Fully coded ⁴⁾
PSENs sl-1.0n 2.1/PSENs sl-1.0	Fully coded ⁴⁾
PSENs sl-1.0p 2.2/PSENs sl-1.0	Unique, fully coded ⁵⁾
PSENs sl-1.0n 2.2/PSENs sl-1.0	Unique, fully coded ⁵⁾

Electrical data

- Supply voltage: 24 VDC
- Safety outputs: 2
- Signal output: 1

Safety gate systems PSENs gate



Type
PSENs sg1c-2/1
PSENs sg1c-4/1

Electrical data

- Supply voltage: 24 VDC
- Safety outputs: 2 (semiconductor, max. 500 mA each)
- Signal output: 500 mA
- "Safe range" input (solenoid pin): 1.5 A, 150 ms
- Power consumption depends on configuration (gate locked): Max. 2 W
- Voltage tolerance: -15/+10 %

Holding force	Power consumption ¹⁾	Dimensions (H x W x D) in mm		Connection type	Order number ²⁾
		Safety guard locking device	Actuator		
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 8-pin	570500
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 5-pin	570503
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 8-pin	570501
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 5-pin	570504
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 8-pin	570502
500 N	4.8 W	122 x 45 x 44	138 x 52 x 23	Connector, M12, 5-pin	570505
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 8-pin	570600
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 8-pin	570630
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 5-pin	570603
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 8-pin	570601
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 5-pin	570604
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 8-pin	570602
1,000 N	7.2 W	172 x 45 x 44	188 x 52 x 22	Connector, M12, 5-pin	570605

Mechanical data

- ▶ Vertical and lateral offset:
+/- 3 / +/-5 mm
- ▶ Protection type: IP67

¹⁾ Gate locked ²⁾ Order number for sensor and actuator (one unit)

³⁾ Switch accepts any PSENSlock actuator

⁴⁾ Switch accepts only one PSENSlock actuator, teach-in up to 8 times

⁵⁾ Switch accepts only one PSENSlock actuator, no teach-in facility

★ Recommended type for the majority of applications



Technical documentation on safety gate systems:

▶ PSENSlock

Webcode 4898

▶ PSENSgate

Webcode 5546

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

Number of pushbuttons	Number of emergency stop devices	Dimensions (H x W x D) in mm	Connection type	Order number
2 ⁶⁾	1	466 x 200 x 104.5	Plug-in terminals	570700
4 ⁷⁾	1	556 x 200 x 104.5	Plug-in terminals	570701

Mechanical data

- ▶ Vertical and lateral offset:
+/-5 / +/-5 mm
- ▶ Protection type: IP65/54
- ▶ Holding force, swing gate: 2,000 N
- ▶ Holding force, bolt (holding pin): 1,000 N
- ▶ Connection type:
Plug-in spring-loaded terminals

⁶⁾ 2 illuminated buttons: 1 request button, 1 reset button,

⁷⁾ 4 illuminated buttons: 1 request button, 1 reset button, 2 free pushbuttons (100 mA)

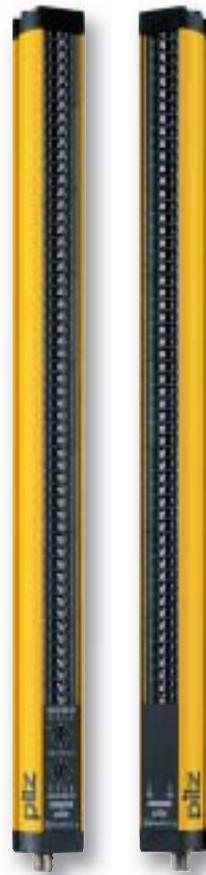
★ Recommended type for the majority of applications



► Safety light beams, curtains and grids



PSEN op4F.../1



PSEN opSB-4F

PSENOpt for all industries and applications

Muting, blanking and/or cascading open up a range of possibilities for optimum incorporation of PSENOpt into your plant. They are suitable for all industries and applications:

- ▶ Presses and punch machines
- ▶ Folding and cutting machines
- ▶ Machining centres
- ▶ Robot systems
- ▶ Assembly stations
- ▶ Assembly lines
- ▶ Transport and conveyor systems
- ▶ High-bay racking
- ▶ Packaging machines
- ▶ Injection moulding machines
- ▶ Wood, leather, ceramics and textile processing machines

PSENOpt – with semiconductor outputs

PSENOpt light beams, curtains and grids with semiconductor outputs are suitable for all Type 2 and 4 applications in accordance with EN/IEC 61496-1/-2. Read more from page 42.

PSENOpt SB – for SafetyBUS p applications

The safe, open bus system SafetyBUS p in conjunction with PSENOpt SB is recommended for cost-effective monitoring of a large light grid application. Only this way can you reduce the amount of work involved by using compatible system components. Read more from page 50.

... the ideal protection when the production process requires active intervention

If the production process requires active intervention, there is a high potential risk. Mechanical guards can seriously disrupt the work cycle. Why not design workstations to be ergonomic and still provide effective protection for your staff.

PSENOpt offer greater productivity, while safeguarding access to the work process. Save costs:

- ▶ PSENOpt devices have a compact design and therefore save space
- ▶ They can quickly be incorporated, operated and maintained on your plant
- ▶ Protected fields and detection capability can be set up to be process-oriented

Select the right PSENopt to conform to the standard

Carry out a safety assessment and then assess the risk in accordance with EN/IEC 61496-1/-2. You can then use this information to work out the appropriate light grid resolution for your application, in accordance with EN 999.

Select the electro-sensitive protective device that best meets your needs. This will mean greater safety for finger, hand and body, compatible with a wide range of applications.



The appropriate PSENopt safety sensor for each application

Type	PSENopt	PSENopt SB
Interfaces	With safe semiconductor outputs	With SafetyBUS p interface
Resolution	Finger, hand, body protection as well as access protection	Finger, hand, body protection
Can be used in applications in accordance with		
EN ISO 13849-1	PL c and PL e	PL e
EN/IEC 62061	SIL CL 1 and SIL CL 3	SIL CL 3
EN 954-1	Category 2 and 4	Category 4
Approved to EN/IEC 61496-1/-2	Type 2/Type 4	Type 4
Functions/features	Muting (S/L/T or total/partial), blanking, cascading, feedback loop monitoring	Muting sensors, muting lamp, reset, acknowledgement, diagnostics
Height of protected field	150 ... 1,800 mm	300 ... 1,650 mm
Operating range	0.2 ... 50 m (depending on type)	0.2 ... 25 m (depending on type)
Light grid reaction time	320 µs ... 68 ms (depending on type)	55 ... 105 ms (depending on type)

Keep up-to-date on light beams, curtains and grids PSENopt:

Webcode 0311

Online information at www.pilz.com



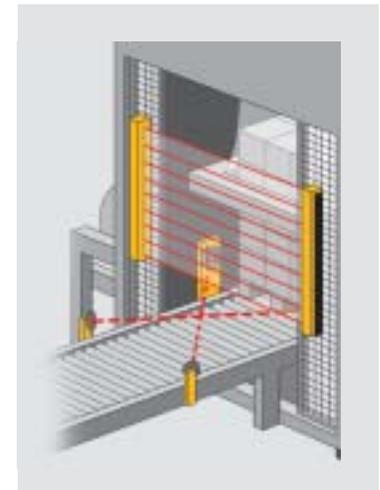
► Light beams, curtains and grids with semi



PSENOpt op4F.../1

... for finger, hand and body protection

Thanks to their compact dimensions, simple installation technology and optimum performance, PSENOpt are an ideal solution when an ergonomic work environment is an absolute must. For example, where operator intervention is required as part of each cycle, such as insertion work, or the infeed and outfeed of material.



Muting with crossed muting sensors.

Muting to distinguish between a person and material

PSENOpt devices with muting function are suitable for transporting material into and out of a danger zone, when loading or unloading pallets for example.

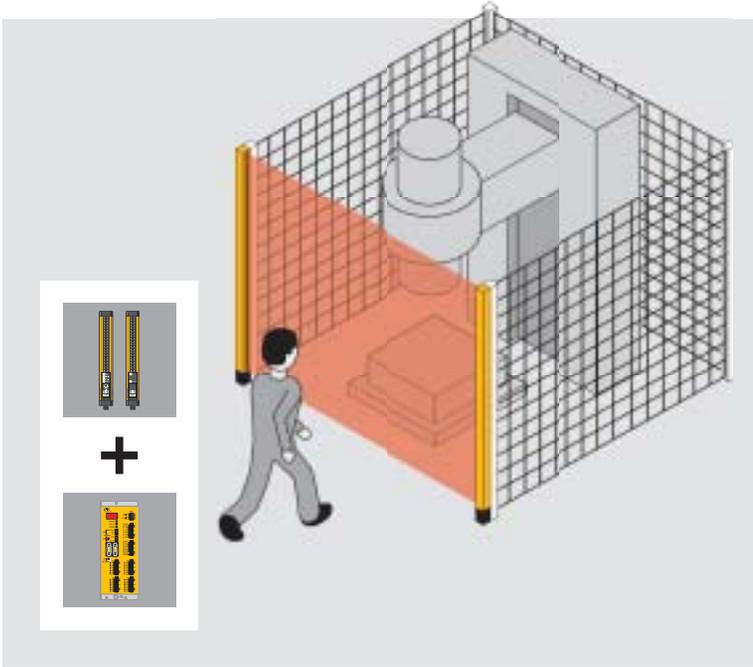
Type code for PSENOpt

PSENOpt op4F-s-14-120/1

Product area Pilz SENSors	Approval	Resolution	Functions	Resolution/No. of beams	Feature/Height of protected field	Generation
Product range op – PSENOpt	2 Type 2 4 Type 4	S Access protection (light beam device) F Finger protection (light curtain) H Hand protection (light curtain) B Body protection (light grid)	– Muting (total/partial) s Standard¹⁾ b Blanking ¹⁾ m Cascading Master ¹⁾ bm Blanking/ Cascading Master ¹⁾ sl Cascading Slave ¹⁾ S Linear version L L-Version T T-Version	1 1 beam 2 2 beams 3 3 beams 4 4 beams 14 14 mm 30 30 mm	1 Infrared 2 Laser 015 150 mm 030 300 mm 045 450 mm 050 500 mm 060 600 mm 075 750 mm 080 800 mm 090 900 mm 105 1,050 mm 120 1,200 mm 135 1,350 mm 150 1,500 mm 165 1,650 mm 180 1,800 mm	/1 New generation PSENOpt
Operation	Approved in accordance with EN/IEC 61496-1/-2					
► Non-contact, optical, 2D (area monitoring) ► With safe semiconductor outputs						

¹⁾ incl. feedback loop monitoring

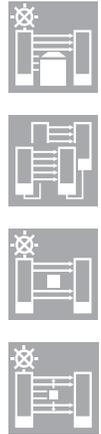
conductor outputs – PSENopt



The optimum solution: Monitoring the infeed area on a press using the light grid PSENopt and control system PSScompact.

Your benefits at a glance

- ▶ Economical:
 - Protected fields and detection capability can be set up to be process-oriented
 - Cost savings with PSENopt integration, operation and maintenance
- ▶ Functionalities which increase the efficiency and availability of your plant:
 - Muting to distinguish between a person and material
 - Cascading function for effective protection against encroachment into and behind the protected area
 - Blanking for a flexible, uninterrupted material flow
- ▶ Protection for your investment: open for interfaces from other manufacturers
- ▶ Fast installation and commissioning thanks to a rotatable mounting bracket



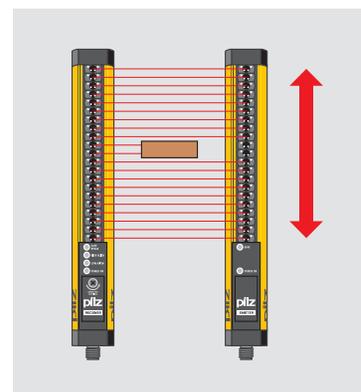
Cascading function for effective protection against encroachment into and behind the protected area

Adjacent protected fields can easily be safeguarded using the cascading function. Just connect master and slave quickly and simply using a convenient plug-in connector; also combines finger and hand protection.

Blanking for a flexible, uninterrupted production process

You can use the blanking function to blank out a defined area of the light grid. The safety function will not be triggered when the material to be processed passes through. Blanking can be implemented in two different ways: fixed blanking and floating blanking.

*Floating blanking:
Two beams are blanked out.
Any object that obscures more than two beams will be detected.*



Keep up-to-date on light beams, curtains and grids PSENopt:

Webcode 0337

Online information at www.pilz.com



▶ Selection guide – PSENopt

Access protection (1 beam) – Light beam devices PSEN op2S/4S

Common features

- ▶ In conjunction with
 - Configurable control systems
PNOZmulti: PNOZ m0p,
PNOZ m1p, PNOZ m2p
 - Programmable control system
PSS: PSS DI2O T
- ▶ Supply voltage:
20 ... 30 VDC



Type	Approved to EN/IEC 61496-1/-2
PSEN op2S-1-1	Type 2
PSEN op4S-1-1	Type 4
PSEN op4S-1-2	Type 4

Hand and body protection in accordance with EN/IEC 61496-1/-2: Type 2 – Light curtains, grids PSEN op2H,

Common features

- ▶ Compliant and approved in accordance with EN/IEC 61508
- ▶ For use in applications up to
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Cat. 4 of EN 954-1
- ▶ Integral functions:
Muting (total/partial),
PSEN op2B only
- ▶ Function selection: Test, override (PSEN op2B only), via DIP switches:
 - Automatic reset (PSEN op2H)
 - Manual/automatic reset (PSEN op2B)
- ▶ Semiconductor outputs
- ▶ Supply voltage: 24 VDC
- ▶ Connection PSEN op2H:
 - Receiver Rx:
Connector, M12, 5-pin
 - Transmitter Tx:
Connector, M12, 4-pin
- ▶ Connection PSEN op2B:
 - Receiver Rx:
Connector, M12, 8-pin
 - Transmitter Tx:
Connector, M12, 4-pin



Type	Approved to EN/IEC 61496-1/-2
PSEN op2H-s-30-015/1	Type 2
PSEN op2H-s-30-030/1	Type 2
PSEN op2H-s-30-045/1	Type 2
PSEN op2H-s-30-060/1	Type 2
PSEN op2H-s-30-075/1	Type 2
PSEN op2H-s-30-090/1	Type 2
PSEN op2H-s-30-105/1	Type 2
PSEN op2H-s-30-120/1	Type 2
PSEN op2H-s-30-135/1	Type 2
PSEN op2H-s-30-150/1	Type 2
PSEN op2H-s-30-165/1	Type 2
PSEN op2H-s-30-180/1	Type 2
PSEN op2B-2-050	Type 2
PSEN op2B-3-080	Type 2
PSEN op2B-4-090	Type 2
PSEN op2B-4-120	Type 2

Resolution/ No. of beams	Features/ functions	Operating range	PSENopt reaction time	Design	Order number ¹⁾
Access protection (1 beam)	Infrared	0 ... 8 m	1.5 ms max.	M18	630380
Access protection (1 beam)	Infrared	0 ... 8 m	1.5 ms max.	M18	630381
Access protection (1 beam)	Laser	0 ... 40 m	320 µs max.	M18	630382



PSEN op2B

Resolution/ No. of beams	Height of protected field	Operating range	PSENopt reaction time	Dimensions	Order number ¹⁾
Hand (30 mm)	150 mm	0.2 ... 19 m	8 ms	31 x 32 mm	630720
Hand (30 mm)	300 mm	0.2 ... 19 m	9 ms	31 x 32 mm	630721
Hand (30 mm)	450 mm	0.2 ... 19 m	11 ms	31 x 32 mm	630722
Hand (30 mm)	600 mm	0.2 ... 19 m	12 ms	31 x 32 mm	630723
Hand (30 mm)	750 mm	0.2 ... 19 m	14 ms	31 x 32 mm	630724
Hand (30 mm)	900 mm	0.2 ... 19 m	15 ms	31 x 32 mm	630725
Hand (30 mm)	1,050 mm	0.2 ... 19 m	17 ms	31 x 32 mm	630726
Hand (30 mm)	1,200 mm	0.2 ... 19 m	18 ms	31 x 32 mm	630727
Hand (30 mm)	1,350 mm	0.2 ... 19 m	20 ms	31 x 32 mm	630728
Hand (30 mm)	1,500 mm	0.2 ... 19 m	21 ms	31 x 32 mm	630729
Hand (30 mm)	1,650 mm	0.2 ... 19 m	23 ms	31 x 32 mm	630730
Hand (30 mm)	1,800 mm	0.2 ... 19 m	24 ms	31 x 32 mm	630731
Body (2 beams)	500 mm	0.5 ... 50 m	14 ms	35 x 40 mm	630200
Body (3 beams)	800 mm	0.5 ... 50 m	14 ms	35 x 40 mm	630201
Body (4 beams)	900 mm	0.5 ... 50 m	14 ms	35 x 40 mm	630202
Body (4 beams)	1,200 mm	0.5 ... 50 m	14 ms	35 x 40 mm	630203

The complete range plus technical documentation on safety light beams, curtains and grids PSENopt:

Webcode 0337

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

¹⁾ Order number for transmitter, receiver and mounting bracket respectively (one unit)

★ Recommended type for the majority of applications



► Selection guide – PSENopt

Hand protection in accordance with EN/IEC 61496-1/-2: Type 4 – Light curtains PSEN op4H

Common features

- ▶ Compliant and approved in accordance with EN/IEC 61508, EN/IEC 61496-1/-2: Type 4
- ▶ Resolution: Hand protection (30 mm)
- ▶ For use in applications up to
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Cat. 4 of EN 954-1
- ▶ Function selection:
Test, via DIP switches:
manual/automatic reset,
feedback loop monitoring
- ▶ Connection:
 - Receiver Rx:
Connector, M12, 8-pin
 - Transmitter Tx:
Connector, M12, 4-pin
 - Slave: Connector, M12, 5-pin
- ▶ Safe semiconductor outputs: 2
- ▶ Operating range: 0.2 ... 19 m
- ▶ Supply voltage: 24 VDC
- ▶ Dimensions: 35 x 40 mm



Type	Reaction time	Functions Blanking
▶ 150 mm protected field		
PSEN op4H-s-30-015/1	9 ms	
PSEN op4H-b-30-015	16 ms	◆
PSEN op4H-bm-30-015	16 ms	◆
PSEN op4H-sl-30-015	16 ms	
▶ 300 mm protected field		
PSEN op4H-s-30-030/1	11 ms	
PSEN op4H-b-30-030	20 ms	◆
PSEN op4H-bm-30-030	20 ms	◆
PSEN op4H-sl-30-030	20 ms	
▶ 450 mm protected field		
PSEN op4H-s-30-045/1	13 ms	
PSEN op4H-b-30-045	23 ms	◆
PSEN op4H-bm-30-045	23 ms	◆
PSEN op4H-sl-30-045	23 ms	
▶ 600 mm protected field		
PSEN op4H-s-30-060/1	14 ms	
PSEN op4H-b-30-060	25 ms	◆
PSEN op4H-m-30-060	25 ms	
PSEN op4H-bm-30-060	25 ms	◆
PSEN op4H-sl-30-060	25 ms	
▶ 750 mm protected field		
★ PSEN op4H-s-30-075/1	16 ms	
PSEN op4H-b-30-075	27 ms	◆
PSEN op4H-m-30-075	27 ms	
PSEN op4H-bm-30-075	27 ms	◆
PSEN op4H-sl-30-075	27 ms	
▶ 900 mm protected field		
★ PSEN op4H-s-30-090/1	18 ms	
PSEN op4H-b-30-090	30 ms	◆
PSEN op4H-m-30-090	30 ms	

Cascading	Order number ¹⁾	Type	Reaction time	Functions		Order number ¹⁾
				Blanking	Cascading	
▶ 900 mm protected field						
-	630760	PSEN op4H-bm-30-090	30 ms	◆	Master	630675
-	630630	PSEN op4H-sl-30-090	30 ms		Slave	630695
▶ 1,050 mm protected field						
Master	630670	PSEN op4H-s-30-105/1	19 ms		-	630766
Slave	630690	PSEN op4H-b-30-105	32 ms	◆	-	630636
-	630761	PSEN op4H-m-30-105	32 ms		Master	630656
-	630631	PSEN op4H-bm-30-105	32 ms	◆	Master	630676
Master	630671	PSEN op4H-sl-30-105	32 ms		Slave	630696
Slave	630691	▶ 1,200 mm protected field				
-	630762	★ PSEN op4H-s-30-120/1	21 ms		-	630767
-	630632	PSEN op4H-b-30-120	35 ms	◆	-	630637
Master	630672	PSEN op4H-m-30-120	35 ms		Master	630657
Slave	630692	PSEN op4H-bm-30-120	35 ms	◆	Master	630677
▶ 1,350 mm protected field						
-	630763	PSEN op4H-s-30-135/1	23 ms		-	630768
-	630633	PSEN op4H-b-30-135	38 ms	◆	-	630638
Master	630653	PSEN op4H-m-30-135	38 ms		Master	630658
Master	630673	PSEN op4H-bm-30-135	38 ms	◆	Master	630678
▶ 1,500 mm protected field						
Slave	630693	PSEN op4H-s-30-150/1	25 ms		-	630769
-	630764	PSEN op4H-b-30-150	40 ms	◆	-	630639
-	630634	PSEN op4H-m-30-150	40 ms		Master	630659
Master	630654	PSEN op4H-bm-30-150	40 ms	◆	Master	630679
▶ 1,650 mm protected field						
Master	630674	PSEN op4H-s-30-165/1	26 ms		-	630770
Slave	630694	PSEN op4H-b-30-165	43 ms	◆	-	630640
-	630765	PSEN op4H-m-30-165	43 ms		Master	630660
-	630635	PSEN op4H-bm-30-165	43 ms	◆	Master	630680
▶ 1,800 mm protected field						
Master	630655	PSEN op4H-s-30-180/1	28 ms		-	630771



The complete range plus technical documentation on safety light curtains PSENopt:

Webcode 0337

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

¹⁾ Order number for transmitter, receiver and mounting bracket respectively (one unit)

★ Recommended type for the majority of applications



▶ Selection guide – PSENopt

Finger protection in accordance with EN/IEC 61496-1/-2: Type 4 – Light curtains PSEN op4F

Common features

- ▶ Compliant and approved in accordance with EN/IEC 61508, EN/IEC 61496-1/-2: Type 4
- ▶ Resolution:
 - Finger protection (14 mm)
- ▶ For use in applications up to
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Cat. 4 of EN 954-1
- ▶ Function selection:
 - Test, via DIP switches:
 - Manual/automatic reset,
 - feedback loop monitoring
- ▶ Connection:
 - Receiver Rx:
 - Connector, M12, 8-pin
 - Transmitter Tx:
 - Connector, M12, 4-pin
 - Slave: Connector, M12, 5-pin
- ▶ Safe semiconductor outputs: 2
- ▶ Operating range: 0.2 ... 6 m
- ▶ Supply voltage: 24 VDC
- ▶ Dimensions: 35 x 40 mm



PSEN op4F-s-14-060/1



PSEN op4F-b-14-060

Type	Reaction time	Functions Blanking
▶ 150 mm protected field		
PSEN op4F-s-14-015/1	11 ms	
PSEN op4F-b-14-015	21 ms	◆
PSEN op4F-m-14-015	21 ms	
PSEN op4F-bm-14-015	21 ms	◆
PSEN op4F-sl-14-015	21 ms	
▶ 300 mm protected field		
PSEN op4F-s-14-030/1	15 ms	
PSEN op4F-b-14-030	28 ms	◆
PSEN op4F-m-14-030	28 ms	
PSEN op4F-bm-14-030	28 ms	◆
PSEN op4F-sl-14-030	28 ms	
▶ 450 mm protected field		
PSEN op4F-s-14-045/1	18 ms	
PSEN op4F-b-14-045	35 ms	◆
PSEN op4F-m-14-045	35 ms	
PSEN op4F-bm-14-045	35 ms	◆
PSEN op4F-sl-14-045	35 ms	
▶ 600 mm protected field		
★ PSEN op4F-s-14-060/1	22 ms	
PSEN op4F-b-14-060	41 ms	◆
PSEN op4F-m-14-060	41 ms	
PSEN op4F-bm-14-060	41 ms	◆
PSEN op4F-sl-14-060	41 ms	
▶ 750 mm protected field		
★ PSEN op4F-s-14-075/1	25 ms	
PSEN op4F-b-14-075	48 ms	◆
PSEN op4F-m-14-075	48 ms	
PSEN op4F-bm-14-075	48 ms	◆
PSEN op4F-sl-14-075	48 ms	

Cascading	Order number ¹⁾	Type	Reaction time	Functions		Order number ¹⁾
				Blanking	Cascading	
▶ 900 mm protected field						
-	630740	PSEN op4F-s-14-090/1	29 ms		-	630745
-	630621	PSEN op4F-b-14-090	55 ms	◆	-	630626
Master	630641	PSEN op4F-m-14-090	55 ms		Master	630646
Master	630661	PSEN op4F-bm-14-090	55 ms	◆	Master	630666
Slave	630681	PSEN op4F-sl-14-090	55 ms		Slave	630686
▶ 1,050 mm protected field						
-	630741	PSEN op4F-s-14-105/1	33 ms		-	630746
-	630622	PSEN op4F-b-14-105	62 ms	◆	-	630627
Master	630642	PSEN op4F-m-14-105	62 ms		Master	630647
Master	630662	PSEN op4F-bm-14-105	62 ms	◆	Master	630667
Slave	630682	PSEN op4F-sl-14-105	62 ms		Slave	630687
▶ 1,200 mm protected field						
-	630742	PSEN op4F-s-14-120/1	36 ms		-	630747
-	630623	PSEN op4F-b-14-120	68 ms	◆	-	630628
Master	630643	PSEN op4F-m-14-120	68 ms		Master	630648
Master	630663	PSEN op4F-bm-14-120	68 ms	◆	Master	630668
Slave	630683	PSEN op4F-sl-14-120	68 ms		Slave	630688
▶ 1,350 mm protected field						
-	630743	PSEN op4F-s-14-135/1	40 ms		-	630748
▶ 1,500 mm protected field						
Master	630644	PSEN op4F-s-14-150/1	43 ms		-	630749
▶ 1,650 mm protected field						
Slave	630684	PSEN op4F-s-14-165/1	47 ms		-	630750
▶ 1,800 mm protected field						
-	630744	PSEN op4F-s-14-180/1	50 ms		-	630751
-	630625					
Master	630645					
Master	630665					
Slave	630685					

¹⁾ Order number for transmitter, receiver and mounting bracket respectively (one unit)

★ Recommended type for the majority of applications



Technical documentation on safety light curtains PSENopt:

Webcode 0337

Accessories, supplementary products and services:

From page 62

Webcode 0326

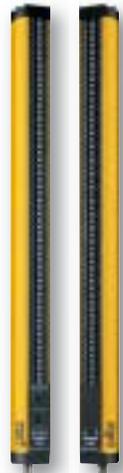
Online information at www.pilz.com



► Safety light curtains and grids with Safety



SafetyBUS p
The Safe Standard



PSENOpt SB

Simpler installation and fewer components

With the bus interface integrated within the PSENOpt SB, there is no need for any other external components.

Rapid plant expansion

All the settings relating to the light grid are stored centrally on the control system and are activated via SafetyBUS p. For the “partial muting” function for example, the individual active zones or zone combinations can be set via the programmable control system PSS.

Diagnostics make all the difference!

The ability to diagnose fault conditions represents the key difference from a classic light curtain connection.

... for extensive SafetyBUS p applications

With PSENOpt SB light curtains and light grids you have a product that is perfectly compatible with the safe, open bus system SafetyBUS p.

Your benefits at a glance

- Less work during installation:
 - Reduced space requirement for light grid and installation
 - Hybrid cable (one-cable solution) up to IP67
 - Connection via SafetyBUS p connectors
 - Simple parameter setting with the programming software PSS WIN-PRO
- Reduced downtimes
 - Simpler troubleshooting thanks to extensive diagnostic data that can be evaluated directly from the controller
 - Units can be exchanged quickly due to centralized configuration and the ability to transfer all the settings

Additional functions relating to the PSENOpt SB

- Internal light grid functions:
 - Muting (total/partial)
 - OSSD
 - Diagnostics
 - Reset (local and from PSS)
 - Test (local and from PSS)
- Additional periphery functions, connected directly to the light grid:
 - 2 x muting sensor
 - 1 x muting lamp, monitored

Type code for PSENOpt SB

PSEN opSB-4H-30-135

Product area Pilz SENSors	Approval	Resolution	Resolution/ No. of beams	Feature/Height of protected field
Product range opSB – PSENOpt SB Operation ► Non-contact, optical, 2D (area monitoring) ► With SafetyBUS p interface ► Integral functions: Total/partial muting	4 Type 4 Approved in accordance with EN/IEC 61496-1/-2	F Finger protection (light curtain) H Hand protection (light curtain) B Body protection (light grid)	2 2 beams 3 3 beams 4 4 beams 14 14 mm 30 30 mm	030 300 mm 045 450 mm 050 500 mm 060 600 mm 075 750 mm 080 800 mm 090 900 mm 105 1,050 mm 120 1,200 mm 135 1,350 mm 150 1,500 mm 165 1,650 mm 180 1,800 mm

BUS p[®] interface – PSENopt SB

Finger, hand and body protection – PSEN opSB



PSEN opSB-4F



PSEN opSB-4H



PSEN opSB-4B

Type	Height of protected field	Reaction time	Order number ¹⁾
▶ Finger protection (14 mm)			
PSEN opSB-4F-14-030	300 mm	75 ms	630351
PSEN opSB-4F-14-045	450 mm	82 ms	630352
PSEN opSB-4F-14-060	600 mm	90 ms	630353
PSEN opSB-4F-14-075	750 mm	97 ms	630354
PSEN opSB-4F-14-090	900 mm	105 ms	630355
▶ Hand protection (30 mm)			
PSEN opSB-4H-30-030	300 mm	58 ms	630451
PSEN opSB-4H-30-045	450 mm	61 ms	630452
PSEN opSB-4H-30-060	600 mm	64 ms	630453
PSEN opSB-4H-30-075	750 mm	67 ms	630454
PSEN opSB-4H-30-090	900 mm	70 ms	630455
PSEN opSB-4H-30-105	1,050 mm	72 ms	630456
PSEN opSB-4H-30-120	1,200 mm	75 ms	630457
PSEN opSB-4H-30-135	1,350 mm	78 ms	630458
PSEN opSB-4H-30-150	1,500 mm	81 ms	630459
PSEN opSB-4H-30-165	1,650 mm	84 ms	630460
▶ Body protection			
PSEN opSB-4B-2-050	500 mm	55 ms	630550
PSEN opSB-4B-3-080	800 mm	55 ms	630551
PSEN opSB-4B-4-090	900 mm	55 ms	630552
PSEN opSB-4B-4-120	1,200 mm	55 ms	630553

¹⁾ Order number for transmitter, receiver and mounting bracket respectively (one unit)

Common features

- ▶ Compliant and approved in accordance with EN/IEC 61508 and EN/IEC 61496-1/-2: Type 4
- ▶ For use in applications up to
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 62061
 - Cat. 4 of EN 954-1
- ▶ Connection: Receiver Rx: Connector, M12, 8 and 5-pin
Transmitter Tx: Connector, M12, 4-pin
- ▶ Supply voltage: 24 VDC
- ▶ Operating range:
 - PSEN opSB-4F: 0.2 ... 6 m
 - PSEN opSB-4H: 0.2 ... 15 m
 - PSEN opSB-4B: 0.5 ... 25 m
- ▶ Dimensions: 35 x 40 mm

SafetyBUS p[®]



Technical documentation on safety light beams, curtains and grids PSENopt SB:

Webcode 0347

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com



► Camera-based protection and measuring



Bending angle
is recorded



Short
reaction time



Innovative
optical system
"vision parallel"



Operator
protection



Resistant
to vibration,
diffused light
and interference



PSEnvip RL D Set

Fast, simple original equipment and tool change

Precision adjustment on original equipment and after tool change can be made quickly and simply thanks to the innovative technology and software. This reduces setup times to a minimum.

In conjunction with descriptive information on the display, it guarantees productive work practices in complete safety. Time savings and intuitive handling make for happy operators.

Forming technology more efficient than ever: thanks to automatic bending angle measurement

PSEnvip records relevant control data from the bending process: the plate is detected automatically and the bending angle measured. Consistently high production quality and easy handling bring competitive advantages.

... safe press braking

Camera-based protection and measuring systems PSEnvip are mobile protection systems used to monitor press brakes safely. When installed on the upper die, the systems detect even the smallest foreign body in the protected field between the transmitter and receiver.

Innovative optical system for high productivity

An innovative optical system is used: the visible light beams are transmitted to the receiver via a

telecentric lens (vision parallel). As a result, PSEnvip provides high availability and therefore better productivity compared to laser-based systems.

PSEnvip are insensitive to reflections and external/diffused light, as well as vibration and temperature stratification (e.g. due to heated tools). The longer service life of the light source reduces maintenance costs.

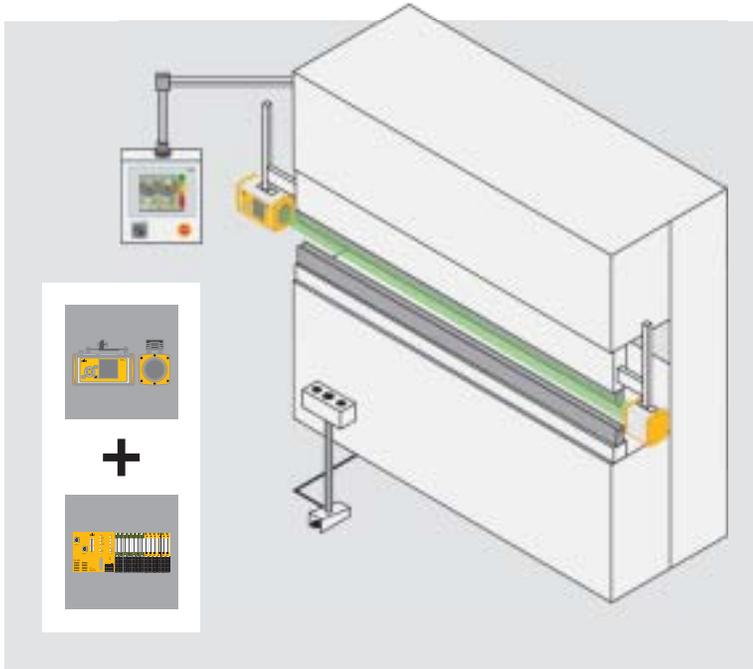
As the light is safe for eyes, PSEnvip provides a higher level of safety than conventional systems.

Type code for PSEnvip

PSEnvip RL D M Set

Product area Pilz SENSors	Transmitter/ receiver	Display (receiver)	Measuring function (receiver)	Scope of supply
Product range vip – PSEnvip	T Transmitter RL Receiver, left	D With display	– Without bending angle measurement M With bending angle measurement	Set Unit comprising transmitter and receiver
Operation Non-contact, optical, 2D (area monitoring)				

systems PSEnvip

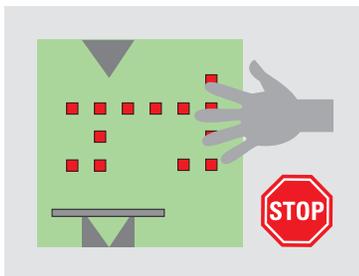


The optimum solution: Safe, effective press braking with the protection and measuring system PSEnvip and the automation system PSS 4000.

Your benefits at a glance

- ▶ Highest level of safety for press brakes in accordance with the most current safety standards and in accordance with prEN 12622
- ▶ Higher level of operator safety:
 - LED light is safe for eyes
 - New, innovative evaluation of protected field
 - Detection zone certified up to 10 m
- ▶ Higher productivity and availability thanks to
 - Innovative optical system
 - Tolerance to vibration, temperature stratification, reflections, external/diffused light
- ▶ User-friendly:
 - Software-supported precision adjustment after tool change
 - User-friendly operation via integrated display
- ▶ Low maintenance, as the system has a long service life

Please contact us for details of the new productive system PSEnvip in combination with the automation system PSS 4000.



Foreign bodies in the optical field are detected immediately and the press operation is stopped.

Flexible application with integrated protection against reaching behind the system

The protected field enables flexible application in back gauge or box bending mode. One system protects the danger zone on the press from both front and behind.

And special purpose presses can also be equipped with PSEnvip, as the system is certified for detection zones up to 10 m.

Keep up-to-date on camera-based protection and measuring systems PSEnvip:

Webcode 2080

Online information at www.pilz.com



▶ Selection guide – PSEnvip

Camera-based protection and measuring systems PSEnvip

Common features

- ▶ Detection zone:
 - Length: 0.1 ... 10 m
 - Height: max. 19 mm
 - Width: 38 mm
- ▶ Reaction time: 4 ms
- ▶ Compliant and approved in accordance with prEN 12622
- ▶ For use in applications up to
 - Type 4 of IEC 61496-1/-2
 - PL e of EN ISO 13849-1
 - SIL CL 3 of EN/IEC 61508
 - Cat. 4 of EN 954-1



PSEnvip RL D Set

Features of bending angle measurement

- ▶ Distance between workpiece (plate) and receiver: max. 1.5 m
- ▶ Sheet thickness: 2 ... 4 mm
- ▶ Bending angle: 50 ... 160°
- ▶ Temperature range (environment): +10 ... +40 °C

Type	Transmitter
PSEnvip RL D Set	◆
PSEnvip RL D M Set	◆
PSEnvip RL D	
PSEnvip RL D M	
PSEnvip T	◆

Receiver	Display	Measuring function	Order number
◆	◆		583 000 ¹⁾
◆	◆	◆	583 002 ¹⁾
◆	◆		583 600
◆	◆	◆	583 610
			583 900

¹⁾ PSEnvip (Sets) include: transmitter, receiver, adjustment plates, adjustment templates with magnet and a test piece



Technical documentation on camera-based protection and measuring systems PSEnvip:

 Webcode 2080

Accessories, supplementary products and services:

 From page 62

 Webcode 0326

Online information at www.pilz.com



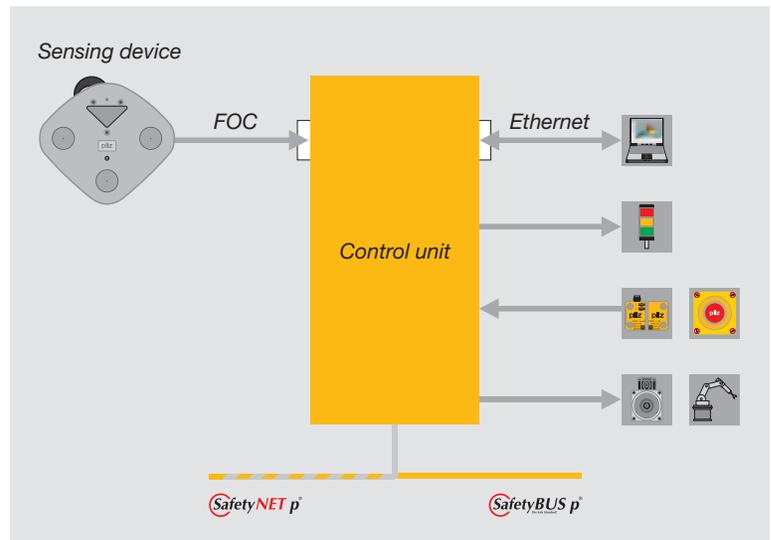
► Safe camera systems



PSEN se Starter Set 1

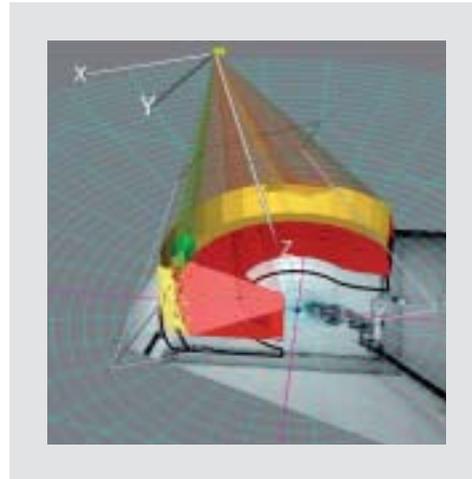
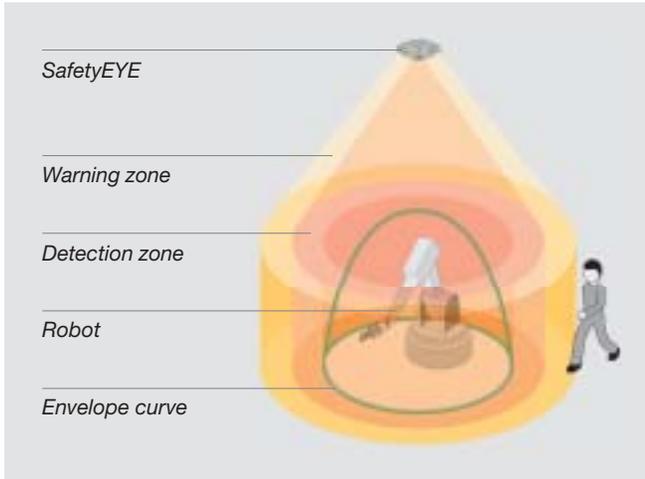
**... three eyes
are better than two**

SafetyEYE is a "sight-based" safety technology for zone monitoring. It combines intelligent sensor technology with effective control.



System structure for safe camera systems SafetyEYE.

*Minimize barriers,
work ergonomically,
maintain flexibility:
SafetyEYE enables
close co-operation
between man and
machine.*



Leading technology: 3D warning and detection zones at the click of a mouse.

The innovative 3D solution

SafetyEYE safe camera systems protect your plant from a bird's eye view, because the sensing device is installed above the zone to be monitored. Where today's applications require a multitude of sensors, a three-dimensional protective cocoon surrounds the danger zone or the object that is to be monitored. This guarantees free access to the work area and means that workstations can be designed with ergonomics in mind.

Barrier-free protection

SafetyEYE safe camera systems detect and report objects that encroach into freely defined zones, known as warning zones and detection zones. With SafetyEYE, therefore,

it is possible to determine whether there is anyone within the action radius of the hazardous movement (safety) or whether a zone with an increased safety level has been accessed (security).

Safeguarding the future – economical and flexible

Another benefit is that the zone being monitored by SafetyEYE can be divided virtually, into almost any number of warning and detection zones. Various actions can be assigned in the event of an object encroaching into these zones: for example, hazardous movements may be slowed down or brought to an emergency stop, acoustic/optical warning messages may be triggered or an alarm message issued to safety personnel.

Versatile and flexible for safety concepts with optimum compatibility

SafetyEYE has a wide range of application options, far exceeding the options available on previous systems. Whether in the automotive or packaging industry, on presses or infeed stations – SafetyEYE opens up new horizons for the widest range of industries and applications.

Keep up-to-date on safe camera systems SafetyEYE:

 Webcode 1902

Online information at www.pilz.com



▶ Safe camera systems SafetyEYE®

... for wide-ranging tasks and low costs

Previously, aligning multiple sensors and commissioning them in conjunction with the control technology was a laborious process.

Now, innovative 3D technology and user-friendly software enables even complex applications to be monitored and controlled with one system. This lowers your costs, reduces the number of components to a minimum and cuts expenditure on installation and engineering.

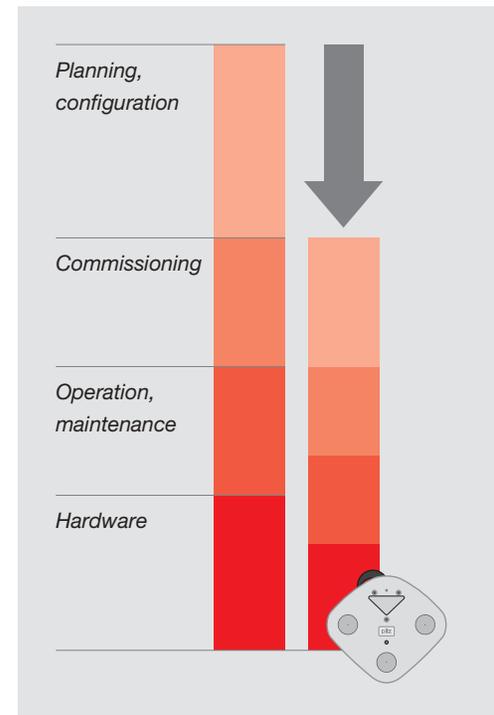
Keeping an eye on your profitability

Monitor, control and protect – you can do all this with just one system. Monitor and control

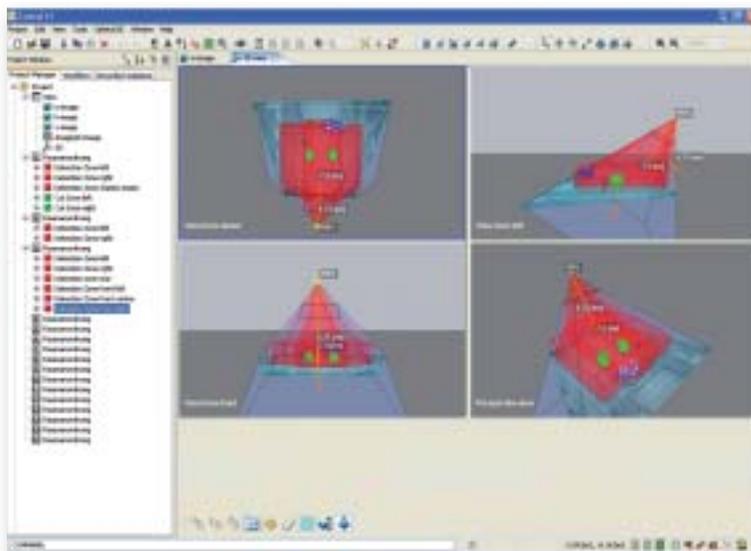
several independent warning and detection zones simultaneously with one SafetyEYE. This reduces components to a minimum, saves on installation and material expenses and reduces costs over the whole lifecycle of the plant.

The future is already in hand

When processes change in an active high-tech operation, your safety and control equipment instantly changes with it, quickly and economically. Warning and detection zones can be adapted thanks to dynamic, automatic switching, while control functions, operator grips or machine operating ranges can also be varied. That way you can remain flexible; once the zones have been defined they can quickly be adapted at the click of a mouse, using the SafetyEYE Configurator.



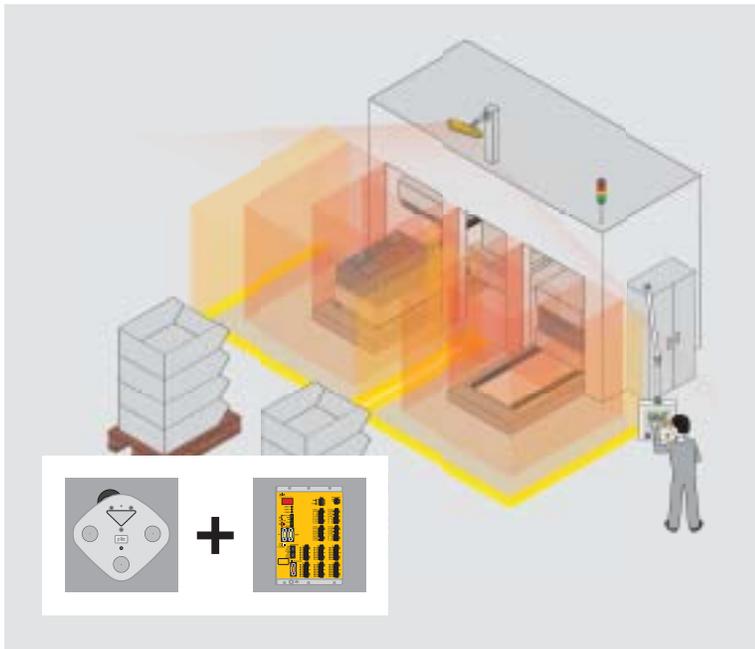
Your cost saving: Production up and running or are you still wiring?



Detection zones set up rapidly at the click of a mouse

Virtual warning and detection zones are set up intuitively using the SafetyEYE Configurator. You define the zones, combine them into groups or switch zone arrangements to suit your needs.

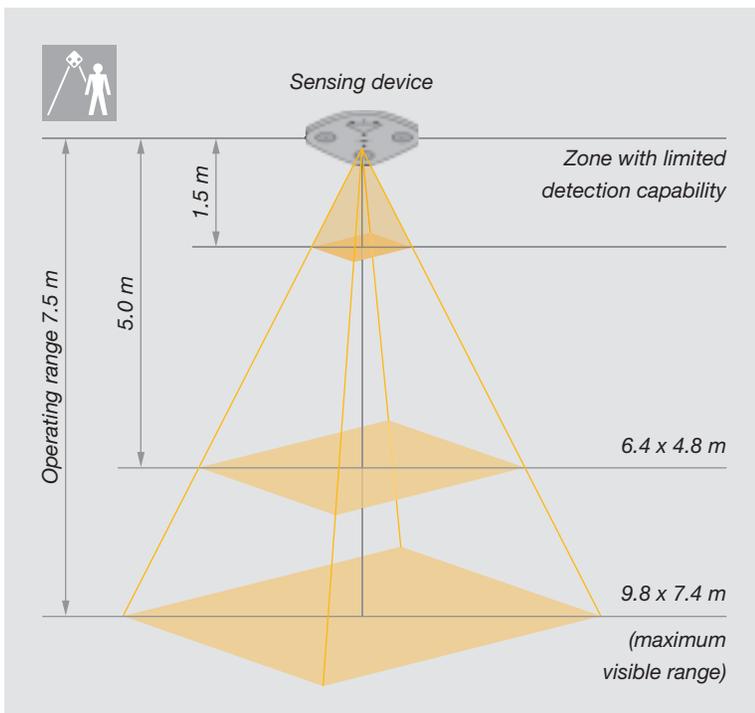
Bring your products to market more quickly than with conventional solutions! With SafetyEYE you save time and costs: during planning, configuration, commissioning, operation and maintenance.



With just one camera system you can monitor and control several work areas independently.

Your benefits at a glance

- ▶ High level of safety and protection against manipulation
- ▶ Economical:
 - Three-dimensional monitoring and control
 - One safe camera system for many functions
 - Highly versatile
 - High level of flexibility when designing or redesigning applications
- ▶ High productivity:
 - Ergonomic workstations
 - Efficient work practices
 - Rapid installation and simple commissioning using just a few user-friendly components
 - Simple configuration of 3D warning and detection zones, intuitively at the click of a mouse
 - User-friendly diagnostics, including evidence



Merlin Award 2009



▶ Selection guide – SafetyEYE®

Safe camera systems SafetyEYE – Starter Set



PSEN se Starter Set 1

Type	Features
PSEN se Starter Set 1	<ul style="list-style-type: none"> ▶ Body protection, up to 7.5 m operating range ▶ Maximum visible range approx. 72 m² ▶ Lighting from 300 lux required, depending on the background ▶ Protection types: <ul style="list-style-type: none"> - Sensing device IP65 - Analysis unit IP20 ▶ Designed in accordance with all relevant norms and standards: <ul style="list-style-type: none"> - Category 3 of EN 954-1 - SIL CL 2 of EN/IEC 61508 - PL d of EN ISO 13849-1 - In accordance with DIN EN 61496 ▶ Suitable for worldwide use

Sensing device



PSEN se SU AM2 65

Type	Designation
PSEN se SU AM2 65	Sensing device (2nd generation)
PSEN se PA 250	Swivel arm for installing the sensing device

Analysis unit and programmable control system



PSEN se AU AM2



CompactFlash Karte



PSS SB 3075-3
ETH-2 SE

PSEN se AU AM2	Analysis unit (2nd generation), 482.6 mm/19" module for rack-mounting
CompactFlash Karte	4 GByte memory capacity for storing the project, 2 pieces included in the PSEN se Starter Set
PSEN se AU AM2 Rear Mount	Mounting bracket for analysis unit (2nd generation) for mounting plate
PSS 3047-3 ETH-2 SE	Programmable control system with preinstalled user program for SafetyEYE (32 digital inputs, 6 of which are alarm outputs; 12 single-pole outputs, 4 of which are test pulse outputs; 3 dual-pole outputs; Ethernet interfaces)
PSS SB 3075-3 ETH-2 SE	Programmable control system with preinstalled user program for SafetyEYE (48 digital inputs, 6 of which are alarm outputs; 18 single-pole outputs, 4 of which are test pulse outputs; 9 dual-pole outputs; SafetyBUS p and Ethernet interfaces)
PSS ZKL 3047-3	Screw connectors (1 set) for PSS 3047-3 ETH-2 SE
PSS ZKL 3075-3	Screw connectors (1 set) for PSS SB 3075-3 ETH-2 SE

Starter Set contains	Order number
<ul style="list-style-type: none"> ▶ PSEN se SU AM2 65 ▶ PSEN se PA 250 ▶ PSEN se AU AM2 ▶ PSEN se AU AM2 Rear Mount ▶ PSS 3047-3 ETH-2 SE ▶ PSS ZKL 3047-3 ▶ PSEN se TO Body 140 ▶ PSEN se Cable FO2C 30 	581 300
<ul style="list-style-type: none"> ▶ PSEN se Cable ETH Patch 1 (2 cables) ▶ PSEN se Cable ETH Patch 5 ▶ CompactFlash card (2 pieces) ▶ PIT si3.1 indicator light unit ▶ PSEN se SM 6 ▶ PSEN se SM 10 ▶ PSEN se RM 6 ▶ PSEN se RM 10 ▶ SafetyEYE Assistant and Configurator 	



Dimensions (H x W x D) in mm	Protection type ¹⁾	Ambient temperature ²⁾	Supply voltage	Order number
63.0 x 292.0 x 292.0	IP65	0 ... 50 °C	-	581 120 ³⁾
-	-	-	-	581 150 ³⁾

Technical documentation on safe camera systems SafetyEYE:

Webcode 1905

312.0 x 483.0 x 405.0	IP54 ⁵⁾ /IP20 ⁶⁾	0 ... 40 °C	110 ... 240 VAC	581 121 ³⁾
-	-	-	-	310388 ³⁾ 7)
250.0 x 30.0 x 55.0	-	-	-	581 201 ³⁾
246.4 x 123.6 x 162.0	IP20	0 ... 60 °C	24 VDC	300 123 ³⁾
246.4 x 160.2 x 162.0	IP20	0 ... 60 °C	24 VDC	300 253
-	-	-	-	300 900 ³⁾
-	-	-	-	300 910

Training – Basic SafetyEYE Course:

Webcode 4001

Accessories, supplementary products and services:

From page 62

Webcode 0326

Online information at www.pilz.com

Please note: This leaflet considers the current development status.

Please refer to the Internet for the latest technical details.

¹⁾ In accordance with EN 60529 ²⁾ In accordance with EN 60068-2-14 ³⁾ Included in the Starter Set ⁴⁾ In development ⁵⁾ Mounting area (e.g. control cabinet) ⁶⁾ Housing ⁷⁾ 2 cards included when ordering an analysis unit



The safe, complete solution

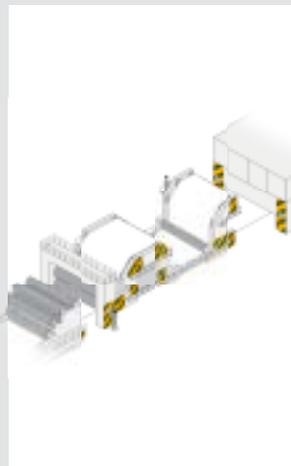
► Compatible with sensor technology: Cont



Our sensors are perfectly compatible with Pilz control technology. You receive first-class components, which you can use individually or combine to form a system.

- **PNOZ:** Safety relays for simple plant and machinery with up to 4 safety functions. Safe monitoring of safety gates and light grids, for example.
- **PNOZmulti Mini:** Safety relay with a compact design, which still provides the proven functions of the PNOZmulti as well as an integrated display for diagnostics.
- **PNOZmulti:** Configurable control system which is multi-functional, freely configurable and tailor-made for use in many areas of mechanical engineering.
- **PSS:** Programmable control systems for use on complex machinery or distributed plants, to monitor safety-related functions and/or for complete machine control.
- **PSS 4000:** The automation system for standard and safety is the ideal system for automation solutions in all industries. Reduce engineering effort and costs, now!

Your requirements:



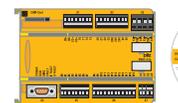
Our solution:



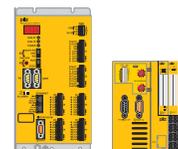
Relays for functional safety PNOZ



Configurable safety relays PNOZmulti Mini



Configurable control system PNOZmulti



Programmable control systems PSS



Automation system PSS 4000

Keep up-to-date on control technology:

Webcode 0196

Online information at www.pilz.com

rol technology and services

Easy project implementation with Pilz

Pilz offers a comprehensive range of services to help implement sensor technology in your application:

▶ Safety-related inspection

- Plant assessment
- Risk analysis



▶ Safety concept in accordance with the current standards and directives

- ▶ Including safety design
 - Measurement of plant/machine's stopping time
 - Calculation of safety distances



▶ Including system implementation

- Preparation/adaptation of circuit diagrams
- Wiring, assembly, installation
- System configuration
- Testing prior to initial commissioning
- Commissioning



▶ Safety validation



▶ CE Services



▶ Training



▶ Repeat testing (ESPE inspection)



Machinery safety services:

Webcode 0427

Machinery safety training courses:

Webcode 0218

Online information at www.pilz.com



► Selection guide – Accessories: Cable

Cable with socket for PSEnmag



PSEN cable

Description Type	Features	Quantity
Cable, M8, 4-pin Kabel/cable	Straight, screw-on	1
	Angled, screw-on	1
Cable, M8, 8-pin PSEN cable	Straight, screw-on	1

Cable with socket for PSENcode, PSENini, PSENslock



PSEN cable

Cable, M8, 8-pin PSEN cable	Straight, screw-on	1
Cable, M12, 8-pin PSEN cable	Straight, screw-on	1
	Angled, screw-on	1

Cable with socket for PSENhinge, PSENopt, PSEnvip



PSEN op cable



PSEN op cableset



PSEN op connector

Cable, shielded, M12, 4-pin PSEN op cable	Straight	1
	Angled	1
Cable, shielded, M12, 8-pin PSEN op cable	Straight	1
	Angled	1
Cable, M12, 4-pin PSEN op cable	Straight	1
	Angled	1
Cable, M12, 5-pin PSEN op cable	Straight	1
	Angled	1
Cable, shielded, M12, 5-pin PSEN op cable	Cable for cascading, straight	1
Cable, shielded, M12, 4-pin PSEN op cableset	Cable for L-Muting, coupling socket, straight/angled	1
Cable, shielded, M12, 4-pin PSEN op cableset	Y-cable for T-Muting, angled	1
Plug-in adapter, M12, 5-pin PSEN op connector	M12 coupling sockets, for cascade master in standalone mode	1

Cable with connector for SafetyEYE



PSEN se Cable FO2C

Cable for data and supply voltage PSEN se Cable FO2C	To connect the sensing device to the analysis unit: FOC for data, copper cables for 12 V supply voltage	1
Ethernet connection cable PSEN se Cable ETH Patch	To connect the analysis unit to the programmable control system or configuration PC, shielded	1

Order number (by length)

0.5 m	0.75 m	1 m	2 m	3 m	5 m	10 m	15 m	30 m	50 m	80 m
-	-	-	533 111	-	533 121	533 131	-	533 141	-	-
-	-	-	533 110	-	533 120	533 130	-	533 140	-	-
-	-	-	533 150	-	533 151	533 152	-	533 154	-	-

-	-	-	533 150	-	533 151	533 152	-	533 154	-	-
-	-	-	-	540 319	540 320	540 321	-	540 326	-	-
-	-	-	-	540 322	540 323	540 324	-	540 325	-	-

-	-	-	-	630 303	630 304	630 305	-	630 309	-	-
-	-	-	-	630 306	630 307	630 308	-	630 319	-	-
-	-	-	-	630 313	630 314	630 315	-	630 328	-	-
-	-	-	-	630 316	630 317	630 318	-	630 329	-	-
-	-	-	-	630 300	630 301	630 302	-	630 296	-	-
-	-	-	-	630 341	630 342	630 343	-	630 344	-	-
-	-	-	-	630 310	630 311	630 312	-	630 297	-	-
-	-	-	-	630 347	630 348	630 349	-	630 350	-	-
630 280	-	630 281	-	-	-	-	-	-	-	-
-	630 282	-	-	-	-	-	-	-	-	-

630 295

630 285

-	-	-	-	-	-	-	581 122	581 123 ¹⁾	581 124	581 125
-	-	581 112 ²⁾	-	-	581 111 ¹⁾	-	-	-	-	-

¹⁾ 1 cable included
in the SafetyEYE
Starter Set
(2nd generation)

²⁾ 2 cables included
in the SafetyEYE
Starter Set
(2nd generation)



▶ Selection guide – Accessories for series connection

Accessories for series connection for PSENiNi, PSEncode, PSEnlock, PSEnsgate



PSEn Y junction



PDP67 F 4 code

Description Type	Features	Quantity	Order number
Diagnostic connector PSEn T junction M12	M12, 8-pin	1	540331
Cable separator PSEn Y junction M8-M12/M12	M8, 8-pin	1	540327
PSEn Y junction M12-M12/M12	M12, 8-pin	1	540328
Connection cable PSEncable M12-8sf M12-8sm	M12, 8-pin	1	2 m540340 5 m540341 10 m540342 20 m540343 30 m540344
Multiple interface PDP67, protection type: IP67 PDP67 F 8DI ION	Series connection up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1 Sensor junction box for decentralized periphery PNOZmulti	1	773600
PDP67 F 4 code	Passive junction for PSEncode	1	773603

Accessories for series connection for PSEnmag, PSEnmech, PSEnhinge, PSEnrope



PDP67 F 8DI ION

Multiple interface PDP67, protection type: IP67 PDP67 F 8DI ION	Series connection up to PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061 and Cat. 4 of EN 954-1 Sensor junction box for decentralized periphery PNOZmulti	1	773600
Multiple interface for PSEnmag (PSEn 1 series) PSEn ix1	Can be used for connection to: ▶ Safety relays PNOZsigma, PNOZpower, PNOZ X ▶ Configurable control systems PNOZmulti ▶ Programmable control systems PSS	1	535120
Multiple interface for PSEnmag (PSEn 2 series) PSEn i1	Can be used for connection to: ▶ Safety relays PNOZellog ▶ Configurable control systems PNOZmulti ▶ Programmable control systems PSS	1	535110

Connection and installation

Installation accessories for PSENmech, PSENmag, PSENcode, PSENSlock



PSEN screw

Description Type	Features	Quantity	Order number
One-way screw to secure the actuator	<ul style="list-style-type: none"> ▶ Stainless steel ▶ Drive: One-way slot (safety screw) 		
PSEN screw M4x16	<ul style="list-style-type: none"> ▶ M4, 16 mm ▶ Suitable for PSEN 1.x, PSEN 2.x, PSEN me1x/1AS and PSEN me4x 	10	540 310
PSEN screw M5x10	<ul style="list-style-type: none"> ▶ M5, 10 mm ▶ Suitable for PSEN cs1.x and PSEN cs2.x 	10	540 311
PSEN screw M5x20	<ul style="list-style-type: none"> ▶ M5, 20 mm ▶ Suitable for PSEN cs1.x, PSEN cs2.x, PSEN me1x/1AR, PSEN me2/x, PSEN me3/x and PSEN sl-x 	10	540 312

Installation accessories for PSENmag (PSEN 1.1 and PSEN 2.1)



PSEN reverse spacer

Spacer PSEN spacer	Plastic	10	534 310
Mounting bracket PSEN bracket	Aluminium	1	532 110
Reverse spacer PSEN reverse spacer	Plastic	2	534 320

Installation accessories for PSENhinge

Blank hinge PSEN hs1 hinge	Stainless steel	1	570 280
Change kit PSEN hs kit1	To re-adjust the switching point	1	570 281

Installation accessories for PSENrope

Block rope pulley PSEN rs pulley flex	Rotatable	1	570 313
Rope for rope pull switch PSEN rs rope d3/d4	<ul style="list-style-type: none"> ▶ Rope diameter: 3 mm ▶ Insulation diameter: 4 mm ▶ PVC-coated, red 	1	50 m570 314 100 m570 315
Guide roller PSEN rs pulley 75	ø 75 mm	1	570 312
Cage clamp PSEN rs spring	Steel, max. spring force to tension the rope		
	175 N	1	570 310
	300 N	1	570 311



► Selection guide – Installation accessories

Installation accessories for PSENOpt

	Description Type	Features	Quantity	Order number
 <i>PSEN iop1</i>	Junction box PSEN iop1	Suitable for PSEN op4B-T/-L/-S	1	630370
	Alignment guide PSEN op Laser pointer	Laser protection class 2 in accordance with EN 60825-1	1	630340
 <i>PSEN op Laser pointer</i>	Floor bracket PSEN op Stand	► Dimensions (W x D): 240 x 240 mm ► Profile: 30 x 30 mm	1	1,000 mm .. 630330 1,200 mm .. 630331
		► Dimensions (W x D): 240 x 240 mm ► Profile: 45 x 45 mm	1	1,500 mm .. 630332 1,800 mm .. 630333
 <i>PSEN op Bracket</i>	Mounting bracket PSEN 2S/4S bracket	Suitable for PSEN op2S/4S	2	630712
	PSEN op2H bracket kit	Suitable for PSEN op2H	12	630713
	PSEN op2H bracket kit adjustable	Suitable for PSEN op2H, adjustable	4	630714
	PSEN op Bracket	Suitable for muting sensors	1	630324
	PSEN op Bracket kit	► Suitable for all PSENOpt except PSEN op2H ► Profile: 30 x 30 mm	4	630325 ¹⁾
	PSEN op bracket turnable (kit)	► Suitable for PSEN op.../1, rotatable and adjustable ► Profile: 30 x 30 mm	4	630772 ²⁾
 <i>PSEN op Bracket kit</i>	PSEN op Bracket kit adjustable	► Adjustable ► Profile: 30 x 30 mm	4	630326
	PSEN op Bracket kit antivibration	► Vibration-resistant ► Profile: 30 x 30 mm	4	630327
 <i>PSEN op Mirror</i>	Deviating mirror PSEN 2S/4S mirror	Suitable for light beam devices PSEN op2S/4S	1	630711
	PSEN op Mirror	► Suitable for PSEN op2 and PSEN op4 ► Dimensions (W x D): 124 x 6 mm	1	550 mm ... 630335 700 mm ... 630336 900 mm ... 630337 1,000 mm .. 630338 1,270 mm .. 630339 1,600 mm .. 630360 1,800 mm .. 630361

¹⁾ Included with the PSENOpt

²⁾ Included with the PSEN op.../1

Installation accessories for PSEnlock

Description Type	Features	Quantity	Order number
Mounting bracket PSEN sl bracket sliding door	For sliding gates	2	570 551
PSEN sl bracket swing door	For swing gates	1	570 550

Installation accessories for PSEnvip



PSEnvip MS



PSEnvip AT mag

Adapter plate PSEnvip MB	To mount the PSEnvip AP on to any bracket, with slot	2	583 205
Retaining brackets PSEnvip MS	Retaining brackets (set) for installation	2	583 206
Adjustment plates PSEnvip AP	For PSEnvip, transmitter and receiver	2	583 202 ³⁾
Adjustment templates PSEnvip AT mag	With magnet to align PSEnvip on a first-time installation	2	583 203 ³⁾
PSEnvip AT mech	For mechanical installation in the tool holder on a first-time installation	2	583 204

³⁾ Included with the PSEnvip (Set)

Installation accessories for SafetyEYE



PSEN se PA 250



CompactFlash Karte

Swivel arm PSEN se PA 250	For installing the sensing device	1	581 150 ⁴⁾
Mounting bracket PSEN se AU AM2 Rear Mount	<ul style="list-style-type: none"> ▶ Suitable for mounting plate for the analysis unit (2nd generation) ▶ Dimensions (H x W x D): 250 x 30 x 55 mm 	1	581 201 ⁴⁾
CompactFlash card CompactFlash Karte	For storing the project, 4 GByte memory capacity	1	310 388 ^{5) 6)}
Screw connector PSS ZKL 3047-3	Plug-in screw terminals (1 set) For PSS 3047-3 ETH-2 SE	1	300 900 ⁴⁾
PSS ZKL 3075-3	For PSS SB 3075-3 ETH-2 SE	1	300 910

⁴⁾ Included with the SafetyEYE Starter Set

⁵⁾ 2 cards included with the SafetyEYE Starter Set

⁶⁾ 2 cards included when ordering an analysis unit



► Selection guide – Commissioning accessories

Commissioning accessories, live operation of PSENOpt



PSEN op Testpiece

Description Type	Features	Quantity	Order number
Test rod	For regular function test		
PSEN op Testpiece F 14 mm	Finger protection, ø 14 mm	2	630345
PSEN op Testpiece H 30 mm	Hand protection, ø 30 mm	3	630346

Commissioning accessories, live operation of PSENVip



PSENVip TP

Test piece PSENVip TP	For regular function test, finger protection	1	583200 ¹⁾
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¹⁾ Included with the PSENVip (Set)

Commissioning accessories, live operation of SafetyEYE



PSEN se SM 10/
PSEN se RM 10



SafetyEYE
Configurator



PIT si3.1

Setup markers	Depends on the distance between sensing device and user plane		
PSEN se SM 6	1 ... 6 m	5	581160 ²⁾
PSEN se SM 10	4 ... 10 m	5	581161 ²⁾
Reference markers	Depends on the distance between sensing device and user plane		
PSEN se RM 6	1 ... 5 m	6	581170 ²⁾
PSEN se RM 10	4 ... 9 m	6	581171 ²⁾
Software SafetyEYE Assistant and Configurator, basic licence	Basic licence for the SafetyEYE Assistant and Configurator	1	581250B ²⁾
SafetyEYE Assistant and Configurator CD	CD containing the configuration software for SafetyEYE Assistant and Configurator	1	581250D ²⁾
SafetyEYE Assistant and Configurator CD, documentation	CD containing configuration software for SafetyEYE Assistant and Configurator, plus SafetyEYE documentation	1	581250
SafetyEYE Assistant and Configurator, copy licence	Copy licence for the SafetyEYE Assistant and Configurator	1	581250K
Indicator light unit PIT si3.1 indicator light unit	► Red, amber, green ► Supply voltage: 24 VDC	1	581190 ²⁾
Test piece PSEN se TO Body 140	For regular function test, body protection, ø 140 mm	1	581182 ²⁾

²⁾ Included with the SafetyEYE Starter Set

ries, live operation and muting

Muting accessories for PSENopt and PMUT



PIT si 1.1



PSEN op1.1

Description Type	Features	Quantity	Order number
Signal lamp for muting mode	<ul style="list-style-type: none"> ▶ Operating range: 0.1 ... 3 m ▶ Protection type: IP65 ▶ Supply voltage: 24 VDC 		
PIT si 1.1	<ul style="list-style-type: none"> ▶ Unmonitored in accordance with EN/IEC 61496 ▶ Incl. incandescent lamp, mounting bracket and 2 screws 	1	620010
PIT si 1.2	<ul style="list-style-type: none"> ▶ Monitored in accordance with EN/IEC 61496 and VDE 0113-201 ▶ 2 semiconductor outputs to monitor the function of the filament ▶ TÜV approval 	1	620020
PIT si 2.1	<ul style="list-style-type: none"> ▶ Monitored in accordance with EN/IEC 61496 and VDE 0113-201 ▶ TÜV approval ▶ Incl. LED, mounting bracket and 2 screws ▶ Service life up to 50,000 hours 	1	620015
Muting sensors	<ul style="list-style-type: none"> ▶ Output: PNP, N/O and N/C ▶ Supply voltage: 10 ... 30 VDC ▶ Connection: connector, M12, 4-pin 		
PSEN op1.2 Emitter M12	Transmitter: <ul style="list-style-type: none"> ▶ Suitable for PSEN op4, PSEN op2B ▶ Operating range: 0 ... 20 m 	1	630322
PSEN op1.1 Receiver pnp no/nc M12	Receiver: <ul style="list-style-type: none"> ▶ Suitable for PSEN op4, PSEN op2B ▶ Operating range: 0 ... 20 m 	1	630321
PSEN op1.3 Reflex pnp no/nc M12	Reflex: <ul style="list-style-type: none"> ▶ Suitable for PSEN op2B, PSEN op4, PSEN opSB ▶ With prism reflector ▶ Operating range: 0.1 ... 6 m 	1	630320
PSEN op Reflector	Reflector: <ul style="list-style-type: none"> ▶ Suitable for PSEN op2B, PSEN op4, PSEN opSB ▶ With prism reflector ▶ Operating range: 0.1 ... 6 m 	1	630323

Muting accessories for PIT



PITsign 7W

Incandescent lamp PITsign 7W	Replacement lamp (PIT si 1.1 and PIT si 1.2)	1	620100
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