Sensor technology PSEN®, control and signal devices PIT®

PILZ
THE SPIRIT OF SAFETY

- Devices for position monitoring
- Safety switches
- Safety gate systems
- Safety light curtains, safety laser scanners, safe radar systems
- Safe camera systems
- Control and signal devices




Completely safe automation:
one source for sensor and
safe control technology!

Safe sensor technology PSEN®, control and signal devices PIT®

Pilz sensors PSEN and control and signal devices PIT guarantee that machinery and complex plants can be used efficiently while still complying with standards intended to protect human and machine. The versatile portfolio provides individual solutions for every requirement: from monitoring of positions, covers and safety gates to area monitoring. When combined with safe control technology from Pilz, you get a cost-effective, all-in-one solution.

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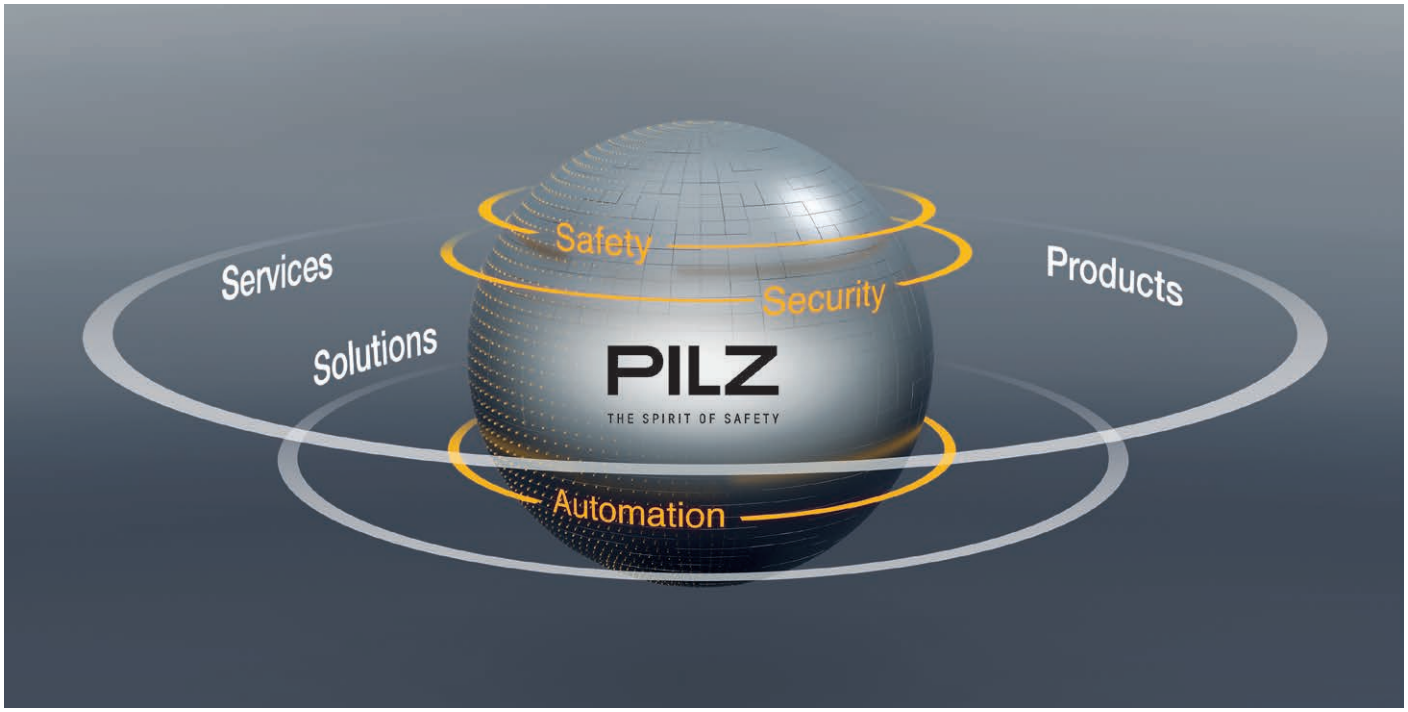
The Spirit of Safety in Digital Automation

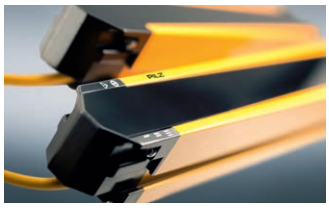


Pilz offers products, services and solutions for safety, security and automation.

With everything we do, we make the world a safer place. This is apparent in every idea, every product and every solution that's developed at Pilz. We always focus on our customers' needs and are passionate about supplying them with cutting-edge technology and the very best quality.

Today, Pilz is a global supplier of automation products, solutions and services with around 2 500 employees. The topics of digitisation and industrial security play an increasingly important role. Our digital business models offer our customers maximum benefits. Interlinked production and industrial plants must be protected against errors, whether caused intentionally or unintentionally. Pilz believes that only a holistic approach to safety and security can guarantee the comprehensive protection of humans and machinery.

For almost 75 years, Pilz has been providing inspiration with its innovative product developments and comprehensive services. Our end-to-end, individual concepts for safety, security and automation support our customers around the world in the implementation of their solutions. This is what we, as a family business steeped in tradition, stand for with our employees – each one an "Ambassador for Safety".



Sensor technology

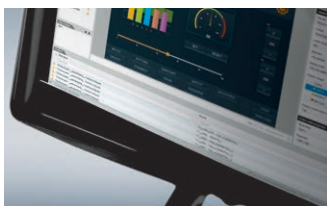
Relays

Small controllers

Controllers

Drive technology

Operation and monitoring

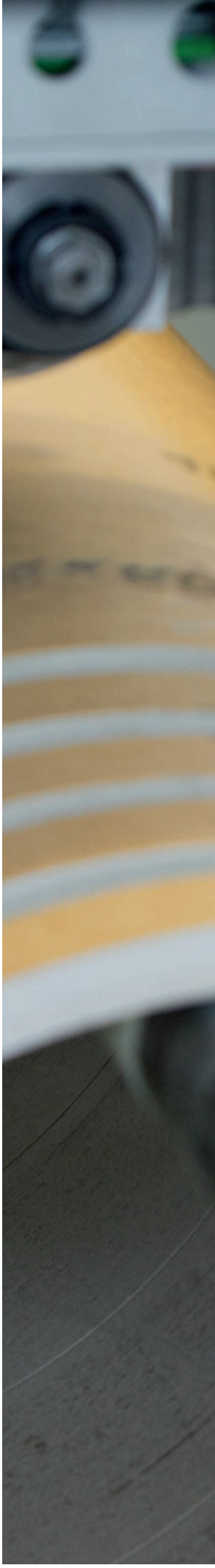


Software

Services

Sensor technology

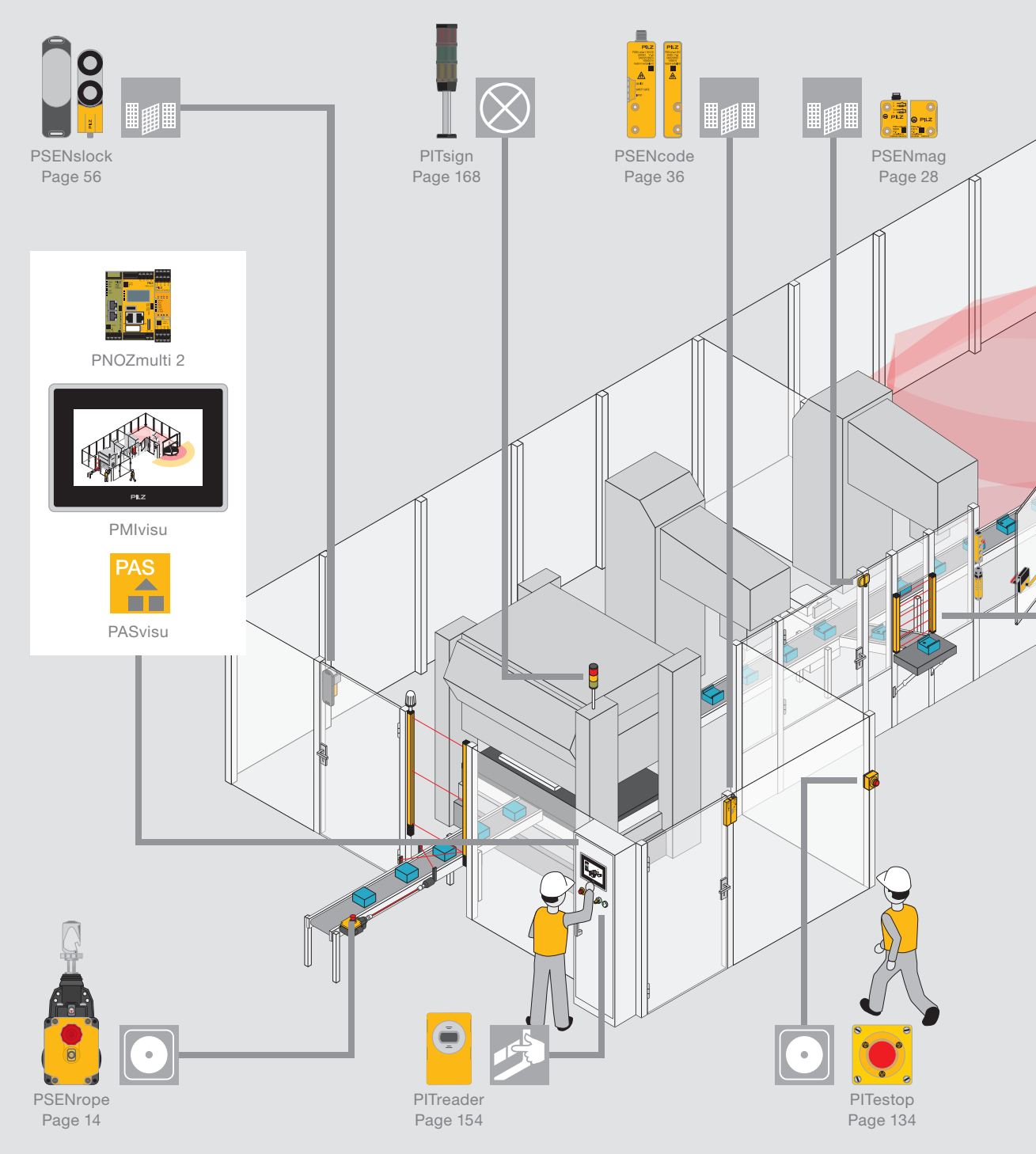
Comprehensive and individual: benefit from an extensive portfolio of safety sensors that conform to international standards and have been tested by certification bodies. As the sensors were developed, great value was placed on performance, robustness, quality and ease of operation. Combined with control technology from Pilz, you receive a safe and economical complete solution. High availability and productivity, as well as maximum safety, are guaranteed for your plant and machinery.



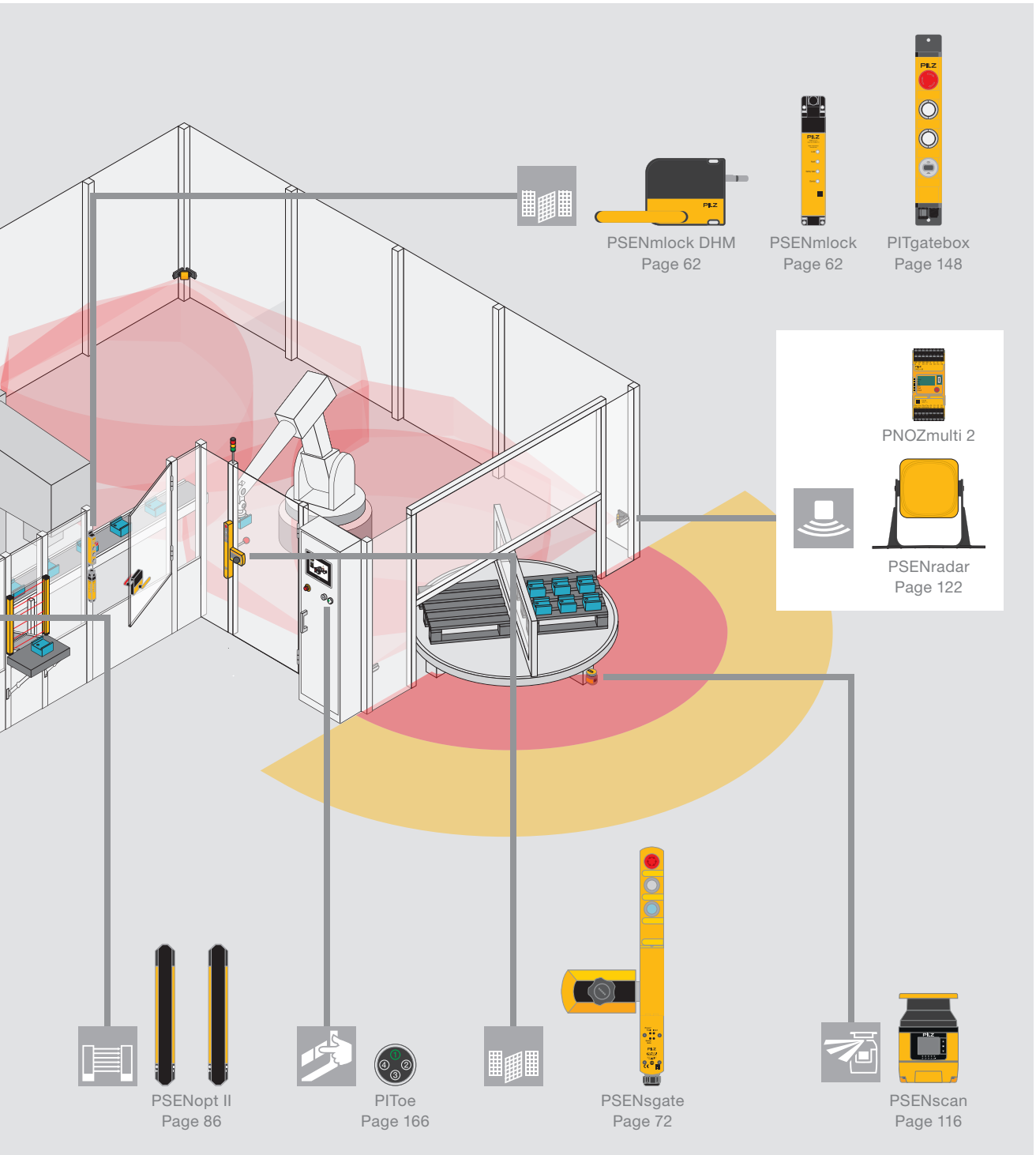

PILZ

Strong solution – with safe sensor technology PSEN®

Play it safe during the automation of your plant and machinery: sensor technology, control technology, drive technology and visualisation from one source – the complete solution from Pilz.



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



Keep up-to-date on sensor technology PSEN:

Webcode: web150521

Control devices:

Webcode: web150559

Online information at www.pilz.com

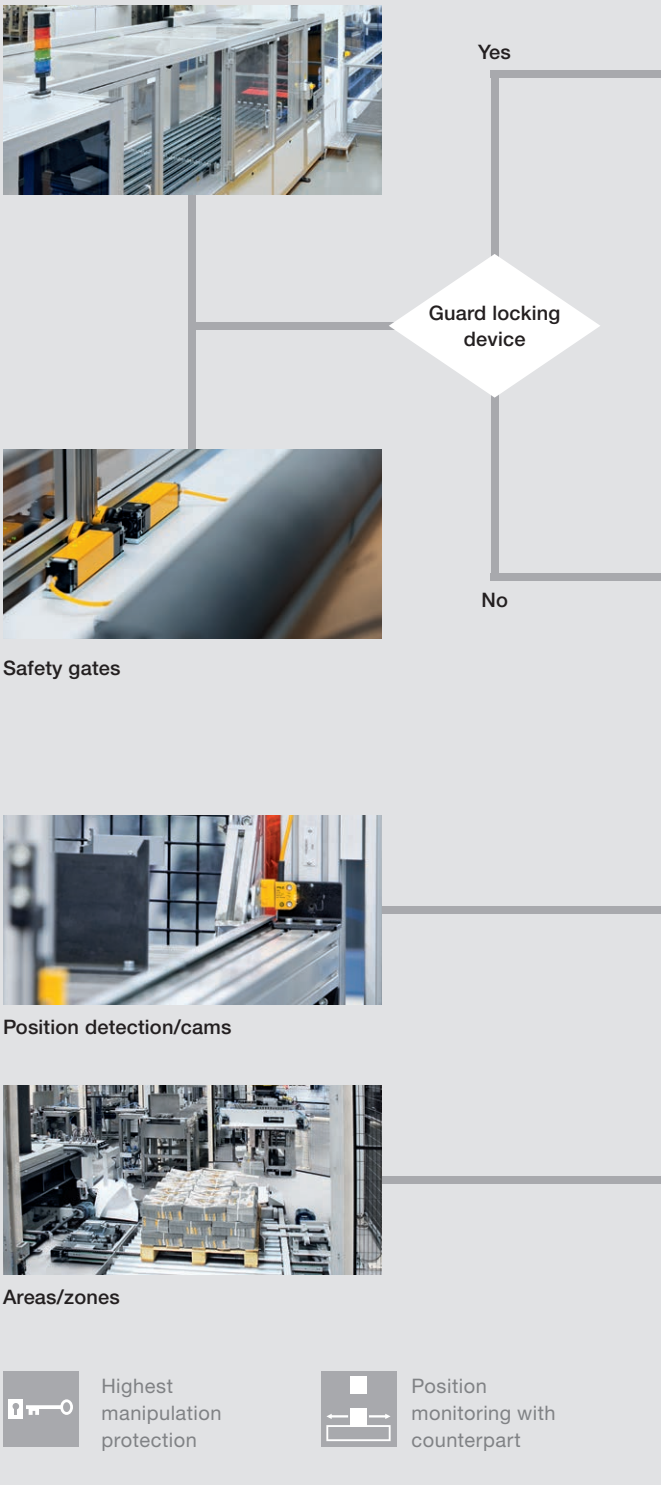
For every requirement – Safe sensors PSEN®

Free choice for your application

Safe sensors are suitable for use on covers, flaps, rolling doors, safety gates, cams, electrosensitive protective equipment and for position detection. In the overview you'll find the right sensors to suit your safety requirement. For example, if your safety gate needs a sensor with no guard locking function, with non-contact operation and the highest level of manipulation protection, PSENcode is the right choice.

The right technology

The high variability of safe sensors PSEN is apparent in the different technologies: whether mechanical, magnetic, RFID, optical or camera-based – Pilz has used its know-how and experience to make optimum use of all technologies.



All up-to-date certifications for our products can be found at www.pilz.de and with a QR code on our website.

Keep up-to-date on sensor technology PSEN:

Webcode: web150521

Online information at www.pilz.com

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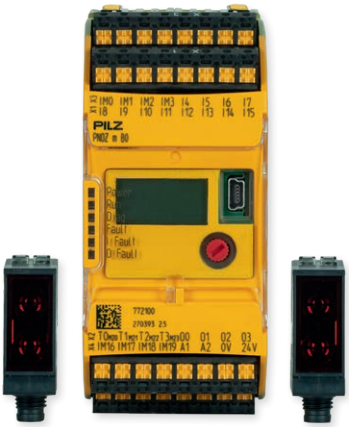
E-STOP pushbutton

Safety light curtains

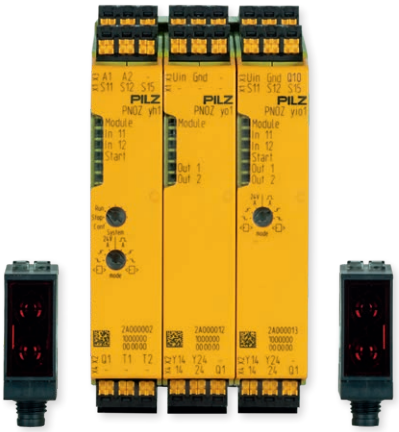
Safety gate

Safety laser scanners

Safe monitoring of the cardboard feed on packa



PNOZmulti 2 with optical sensors
O300.GP.2-11246332



myPNOZ with optical sensors
O300.GP.2-11246332

With this Pilz solution, you can increase the safety and productivity of your packaging machines! The solution is used in the cardboard feed to prevent an operator from reaching into the machine through the empty material feed opening and being injured. While there are sufficient cardboard boxes in the magazine, the cardboard boxes will cover the opening and it will be impossible to reach into the danger zone while the machine is running. The opening of the movable guard can be safeguarded as follows: if the defined minimum amount of cardboard boxes is reached or undershot in the magazine, the outputs of the programmable safety system shut down the machine. The machine remains stopped until sufficient cardboard boxes are once again filled and production can start up again. You can choose either the safe small controller PNOZmulti 2 or the modular safety relay myPNOZ. Two optical sensors are required for each feed device. You are in safe hands and reduce the down-times of your machine with this TÜV-SÜD-certified solution.

Your benefits at a glance

- TÜV SÜD-certified solution for PL d/Cat. 3 of EN ISO 13849-1 or SIL 2 of IEC 62061: ready-to-use solution saves costs and time
- Higher machine productivity: packaging material provides natural protection; fences or the like are not needed
- Cost saving: no costly mechanical devices
- Higher level of personnel safety: minimised risk of accident thanks to use of safe control technology in combination with optical sensors
- Simple integration in existing applications and retrofit possible
- High reliability in the detection of different packaging materials

ging machines

Safe monitoring of the cardboard feed on packaging machines

Technical features

- TÜV SÜD-certified solution for PL d/Cat. 3 of EN ISO 13849-1 or SIL 2 of IEC 62061
- Solution consists of:
  - The safe small controllers PNOZmulti 2 (all base units from the PNOZmulti 2 product range can be used) or
  - Modular safety relay with the type code myPNOZ.91.CKA360AB000XB700 with semiconductor outputs or myPNOZ.03.CKA360AB000XD700 with relay outputs and
  - 2 optical sensors O300.GP.2-11246332 for each cardboard feed/cardboard magazine
- Pulsed by PNOZmulti 2 or myPNOZ
- Short response times of the sensors; point/beam shape; background suppression; switching distance 30 – 100 mm; M8 4-pin connector; 12.9 mm wide
- Further information is available from the solution description under webcode web230900.

Order number

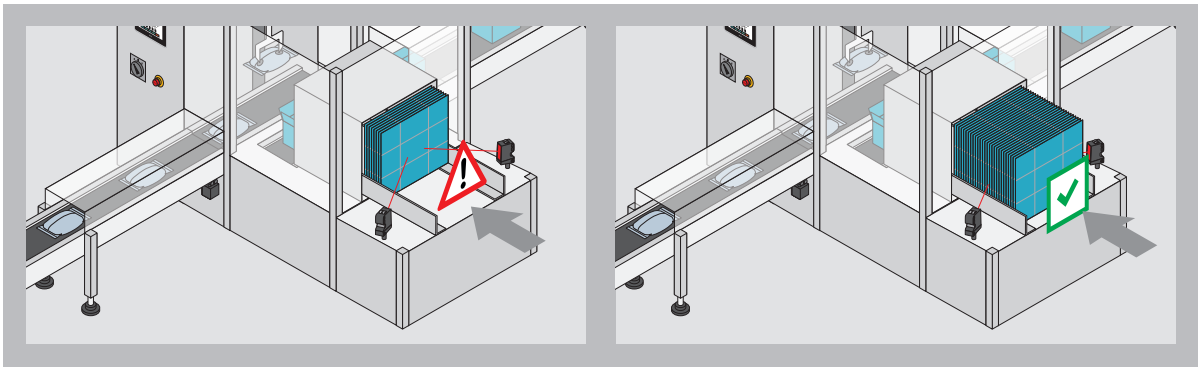
PNOZ m B0/PNOZ m B0.1	772 100/772 104
- Plug-in spring-loaded terminals	751 008
- Plug-in screw terminals	750 008
- Chip card 8 kByte/32 kByte	779 201/779 211
- Mini USB cable, 3 m/5 m	312 992/312 993
- Software tool PNOZmulti Configurator, from V11.0	No licensing costs
Safety relay myPNOZ, Creator type code	
- myPNOZ.91.CKA360AB000XB700: PNOZ yh1/yo1/yio1 (with semiconductor outputs)	
- myPNOZ.03.CKA360AB000XD700: PNOZ yh1/yo1/yio2 (with relay outputs)	
Optical sensor O300.GP.2-11246332: please order 2 sensors per infeed magazine	Z9000039
Accessories	
e.g. straight cable 5 m	533 121

Solution with the safe small controller PNOZmulti 2

- Economical: all base units PNOZmulti 2 can be used.
- Open and flexible: all other application-based safety functions can also be monitored (E-STOP, safety gates etc.).
- Productive: the integrated diagnostics via PVIS with plain text messages enables the fast rectification of standstills with clear handling instructions.
- Saves costs: monitoring of several cardboard magazines possible with only one base unit, you configure one function block and use two sensors for each magazine.

Solution with modular safety relays myPNOZ

- Can be ordered preconfigured with the myPNOZ Creator type code
- Plug and play: wired – ready for immediate use
- Simple: diagnostics via LEDs
- Flexible: monitoring of additional safety functions possible



Solution for safe monitoring of the cardboard feed – a tool to increase the safety and productivity of your packaging machines!

Keep up-to-date on packaging:

Webcode: web231143

PNOZmulti 2:

Webcode: web225263

myPNOZ:

Webcode: web224965

Optical sensors:

Webcode: web230900

Online information at www.pilz.com

Safe rope pull switch PSENrope

Whether on the assembly line or the machine – where safety in the production area is concerned, the safe rope pull switch PSENrope is a proven, reliable solution. PSENrope switches off functional processes by manual action. It provides maximum safety, as the emergency stop function can be triggered at any point along the rope.

PSEN rs1.0-175

PSEN rsm 2.0-300-0-0-0

PSEN rsm 1.0-300-0-1-0

PSEN rsm 2.0-300-1-0-0

Simple and robust safety solution

PSENrope is flexible to use, easy to install and simple to operate. 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. Due to its rugged finish, PSENrope is reliable even under extreme environmental conditions.

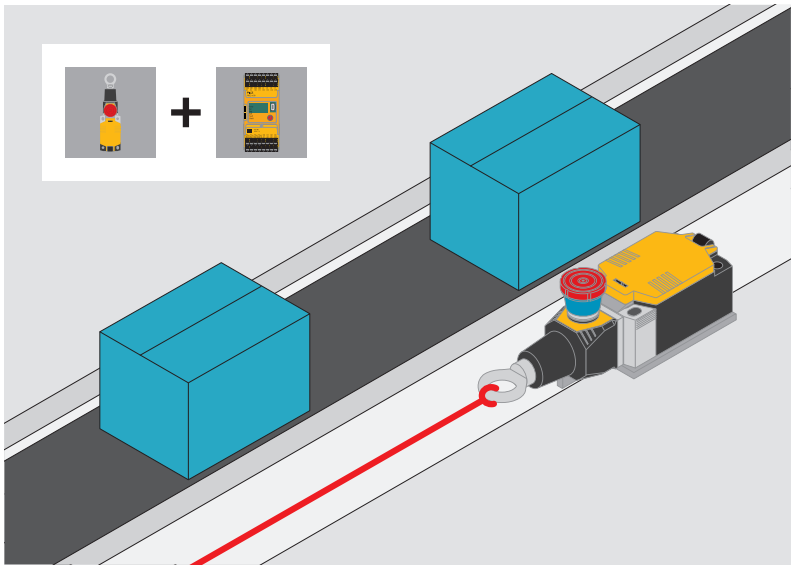
Safe rope pull switch in compact design

With PSENrope mini you get a particularly compact, cost-efficient rope pull switch with a rope length of up to 30 metres. Thanks to versions with straight and angled head, PSENrope mini can be flexibly and easily mounted in a variety of installation situations. In addition to the versions with emergency stop function, there are also versions with integrated reset button that are suitable for concealed installation in the application.

Type code for PSENrope

PSEN rs1.0-300-0-0-0

Product area Pilz **SEN**sors	Housing material	Contacts	Max. spring force to tension the rope	Button	Head	Connection
Product group **rs – PSENrope**	**1 Metal** 2 Plastic	**0 2 N/C, 2 N/O**	175 175 N **300 300 N**	**0 E-STOP** 1 Reset	**0 Straight** 1 Angled to the right 2 Angled to the left	**0 M20 thread**
Operation Mechanical						



Your benefits at a glance

- Easy installation and simple operation
- Flexible use even when safeguarding large plants
- Highly robust thanks to sturdy metal or plastic housing
- Suitable for indoor and outdoor use
- High level of safety as wiring space is physically separate from mechanics
- Cost-effective thanks to the combination of emergency stop and pull-to-release

Components for your safe solution	Order number
Sensor: PSEN rsm 2.0-300-0-0-0	570306
Connection: cable, depending on function, e.g. 4 x 0.5 mm²	-
Evaluation device: e.g. PNOZmulti 2	772100

The cost-efficient solution for the emergency stop function along conveyor belts: safe rope pull switch PSENrope mini and configurable safe small controller PNOZmulti 2.

Cable selection:

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Keep up-to-date on safe rope pull switches PSENrope:

Webcode: web150404

Online information at www.pilz.com

Selection guide – PSENrope and PSENrope mini

Safe rope pull switch PSENrope

PSEN rs1.0-175

Type	Head	Housing material	Maximum rigging length	Certification	Order number
PSEN rs1.0-175	Straight head	Aluminium die cast	37.5 m	CSA, DGUV	570301
PSEN rs1.0-300	Straight head	Aluminium die cast	75.0 m	CSA, DGUV	570300
PSEN rs2.0-175	Straight head	Plastic	37.5 m	CSA, DGUV	570303
PSEN rs2.0-300	Straight head	Plastic	75.0 m	CSA, DGUV	570302

Common features

- Integrated emergency stop pushbutton
- Contacts: 2 N/C, 2 N/O
- Protection type: IP67
- Ambient temperature:
  - PSEN rs1.0: –30 … +80 °C
  - PSEN rs2.0: –25 … +70 °C
- Dimensions (H x W x D) in mm:
  - PSEN rs1.0: 237 x 90.0 x 88
  - PSEN rs2.0: 294 x 42.5 x 88

Safe rope pull switch PSENrope mini

PSEN rsm 2.0-300-1-0-0

PSEN rsm 2.0-300-0-0-0

PSEN rsm 1.0-300-0-1-0

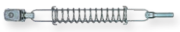
Type	Head	Housing material	Maximum rigging length	Certification	Order number
▸ **Version with reset function**					
PSEN rsm 2.0-300-1-0-0	Straight head	Plastic	30 m	-	570305
▸ **Versions with emergency stop function**					
PSEN rsm 2.0-300-0-0-0	Straight head	Plastic	30 m	-	570306
PSEN rsm 1.0-300-0-0-0	Straight head	Metal	30 m	-	570304
PSEN rsm 1.0-300-0-2-0	Angled head, left	Metal	30 m	-	570307
PSEN rsm 1.0-300-0-1-0	Angled head, right	Metal	30 m	-	570308

Common features

- Versions with emergency stop and reset function
- Material: Aluminium die cast/ metal or plastic
- Versions with straight and angled head (right, left)
- Rope length: 30 m
- Protection type: IP67
- Ambient temperatures: –30 °C to +75 °C
- Contacts: 2 N/C, 2 N/O
- Dimensions (H x W x D) in mm:
  - Straight head: 157.5 x 42.5 x 41
  - Angled head: 110 x 114.5 x 42.5

Accessories – safe rope pull switch PSENrope and PSENrope mini

PSEN rs pulley flex



PSEN rs spring

Type	Features	Quantity	Order number
Block rope pulley **PSEN rs pulley flex**	Rotatable	1	570313
Rope for rope pull switch **PSEN rs rope d3/d4**	▸ Rope diameter: 3 mm ▸ Insulation diameter: 4 mm ▸ PVC-coated, red	1	50 m ____ 570314 100 m ____ 570315
Pulley **PSEN rs pulley 75**	Ø 75 mm	1	570312
Tension spring **PSEN rs spring**	Steel, max. spring force to tension the rope		
	175 N	1	570310
	300 N	1	570311
Turnbuckle **PSEN rsm turnbuckle**	M6x60	1	570316
Turnbuckle nut **PSEN rsm turnbuckle nut**	M6	1	570317
Rope thimble **PSEN rsm rope thimble**	D4, blue passivated strip steel, RoHs-compliant	1	570318
Rope clamp **PSEN rsm rope clamp**	Nominal size 4, blue passivated strip steel, RoHs-compliant	1	570319

Cable selection:

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Keep up-to-date on safe rope pull switches PSENrope and PSENrope mini:

Webcode: web150404

Online information at www.pilz.com

Rotary encoder PSENenco

The rotary encoders PSENenco are used to determine position, speed and movement. These are available as absolute encoders and incremental encoders. The absolute encoders supply diverse, absolute position values, which are verified in the software block of the automation system PSS 4000. The safe incremental encoders are used for safe motion monitoring: they transmit position changes of machinery or machine parts, for example in machine tools or presses, to the evaluation device.

Part of PSS 4000

PSEN enc m1 eCAM

PSEN enc m2 eCAM

PSEN enc HTL 1024 hs

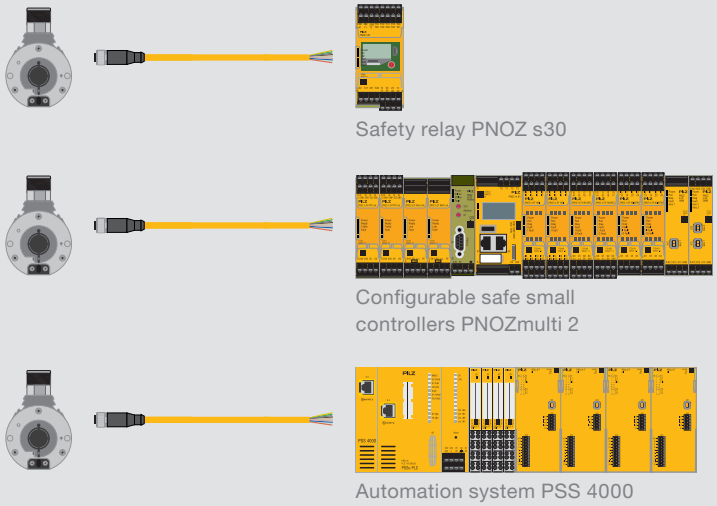
PSEN enc HTL 1024 ss

Standard rotary encoder, but safe

The absolute rotary encoders PSENenco are standard encoders, but through the combination of the programmable logic controller PSSuniversal PLC from the automation system PSS 4000, the rotary encoder and the software blocks, the system reaches SIL CL 3 and PL e.

Incremental encoder for safe movement

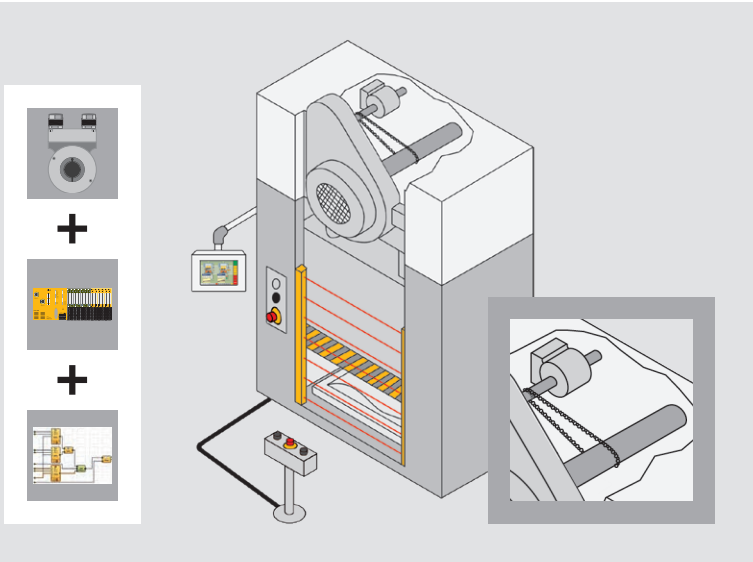
In combination with the Pilz speed monitor PNOZ s30, PNOZmulti 2 expansion module PNOZ m EF 1MM/2MM or I/O module PSSu K F EI from automation system PSS 4000, the incremental encoders PSENenco offer safety functions for speed, direction, acceleration and standstill with different safety levels.



The appropriate solution including rotary encoder PSENenco for all scaling on the control side.

Your benefits at a glance

- Enables speed and position-based safety functions
- High flexibility through scalable evaluation system
- High resolution enables fast reaction times and precise measurements
- Holistic safety solution for motion and position monitoring from a single source
- Simple, fast implementation



Your benefits at a glance

- Safe evaluation of speed and position
- The safe monitoring function is transferred to the user software
- High flexibility when monitoring limit values due to dynamic limit value monitoring in the user program
- Mechanical rotary cam arrangement is replaced by the safe electronic rotary cam arrangement PSS 4000 incl. PSENenco

Components for your safe solution	Order number
Sensor: PSEN enc m1 eCAM	544 021
Connection: Signal cable, min. 0.25 mm², shielded, stranded pair	-
Evaluation device: PSSu PLC1 FS SN SD	312 070

The optimum solution: Rotary encoder, control system and software = safe electronic rotary cam switching unit.

Selection guide – rotary encoder PSENenco

Type	Function	Rotary encoder feature	Order number
PSEN enc m1 eCAM	Absolute encoder	Multi-turn, hollow shaft	544 021
PSEN enc m2 eCAM	Absolute encoder	Multi-turn, solid shaft	544 022
PSEN enc s1 eCAM	Absolute encoder	Single-turn, hollow shaft	544 011
PSEN enc s2 eCAM	Absolute encoder	Single-turn, solid shaft	544 012
PSEN enc sincos 4096 ss	SDI, SS1, SS2, SOS, SLP, SLI, SCA, SLS, SSR, SSM, SLA, SRA	Safe incremental rotary encoder, SIN/COS signals, solid shaft	6Z000001
PSEN enc sincos 4096 hs	SDI, SS1, SS2, SOS, SLP, SLI, SCA, SLS, SSR, SSM, SLA, SRA	Safe incremental rotary encoder, SIN/COS signals, hollow shaft	6Z000002
PSEN enc HTL 1024 ss	SDI, SS1, SS2, SOS, SLP, SLI, SCA, SLS, SSR, SSM, SLA, SRA	Safe incremental encoder, HTL signals, solid shaft	6Z000003
PSEN enc HTL 1024 hs	SDI, SS1, SS2, SOS, SLP, SLI, SCA, SLS, SSR, SSM, SLA, SRA	Safe incremental encoder, HTL signals, hollow shaft	6Z000004
PSEN cable M23-12sf, 5m	-	M23-12-pin cable – 5 m	6Z000005
PSEN cable M23-12sf, 10m	-	M23-12-pin cable – 10 m	6Z000006
PSEN cable M23-12sf, 20m	-	M23-12-pin cable – 20 m	6Z000007
PSEN cable M23-12sf, 30m	-	M23-12-pin cable – 30 m	6Z000008

Common features

- 2 encoders in one housing
- Diverse, 2-channel (1 x optical, 1 x magnetic)
- 2 SSI interfaces
- SIL CL 3 and PL e in the automation system PSS 4000

Keep up-to-date on rotary encoders PSENenco:

Webcode: web150403

Online information at www.pilz.com

Safety switches

Safety switches from Pilz are used for cost-optimised safety gate and position monitoring and meet the requirements of EN ISO 14119 at particularly low cost. That's why they are used for applications in mechanical engineering as well as in the packaging or pharmaceutical industry and many other sectors.

PSENhinge

PSENmech

PSENmag

PSENcode

PSENbolt

Safety switches are available with various designs and based on different operating principles and can even be used under difficult environmental conditions. Additional costs can be saved when connected in series.

Choose the optimum switch for your application:

- Mechanical – PSENmech offers personnel and process protection with safe guard locking
- Non-contact, magnetic – with concealed installation PSENmag is the most economical solution – for the highest safety requirements
- Non-contact, unique and fully coded – PSENcode enables maximum freedom in installation thanks to the highest manipulation protection for guards, as required in EN ISO 14119
- Non-contact, coded – PSENcode x.19n is suitable for safe monitoring and distinguishing up to three positions

Safety bolt – the robust, cost-effective solution for everyday use in a rugged industrial environment

The safety bolt PSENbolt is particularly suitable for safety gates that are difficult to adjust or in areas where safety gates are often opened and closed. What you get is a complete solution comprising safety switch, handle and bolt.

Safe hinge switch – bundled hinge and safety switch

The combination of hinge and safety switch is the optimum solution for hinged safeguards. Designed as one functional and installation unit, the safe hinge switch PSENhinge offers a high level of flexibility in installation, connection and adjustment.

Selection guide – safety switches and safe hinge switches

Type	Hinge switch PSENhinge	Safety switch PSENmech	Safety switch PSENmag	Safety switch PSENcode
Mode of action/Coding	Magnetic	Mechanical	Non-contact, magnetic	Coded, fully coded, uniquely coded
Application				
Covers		◆	◆	◆
Flaps	◆	◆	◆	◆
Hinged safety gates	◆	◆	◆	◆
Sliding gates		◆	◆	◆
Rolling doors			◆	◆
Position detection			◆	◆
Guard locking device	Without	Without	Without	Without
IP protection type	IP67	IP65	IP65/IP67/IP6K9K	IP67/IP6K9K
Performance level				
PL e	2 x	2 x	1 x	1 x
PL d	1 x + FE[1)]	1 x + FE[1)]	1 x	1 x
PL c	1 x	1 x	1 x	1 x
Classification in accordance with EN ISO 14119				
Type	1	2	4	4
Coding stage	-	Low	Low	▸ Low: coded ▸ High: - Fully coded - Uniquely coded

[1)] FE = Fault exclusion

Safety gate systems:

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Keep up-to-date on safety switches:

Webcode: web150523

Online information at www.pilz.com

Safe hinge switch PSENhinge

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 controllers.

PSEN hs1.1p

For guards

PSENhinge is suitable for rotatable and hinged gates as well as flaps. High manipulation protection is achieved by concealing the installation within the guard. Safe hinge switches from Pilz can also be used where there is heavy soiling, as they conform to protection type IP67.

With re-adjustable switching point

Designed as one functional and installation unit, the hinge switch PSENhinge offers high 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°. Even after setting the switching point, the user can still correct the setting of the hinge with the integrated precision adjustment system.

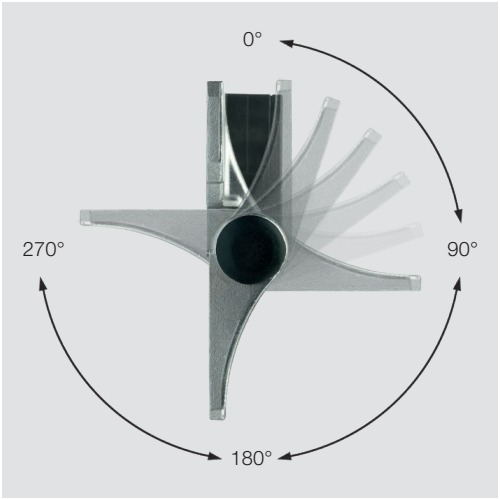
Maximum flexibility

The change kit can be used to redefine the switching point when the plant is upgraded.

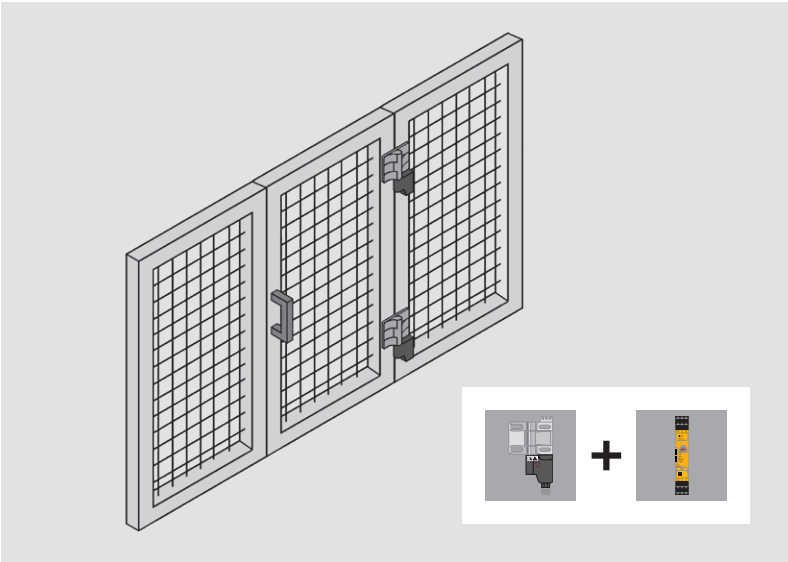
Type code for PSENhinge

PSEN hs1.1p

Product area Pilz **SEN**sors	Contacts	Door stop	Connection
Product group **hs – PSENhinge**	**1 2 N/C**	**1 Right** 2 Left	**p Connector, M12, 4-pin** (compatible with M12, 5-pin)
Operation Mechanical			



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



Components for your safe solution	Order number
Sensor: PSEN hs1.1p	570270
Connection: PSEN cable, M12, 4-pin, 5 m	630301
Evaluation device: PNOZ s3	751103

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

Selection guide – safe hinge switch PSENhinge

Type	Door stop	Certification	Order number[1)]
PSEN hs1.1p	Right	CSA, DGUV	570270
PSEN hs1.2p	Left	CSA, DGUV	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 if 2 switches are used
- Connection type: Connector, M12, 4-pin
- Contacts: 2 N/C
- Protection type: IP67
- Plastic-bodied design

Accessories – PSENhinge

Description Type	Features	Quantity	Order number
Empty hinge **PSEN hs1 hinge**	Stainless steel	1	570280
Change kit **PSEN hs kit1**	To re-adjust the switching point	1	570281

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 within the safeguard
- Highest flexibility in installation, connection and adjustment:
  - Switching point is free to set from 0° to 270° and is re-adjustable
  - Protection type IP67
- User-friendly:
  - Slot fastening for mounting on profiles
  - Simple readjustment by means of integrated precision adjustment system
  - For right and left-hinged systems
- Low maintenance:
  - Rugged version for high mechanical loads
  - Resistant to soiling

Cable selection:

From page 174

Keep up-to-date on safe hinge switches PSENhinge:

Webcode: web150410

Online information at www.pilz.com

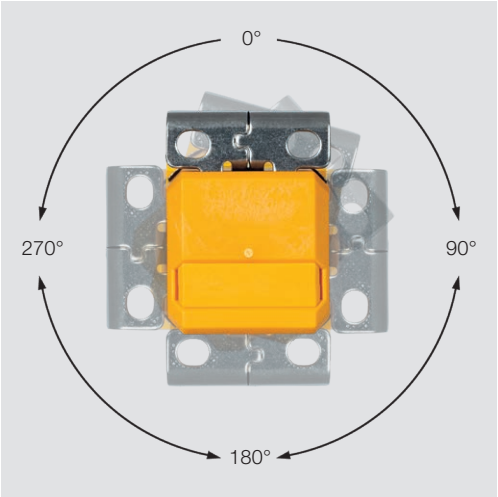
Mechanical safety switch PSENmech

The mechanical safety switches PSENmech are suitable for safe monitoring of a movable guard. If guards are opened, the safety switches PSENmech are triggered. The hazardous machine movement is then stopped with the aid of the Pilz evaluation device.

PSEN me4

Prevents unintentional opening of the safety gate

Using increased extraction force on the actuator, safety switches PSENmech prevent the safety gate from being opened unintentionally. Thanks to mechanically coded actuators, safety switches PSENmech meet the standard EN ISO 14119 (protection against defeat).

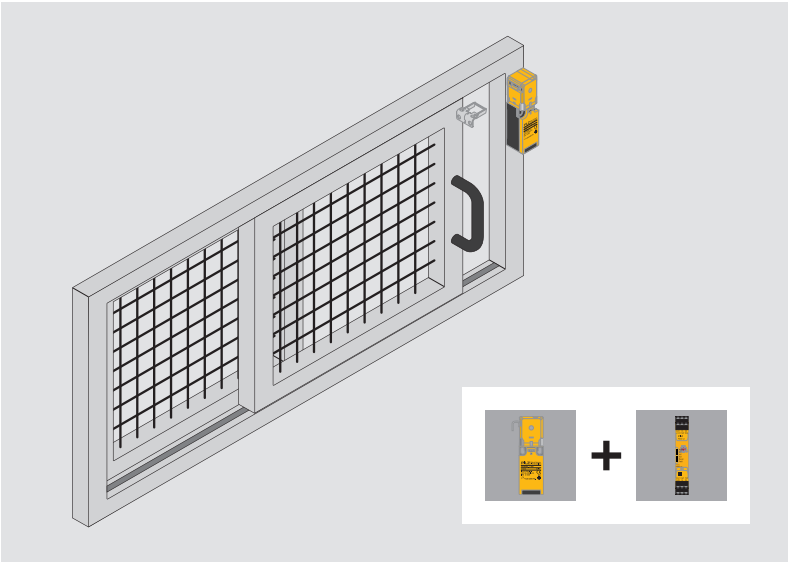


Multiple actuation directions provide flexibility during installation.

Type code for PSENmech

PSEN me3.2/2AS

Product area Pilz **SEN**sors	Product series	Series 3: Contacts	Series 3: Actuator type
Product group **me – PSENmech**	**3 Dim.: 90 x 52 x 51 mm** 4 Dim.: 100 x 31 x 30.5 mm	_ 1 N/C, 1 N/O .1 2 N/C **.2 2 N/C, 1 N/O**	**2AS Standard actuator** 2AR Radius actuator
Operation Mechanical, without guard locking		**Series 4:** **Contacts/extraction force**	**Series 4:** **Actuator type**
		_ 1 N/C, 1 N/O .01 1 N/C, 1 N/O / 50 N .1 2 N/C .11 2 N/C / 50 N .2 2 N/C, 1 N/O .21 2 N/C, 1 N/O / 50 N	4AS Standard actuator



Components for your safe solution	Order number
Sensor: PSEN me4.1/4AS	570 245
Connection: cable, depending on function, e.g. 8 x 0.5 mm²	-
Evaluation device: PNOZ s3	751 103

The optimum solution: safety gate monitoring with the mechanical safety switch PSENmech and the safety relay PNOZsigma.

Your benefits at a glance

- Flexible and fast installation thanks to various actuators and several actuating devices
- No additional accessories are required for latching
- Connection of 230 V possible directly at the contacts
- Series connection in the field is implemented directly in the switch
- Built-in manipulation protection
- Long service life due to the robust design and high mechanical load capacity
- Housing is insensitive to dirt and dust and is also waterproof
- Safe complete solution in conjunction with Pilz evaluation devices

Cable selection:
From page 174

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

Webcode: web150414

Online information at www.pilz.com

Selection guide – PSENmech

Mechanical safety switches PSENmech with separate actuator

Common features

- Safety switch for monitoring the position of movable guards in accordance with EN 60947-5-1
- Designed for applications up to (two devices must be used to meet the highest requirements):
  - PL e of EN ISO 13849-1
  - SIL CL 3 of EN IEC 62061
- Directions of actuation:
  - PSEN me3: 2
  - PSEN me4: 5
- Dimensions (H x W x D, without actuator) in mm:
  - PSEN me3: 90 x 52 x 33
  - PSEN me4: 100 x 30 x 30.5
- Ambient temperature: –30 … +80 °C
- Connection terminals: screw terminals
- Protection type: IP65
- Can be connected to all Pilz evaluation devices

PSEN me3/2AR

PSEN me4/4AS

Type	Actuator type
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 me4.21/4AS	Standard
PSEN me4.2/4AS	Standard

Accessories – mechanical safety switch PSENmech

Description Type	Features	Quantity	Order number
One-way screw to secure the actuator	▸ Stainless steel ▸ Drive: one-way slot (safety screw)		
PSEN screw M4x16	▸ M4, 16 mm ▸ Suitable for PSEN me1/1AS and PSEN me4	10	540310
PSEN screw M5x20	▸ M5, 20 mm ▸ Suitable for PSEN me1/1AR, PSEN me2 and PSEN me3	10	540312

Supply voltage/ contact load Utilisation category AC-15	Extraction force	Certification	Order number
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570210
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570212
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570220
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570222
240 V/1.5 A	10 N	EAC, TÜV, cCSAus	570230
240 V/1.5 A	10 N	EAC, TÜV, cCSAus	570232
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570240
240 V/3.0 A	50 N	EAC, TÜV, cCSAus	570241
240 V/3.0 A	10 N	EAC, TÜV, cCSAus	570245
240 V/3.0 A	50 N	EAC, TÜV, cCSAus	570246
240 V/1.5 A	50 N	EAC, TÜV, cCSAus	570250
240 V/1.5 A	10 N	EAC, TÜV, cCSAus	570251

Cable selection:

From page 174

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

Webcode: web150414

Online information at www.pilz.com

Magnetic safety switch PSENmag

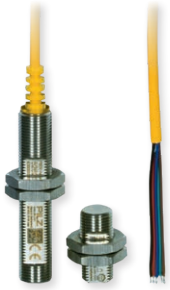
Magnetic safety switches are used both for monitoring the position of guards in accordance with EN 60947-5-3 and for position monitoring. Thanks to economical series connection, PSENmag offers maximum safety at a "low price" and is easily integrated into the existing system environment.

IP67

PSEN ma1.4a

PSEN ma1.4p

PSEN ma2.1p



PSEN ma1.3a VA

Manipulation protection

The concealed installation of the sensor – as defined in accordance with EN ISO 14119 – prevents manipulation. Other ways of manipulation are excluded if the actuator is secured using safety screws (one-way drive head). If the highest manipulation protection is required, we recommend PSENcode due to the RFID technology and the key lock principle.

High requirements – implemented economically

Use PSENmag wherever a high category is specified, heavy soiling occurs or strict cleaning requirements are to be met.

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

Flexible application

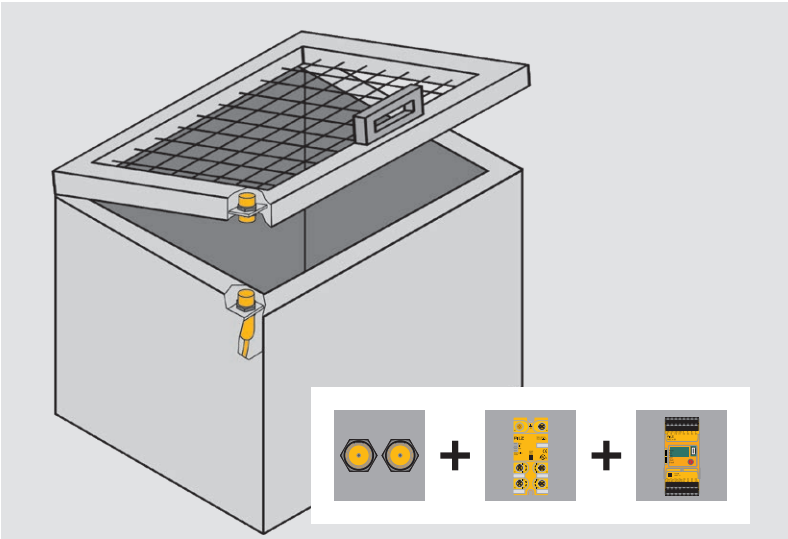
The compact design of the PSENmag saves installation space. A large selection of connectors and cables plus an assured switching distance of 3 to 12 mm enable flexible assembly and rapid, simple installation.

Type code for PSENmag

PSEN ma1.4b-50 VA

Product area Pilz **SEN**sors	Contacts	Design	Connection type	Switching distance	LED/ATEX/ series connection	Material
Product group **ma – PSENmag**	**1 N/O / N/O** 2 N/C / N/O	1 Rectangular, dimensions: 36 x 26 x 13 mm 2 Round, M30 3 Round, M12 **4 Rectangular, 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 (2 contacts) - 8-pin (3 contacts) M12/8 Connector, M12, 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 With LED, only with PSEN ix1 [2] 8 ATEX, with LED, only with PSEN ix1 [2] 9 Special types	**VA Stainless steel**
Operation Non-contact, magnetic						

[1] Depends on the actuator [2] Ri = 0 Ω



Components for your safe solution	Order number
Sensor: PSEN ma1.3n-20/PSEN ma1.3-12	506238
Connection: PSS67 cable, M12, straight, socket/ M12, straight, plug, 5 m	380209
Decentralised periphery: PDP67 F 8DI ION	773600
Connection: PSEN cable, straight, M12, 5-pin	630311
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772100 751008

The optimum solution: Monitoring a cover using the safety switch PSENmag and using the configurable safe small controllers PNOZmulti 2.

Your benefits at a glance

- Safe complete solution with TÜV certification for the highest category applications
- Economical thanks to:
  - Space and time-saving installation
  - Long product service life as it is mechanically non-wearing
  - User-friendly diagnostics via an additional signal contact and LED
- Can be used with heavy soiling and stringent cleaning requirements IP67/IP6K9K, ECOLAB tested
- High level of safety, even in potentially explosive areas
- Stainless steel version for maximum robustness

High level of safety, maximum robustness: PSENmag in stainless steel

PSENmag stainless steel sensors are not only suitable in areas with heavy soiling and strict cleaning requirements, but also in potentially explosive areas. In addition to being highly heat- and cold-proof, they are characterised by their vibration and impact resistance. The high B10D value ensures a long service life.

Cable selection:

From page 174

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

Webcode: web150413

Online information at www.pilz.com

Selection guide – PSENmag

Magnetic safety switch PSENmag – rectangular design

Common features

- Dual-channel safety switch for monitoring the position of movable guards in accordance with EN 60947-5-3
- Certified for applications up to Performance Level e of EN ISO 13849-1 and SIL CL 3 of EN IEC 62061 in conjunction with safety relays such as PNOZ s4, PNOZ X2.8P, PNOZ mB0
- Optional signal contact
- Direct connection, via PDP67, PDP20 or via the interface PSEN ix1, see accessories page 34
- Protection type:
  - Cable versions: IP6K9K
  - Connector versions: IP67
- Flexible installation due to the housing design and pigtail cable
- Protective caps included for better manipulation protection

PSEN ma2.1p

PSEN ma1.4a

PSEN ma1.4p

Type (switch/actuator)	Assured switching distance
PSEN ma2.1p-10/ PSEN2.1-10/3mm/1unit	3 mm
PSEN ma2.1p-11/ PSEN2.1-10/LED/3mm/1unit	3 mm
PSEN ma2.1p-30/ PSEN2.1-10/6mm/1unit	6 mm
PSEN ma2.1p-31/ PSEN2.1-10/LED/6mm/1unit	6 mm
PSEN ma1.1p-10/ PSEN1.1-10/3mm/1unit	3 mm
PSEN ma1.1p-12/ PSEN1.1-10/3mm/ix1/1unit	3 mm
PSEN ma2.1p-34/ PSEN2.1-10-06/LED/ATEX/1u	6 mm
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 ma1.4a-57/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 ma1.4p-57/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 ma1.4-51M12/8-0.15m/ PSEN ma1.4-10	10 mm
PSEN ma1.4a-57/PSEN ma1.4-03	3 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-57/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 ma1.4-51M12/8-0.15m/ PSEN ma1.4-03	3 mm

Contacts	Single connection	Series connection via	LED	ATEX	Connection type Cable/connector	Certification	Order number (Unit) [1]
1 2	◆	-			M8, 4-pin	EAC, TÜV, cULus Listed [2]	506405
1 2	◆	-	◆		M8, 4-pin		506406
1 2	◆	-			M8, 4-pin		506407
1 2	◆	-	◆		M8, 4-pin		506408
1 1	◆	-			M8, 4-pin		506411
1 1		PSEN ix1			M8, 4-pin		506412
1 2	◆	-	◆	◆	M8, 4-pin	ATEX [3], EAC, TÜV, cULus Listed [2]	506413
1 1	◆	-			5 m	EAC, TÜV, cULus Listed [2]	506322
1 1 1	◆	-	◆		5 m		506326
1 1		PSEN ix1			5 m		506323
1 1 1		PSEN ix1	◆		5 m		506327
1 1	◆	-			M8, 4-pin, pigtail, 20 cm		506334
1 1 1	◆	-	◆		M8, 8-pin, pigtail, 20 cm		506338
1 1		PSEN ix1			M8, 4-pin, pigtail, 20 cm		506335
1 1 1		PSEN ix1	◆		M8, 8-pin, pigtail, 20 cm		506339
1 1	◆	PDP67			M12, 5-pin, pigtail, 13 cm		506342
1 1 1	◆	PDP67	◆		M12, 5-pin, pigtail, 13 cm		506343
1 1 1	◆	-	◆		M12, 8-pin, pigtail, 13 cm		506345
1 1 1		PSEN ix1	◆		5 m		506325
1 1	◆	-			5 m		506320
1 1 1	◆	-	◆		5 m		506324
1 1		PSEN ix1			5 m		506321
1 1	◆	-			M8, 4-pin, pigtail, 20 cm		506332
1 1 1	◆	-	◆		M8, 8-pin, pigtail, 20 cm		506336
1 1 1		PSEN ix1	◆		M8, 8-pin, pigtail, 20 cm		506337
1 1		PSEN ix1			M8, 4-pin, pigtail, 20 cm		506333
1 1	◆	PDP67			M12, 5-pin, pigtail, 13 cm		506340
1 1 1	◆	PDP67	◆		M12, 5-pin, pigtail, 13 cm		506341
1 1 1	◆	-	◆		M12, 8-pin, pigtail, 13 cm		506344

2 N/C contact
1 N/O contact

[1] Unit comprising switch and actuator
[2] cULus Listed certification applies only to individual components contained within the set
[3] ATEX certification applies only to individual components contained within the set

Cable selection:
From page 174

Keep up-to-date on magnetic safety switches PSENmag:
Webcode: web150413

Online information at www.pilz.com

Selection guide – PSENmag

Magnetic safety switch PSENmag – round design

Common features

- Dual-channel safety switch for monitoring the position of movable guards in accordance with EN 60947-5-3
- Certified for applications up to Performance Level e of EN ISO 13849-1 and SIL CL 3 of EN IEC 62061 in conjunction with safety relays such as PNOZ s4, PNOZ X2.8P, PNOZ mB0
- With signal contact
- Direct connection, via PDP67, PDP20 or via the interface PSEN ix1
- Protection type: IP67

PSEN ma1.3p-20/
PSEN ma1.3-12

Type (switch/actuator)	Assured switching 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 ma1.3-20M12/8-0.15m/ 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 ma1.3-20M12/8-0.15m/ PSEN ma1.3-12	12 mm
PSEN ma1.3p-22/PSEN ma1.3-12	12 mm

Magnetic safety switches PSENmag – stainless steel

Common features

- Certified for applications up to PL e of EN ISO 13849-1 and SIL CL 3 of EN IEC 62061 in conjunction with safety relays such as PNOZ s4, PNOZ X2.8P, PNOZ mB0
- Directions of actuation: 1
- Diagnostic interface: with and without LED
- Design: round
- Assured switching distance: 8 mm
- Protection type: IP67, IP69
- Stainless steel housing
- Series connection: with PSEN ix1 or PDP67 F8 ION

PSEN ma1.3a-21/
PSEN ma1.3-08/VA/1U

Type (switch/actuator)	Assured switching distance
PSEN ma1.3b-21/PSEN ma1.3-08/VA/1U	8 mm
PSEN ma1.3b-27/PSEN ma1.3-08/IX/VA/1U	8 mm
PSEN ma1.3a-21/PSEN ma1.3-08/VA/1U	8 mm
PSEN ma1.3a-27/PSEN ma1.3-08/IX/VA/1U	8 mm

Contacts	Single connection	Connection to	LED	Connection type Cable/connector	Certification	Order number (Unit) [1]
	◆	-	◆	5 m	EAC, TÜV, cULus Listed [2]	506220
		PSEN ix1	◆	5 m		506221
	◆	-	◆	10 m		506222
		PSEN ix1	◆	10 m		506223
	◆	-	◆	M8, 8-pin, pigtail, 20 cm		506226
	◆	PDP67	◆	M12, 5-pin, pigtail, 13 cm		506228
	◆	-	◆	M12, 8-pin, pigtail, 13 cm		506229
		PSEN ix1	◆	M8, 8-pin, pigtail, 20 cm		506227
	◆	-	◆	5 m		506230
		PSEN ix1	◆	5 m		506231
	◆	-	◆	10 m		506232
		PSEN ix1	◆	10 m		506233
	◆	-	◆	M8, 8-pin, pigtail, 20 cm		506236
	◆	PDP67	◆	M12, 5-pin, pigtail, 13 cm		506238
	◆	-	◆	M12, 8-pin, pigtail, 13 cm		506239
		PSEN ix1	◆	M8, 8-pin, pigtail, 20 cm		506237

N/C contact
N/O contact

[1] Unit comprising switch and actuator, which can also be ordered separately
[2] cULus Listed certification applies only to individual components contained within the set

Contacts	Single connection	Connection to	LED	ATEX	Connection type Cable/connector	Certification	Order number (Unit) [1]
	◆	-	◆		Cable, 10 m	EAC, ECOLAB, TÜV, cULus Listed [2]	506242
		PSEN ix1	◆		Cable, 10 m		506243
	◆	-	◆		Cable, 5 m		506240
		PSEN ix1	◆		Cable, 5 m		506241

N/C contact
N/O contact

[1] Unit comprising switch and actuator, which can also be ordered separately
[2] cULus Listed certification applies only to individual components contained within the set

Cable selection:

From page 174

Keep up-to-date on magnetic safety switches PSENmag:

Webcode: web150413

Online information at www.pilz.com

Selection guide – PSENmag

Magnetic safety switches PSENmag – stainless steel

Common features

- Certified for applications up to PL e of EN ISO 13849-1 and SIL CL 3 of EN IEC 62061 in conjunction with safety relays such as PNOZ s4, PNOZ X2.8P, PNOZ mB0
- Directions of actuation: 1
- Diagnostic interface: with and without LED
- Design: round
- Assured switching distance: 8 mm
- Protection type: IP67, IP69
- Stainless steel housing
- Series connection: with PSEN ix1 or PDP67 F8 ION

PSEN ma1.3-20 M12/8/
PSEN ma1.3-08/VA/1U

Type (switch/actuator)	Assured switching distance
PSEN ma1.3b-24/ PSEN ma1.3-08/EX/VA/1U	8 mm
PSEN ma1.3b-28/ PSEN ma1.3-08/IX/EX/VA/1U	8 mm
PSEN ma1.3n-20/ PSEN ma1.3-08/VA/1U	8 mm
PSEN ma1.3-20 M12/8/ PSEN ma1.3-08/VA/1U	8 mm
PSEN ma1.3-22 M12/8/ PSEN ma1.3-08/IX/VA/1U	8 mm

Accessories – magnetic safety switch PSENmag

Description Type	Features	Quantity	Order number
One-way screw to secure the actuator	▸ Stainless steel ▸ Drive: one-way slot (safety screw)		
PSEN screw M4x10	▸ M4, 10 mm ▸ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540308
PSEN screw M4x12	▸ M4, 12 mm ▸ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540309
PSEN screw M4x16	▸ M4, 16 mm ▸ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540310
PSEN screw M4x20	▸ M4, 20 mm ▸ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540313
PSEN screw M4x26	▸ M4, 26 mm ▸ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540314

Contacts	Single connection	Connection to	LED	ATEX	Connection type Cable/connector	Certification	Order number (Unit) [1]
2 N/C, 1 N/O	◆	-	◆	◆	Cable, 10 m	ATEX [2], EAC, ECOLAB, TÜV, cULus Listed [3]	506254
2 N/C, 1 N/O		PSEN ix1	◆	◆	Cable, 10 m		506255
2 N/C	◆	PDP67			Connector, M12, 5-pin	EAC, ECOLAB, TÜV, cULus Listed [3]	506246
2 N/C, 1 N/O	◆	-			Connector, M12, 8-pin		506249
2 N/C, 1 N/O		PSEN ix1			Connector, M12, 8-pin		506247

N/C contact
N/O contact

[1] Unit comprising switch and actuator, which can also be ordered separately
[2] ATEX certification applies only to individual components contained within the set
[3] cULus Listed certification applies only to individual components contained within the set

PSEN Winkel/bracket

PSEN ma1.4 spacer

Description Type	Features	Quantity	Order number
End caps **PSEN cs3/cs4, PSEN ma1.4 actuator caps**	Suitable for PSEN ma1.4 actuator	50	540335
Mounting bracket **PSEN bracket**	Suitable for PSEN ma1.4, PSEN x.1 [4], PSEN ma1.1, PSEN ma2.1	1	532110
PSEN mag/cs bracket straight	Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	2	532111
Spacer **PSEN spacer**	Suitable for PSEN x.1 [4], PSEN ma1.1, PSEN ma2.1	10	534310
PSEN ma1.4 spacer	Suitable for PSEN ma1.4 [4]	10	534311
Reverse spacer **PSEN reverse spacer**	Suitable for PSEN x.1 [4], PSEN ma1.1, PSEN ma2.1	2	534320

[4] For actuator and switch, 1 of each required

Cable selection:
From page 174

Keep up-to-date on magnetic safety switches PSENmag:
Webcode: web150413

Online information at www.pilz.com

Coded safety switch PSENcode

The non-contact, coded safety switch PSENcode is used both for monitoring the position of guards in accordance with EN 60947-5-3 and simple position monitoring.

IP67


PSEN cs5.11p


PSEN cs4.2p


PSEN cs1.1p


PSEN cs4.2p key


PSEN cs low profile actuator

Highest level of manipulation protection in the smallest space

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

The uniquely coded version of PSENcode has the highest level of manipulation protection: the sensor will only accept a single actuator (key lock principle).

The coded PSENcode is accepted by other PSENcode actuators. The fully coded PSENcode only accepts one actuator. In contrast to the uniquely coded safety switch, it's possible to teach-in a new actuator on the switch retrospectively.

The most low profile actuator on the market

Combine the PSENcode in the slimline or compact design with the PSEN cs low profile actuator. With its height of only 3 mm, it is perfectly suited for applications where space is at a premium.

Non-contact access permission

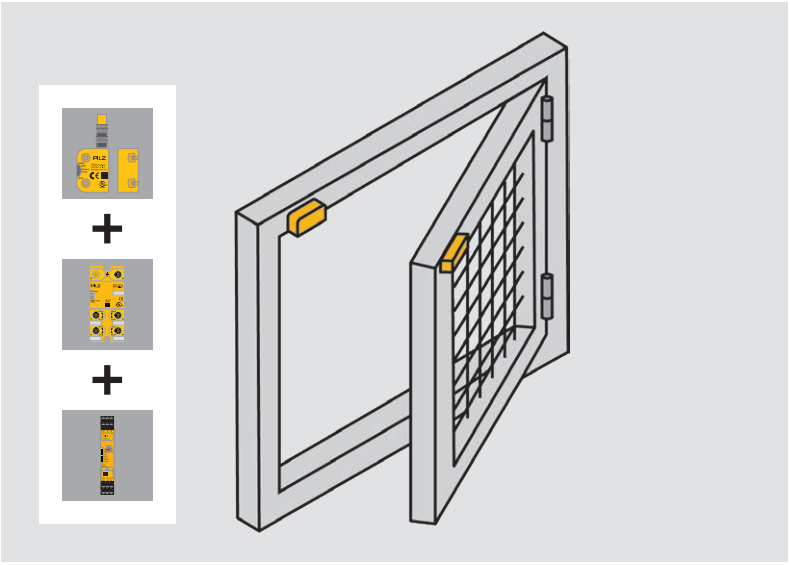
With the contactless sensors PSENcode key, access to machine functions can be limited to certain persons. PSENcode key also prevents the restart of your machine. We thus offer the ideal alternative to a more comprehensive solution with the pushbutton unit PITgatebox and integrated PITreader.

Type code for PSENcode

PSEN cs2.13p

Product area Pilz SENsors	Coding/design	Additional functions	Connection type
Product group cs – PSENcode	1.1 Coded, large design	_ Without ATEX	a ▸ Cable, 5 m [1]
Operation	**2.1 Fully coded, large design**	1 With magnetic latching	b ▸ Cable, 10 m [1]
▸ Non-contact, coded	2.2 Uniquely coded, large design	**3 With ATEX**	n ▸ Connector, M12, 5-pin
▸ Transponder (RFID)	3.1 Coded, compact design	9 With max. 3 actuators	**p ▸ Connector, M12, 8-pin (large design) [1]**
▸ With safe semiconductor outputs	4.1 Fully coded, compact design		**▸ Connector, M8, 8-pin (compact, slimline design) [1]**
	4.2 Uniquely coded, compact design		M12 ▸ Connector, M12, 8-pin (compact, slimline design) [1]
	5.1 Coded, slimline design		key ▸ Key application
	6.1 Fully coded, slimline design		
	6.2 Uniquely coded, slimline design		

[1] Series connection integrated within the sensor, SDD-capable as of version 2.0



Components for your safe solution	Order number
Sensor: PSEN cs4.2 M12, 8-pin, 0.15 m/PSEN cs4.1	541 209
Connection: PSEN cable, M12, 8-pin, straight, connector, M12, 8-pin, straight, connector, 5 m	540 341
Decentralised periphery: PDP67 F 4 code	773 603
Connection: PDP67 cable, M12, 8-pin, straight, connector, 30 m	380 704
Evaluation device: PNOZ s3	751 103

The optimum solution: monitoring swing gate using the safety switch PSENcode and safety relay PNOZsigma.

Your benefits at a glance

- Highest level of safety and plant availability
- Highest manipulation protection offers maximum freedom in installation
- Simple project configuration, as the unit is highly versatile:
  - Insensitive to shock and vibration
  - Can be used with heavy soiling and strict cleaning requirements of IP67/IP6K9K
  - Flexible installation
- Economical:
  - Space-saving installation due to the compact housing
  - Highest level of safety even when connected in series with PSENcode, PSENslock and PSENsgate

SDD
SAFETY DEVICE DIAGNOSTICS

Simple implementation saves time and money

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

Fewer service calls, greater availability

High machine availability is achieved thanks to fast fault diagnostics with Safety Device Diagnostics (see page 80).

High flexibility due to multiple actuation directions (PSEN cs1/PSEN cs5), multiple mounting directions (PSEN cs3/PSEN cs5) for the actuators and compact/slimline design (PSEN cs3/PSEN cs5).

Keep up-to-date on coded safety switches PSENcode:

Webcode: web150412

Online information at www.pilz.com

Selection guide – PSENcode

Coded safety switch PSENcode with 8-pin connector and integrated series connection, SDD-capable

Energy saving by Pilz

Common features

- Safety switch for monitoring the position of movable guards
- Certified for applications up to PL e of EN ISO 13849-1, up to SIL CL 3 of EN IEC 62061
- Integrated evaluation and standard interfaces (OSSD) for connection to evaluation devices from Pilz or other manufacturers
- Series connection with PSENcode, PSENslock and PSENsgate approved up to PL e of EN ISO 13849-1, up to SIL CL 3 of EN IEC 62061
- Protection type:
  - Cable version: IP6K9K
  - Connector version: IP67
- Diagnostic interface with 3 LEDs
- Outputs: 2 safety outputs and 1 signal output only with the p version
- Drill hole spacing:
  - PSEN cs3/PSEN cs4: 22 mm
  - PSEN cs5/PSEN cs6: 22 mm
- Typical switching distance:
  - PSEN cs1/PSEN cs2: 21 mm
  - PSEN cs3/PSEN cs4: 11 mm
  - PSEN cs5/PSEN cs6: 11 mm, 5 mm, 9 mm (M8 connector) or 6 mm (M12 connector)
- Magnetic latching PSEN cs5.11/ PSEN cs6.11/PSEN cs6.21: 30 N

PSEN cs1.1p

PSEN cs4.2p

PSEN cs5.11 M12/8

Type (switch)	Type of coding
Large design	
PSEN cs1.1p	Coded [2]
PSEN cs1.13p	Coded [2]
PSEN cs2.1p	Fully coded [3]
PSEN cs2.13p	Fully coded [3]
PSEN cs2.2p	Uniquely coded [4]
Compact design	
PSEN cs3.1 M12/8-0.15m	Coded [2]
PSEN cs3.1 M12/8-1.5m	Coded [2]
PSEN cs3.1a	Coded [2]
PSEN cs3.1b	Coded [2]
PSEN cs3.1p	Coded [2]
PSEN cs4.1 M12/8-0.15m	Fully coded [3]
PSEN cs4.1a	Fully coded [3]
PSEN cs4.1b	Fully coded [3]
PSEN cs4.1p	Fully coded [3]
PSEN cs4.2 M12/8-0.15m	Uniquely coded [4]
PSEN cs4.2a	Uniquely coded [4]
PSEN cs4.2p	Uniquely coded [4]
Slimline design	
PSEN cs5.1 M12/8	Coded [2]
PSEN cs5.1p	Coded [2]
PSEN cs5.11 M12/8	Coded [2]
PSEN cs5.13 M12/8	Coded [2]
PSEN cs6.1 M12/8	Fully coded [3]
PSEN cs6.1p	Fully coded [3]
PSEN cs6.11 M12/8	Fully coded [3]
PSEN cs6.2 M12/8	Uniquely coded [4]
PSEN cs6.2p	Uniquely coded [4]
PSEN cs6.21 M12/8	Uniquely coded [4]

Cable selection:

From page 174

Keep up-to-date on coded safety switches PSENcode:

Webcode: web150412

Online information at www.pilz.com

Additional functions	Connection type	Certification	Order number		
			Switch	Suitable actuator	Unit [1]
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	540 050	540 080	540 000
With ATEX	Connector, M12, 8-pin	ATEX[6], EAC, electrosuisse, FCC[5], IC[5], TÜV, cULus Listed[5]	-	540 080	540 005
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	540 150	540 180	540 100
With ATEX	Connector, M12, 8-pin	ATEX[6], EAC, electrosuisse, FCC[5], IC[5], TÜV, cULus Listed[5]	-	540 180	540 105
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	-	540 180	540 200
-	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 059	540 080, 541 080, 541 087	541 009
-	Connector, M12, 8-pin, pigtail, 1.5 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 064		541 014
-	Cable, 5 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 061		541 011
-	Cable, 10 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 062		541 012
-	Connector, M8, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 060		541 010
-	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 159	540 180, 541 180, 541 187	541 109
-	Cable, 5 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 161		541 111
-	Cable, 10 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 162		541 112
-	Connector, M8, 8-pin, pigtail, 14 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 160		541 110
-	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 259		541 209
-	Cable, 5 m	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 261		541 211
-	Connector, M8, 8-pin, pigtail, 14 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	-		541 210
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 059	542 083, 542 087, 542 088	542 009
-	Connector, M8, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 050	542 080, 542 087, 542 088	542 000
Magnetic latching	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 051	542 081, 542 087, 542 088	542 011
With ATEX	Connector, M12, 8-pin	ATEX[6], EAC, electrosuisse, FCC[5], IC[5], TÜV, cULus Listed[5]	542 055	542 085	542 005
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 159	542 183, 542 187, 542 188	542 109
-	Connector, M8, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 150	542 180, 542 187, 542 188	542 100
Magnetic latching	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 151	542 181, 542 187, 542 188	542 111
-	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 259	542 183	542 209
-	Connector, M8, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 250	542 180, 542 187, 542 188	542 200
Magnetic latching	Connector, M12, 8-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 251	542 181	542 211

[1] Unit comprising switch and actuator [2] Coded = switch accepts any PSENcode actuator
[3] Fully coded = switch accepts only one PSENcode actuator, teach-in up to 8 times
[4] Uniquely coded = switch accepts only one PSENcode actuator, no teach-in facility
[5] FCC, IC and cULus Listed certification applies only to individual components contained within the set
[6] ATEX certification applies only to individual components contained within the set

Selection guide – PSENcode

Energy saving by Pilz

Coded, non-contact safety switch PSENcode key for access permission

PSEN cs4.2p key

Type (switch)	Type of coding
PSEN cs4.2p key	Uniquely coded [4]

Coded safety switch PSENcode with 5-pin connection for PDP67 F 8DI ION

Common features

- Safety switch for monitoring the position of movable guards
- Certified for applications up to PL e of EN ISO 13849-1, up to SIL CL 3 of EN IEC 62061
- Integrated evaluation and standard interfaces (OSSD) for connection to evaluation devices from Pilz or other manufacturers
- Series connection with PSENcode, PSENslock and PSENsgate approved up to PL e of EN ISO 13849-1, up to SIL CL 3 of EN IEC 62061
- Protection type:
  - Cable version: IP6K9K
  - Connector version: IP67
- Diagnostic interface with 3 LEDs
- Outputs: 2 safety outputs
- Drill hole spacing:
  - PSEN cs3/PSEN cs4: 22 mm
  - PSEN cs5/PSEN cs6: 22 mm
- Typical switching distance:
  - PSEN cs1/PSEN cs2: 21 mm
  - PSEN cs3/PSEN cs4: 11 mm
  - PSEN cs5/PSEN cs6: 11 mm, 5 mm, 9 mm (M8 connector) or 6 mm (M12 connector)
- Magnetic latching PSEN cs5.11/ PSEN cs6.11/PSEN cs6.21: 30 N

PSEN cs1.1n

PSEN cs3.1n

PSEN cs5.1n

Type (switch)	Type of coding
Large design	
PSEN cs1.1n	Coded [2]
PSEN cs2.1n	Fully coded [3]
PSEN cs2.2n	Uniquely coded [4]
Compact design	
PSEN cs3.1n	Coded [2]
PSEN cs4.1n	Fully coded [3]
PSEN cs4.2n	Uniquely coded [4]
Slimline design	
PSEN cs5.1n	Coded [2]
PSEN cs6.1n	Fully coded [3]
PSEN cs6.2n	Uniquely coded [4]
PSEN cs5.11n	Coded [2]
PSEN cs6.11n	Fully coded [3]
PSEN cs6.21n	Uniquely coded [4]

Cable selection:

From page 174

Keep up-to-date on coded safety switches PSENcode:

Webcode: web150412

Online information at www.pilz.com

Connection type	Certification	Order number		
		Switch	Suitable actuator	Obligatory accessories
▸ Connector, M12, 8-pin (large design) ▸ Connector, M8, 8-pin (compact, slimline design)	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	▸ 541 265 ▸ 541 065	532 113	532 113, 532 114, 541 183, 541 182, 541 184, 541 186, 541 181

Additional functions	Connection type	Certification	Order number		
			Switch	Suitable actuator	Unit [1]
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	540 053	540 080	540 003
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	540 153	540 180	540 103
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	540 253	540 180	540 203
-	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 053	540 080, 540 187, 541 080	541 003
-	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 153	540 180, 541 180, 541 187	541 103
-	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	541 253	540 180, 541 180, 541 187	541 203
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 053	542 083, 542 087, 542 088	542 003
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 153	542 183, 542 187, 542 188	542 103
-	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 253	542 183, 542 187, 542 188	542 203
Magnetic latching	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 063	542 081	542 013
Magnetic latching	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 163	542 181	542 113
Magnetic latching	Connector, M12, 5-pin	EAC, FCC[5], IC[5], TÜV, cULus Listed[5]	542 263	542 181	542 213

[1] Unit comprising switch and actuator [2] Coded = switch accepts any PSENcode actuator
[3] Fully coded = switch accepts only one PSENcode actuator, teach-in up to 8 times
[4] Uniquely coded = switch accepts only one PSENcode actuator, no teach-in facility
[5] FCC, IC and cULus Listed certification applies only to individual components contained within the set

Selection guide – PSENcode

Actuator for coded safety switch PSENcode

Energy saving by Pilz

PSEN cs1.1

PSEN cs3.1

PSEN cs5.11 M12

PSEN cs5.1 low profile glue 1 actuator

PSEN cs5.1 low profile screw 1 actuator

Type (actuator)	Additional functions	Certification	Order number Actuator
Large design			
PSEN cs1.1	-	TÜV, EAC, cULus Listed	540 080
PSEN cs2.1	-	TÜV, EAC, cULus Listed	540 180
Compact design			
PSEN cs3.1	-	TÜV, EAC, cULus Listed	541 080
PSEN cs4.1	-	TÜV, EAC, cULus Listed	541 180
Slimline design			
PSEN cs5.1	-	TÜV, EAC, cULus Listed	542 080
PSEN cs5.1 M12	-	TÜV, EAC, cULus Listed	542 083
PSEN cs5.11 M12	Magnetic latching	TÜV, EAC, cULus Listed	542 081
PSEN cs5.13	For ATEX applications	TÜV, EAC, cULus Listed	542 085
PSEN cs6.1	-	TÜV, EAC, cULus Listed	542 180
PSEN cs6.1 M12	-	TÜV, EAC, cULus Listed	542 183
PSEN cs6.11 M12	Magnetic latching	TÜV, EAC, cULus Listed	542 181

Type	Features	Order number
PSEN cs5.1 low profile glue 1 actuator	Stick-on actuator, coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode slimline design	542 087
PSEN cs5.1 low profile screw 1 actuator	Screw-on actuator, coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode slimline design	542 088
PSEN cs6.1 low profile glue 1 actuator	Stick-on actuator, fully coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode slimline design	542 187
PSEN cs6.1 low profile screw 1 actuator	Screw-on actuator, fully coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode slimline design	542 188
PSEN cs3.1 low profile glue 1 actuator	Stick-on actuator, coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode compact design	541 087
PSEN cs3.1 low profile screw 1 actuator	Screw-on actuator, coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode compact design	541 088
PSEN cs4.1 low profile glue 1 actuator	Stick-on actuator, fully coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode compact design	541 187
PSEN cs4.1 low profile screw 1 actuator	Screw-on actuator, fully coded, height: 3 mm, switching distance: 6 mm, for use with PSENcode compact design	541 188

Accessories – coded safety switch PSENcode

PSEN cs3/cs4, PSEN ma1.4 actuator caps

PSEN cs bracket stop swinging door

Description Type	Features	Quantity	Order number
One-way screw to secure the actuator	▸ Stainless steel ▸ Drive: one-way slot (safety screw)		
PSEN screw M4x10	▸ M4, 10 mm ▸ Suitable for PSEN cs3/4/5/6	10	540308
PSEN screw M4x12	▸ M4, 12 mm ▸ Suitable for PSEN cs3/4/5/6	10	540309
PSEN screw M4x16	▸ M4, 16 mm ▸ Suitable for PSEN cs3/4/5/6	10	540310
PSEN screw M4x20	▸ M4, 20 mm ▸ Suitable for PSEN cs3/4/5/6	10	540313
PSEN screw M4x26	▸ M4, 26 mm ▸ Suitable for PSEN cs3/4/5/6	10	540314
PSEN screw M5x10	▸ M5, 10 mm ▸ Suitable for PSEN cs1/2	10	540311
PSEN screw M5x20	▸ M5, 20 mm ▸ Suitable for PSEN cs1/2	10	540312
End caps **PSEN cs3/cs4, PSEN ma1.4 actuator caps**	Suitable for PSEN cs3/4 actuator	50	540335
Mounting bracket **PSEN bracket**	Suitable for PSEN cs3/4 [1]	1	532110
PSEN mag/cs bracket straight	Suitable for PSEN cs3/4/5/6	2	532111
PSEN cs bracket stop swinging door	Suitable for PSEN cs5/6 (set for switch and actuator)	1	532108
PSEN cs bracket stop sliding door	Suitable for PSEN cs5/6 (set for switch and actuator)	1	532109

[1] For actuator and switch, 1 of each required

Cable selection:

From page 174

Keep up-to-date on coded safety switches PSENcode:

Webcode: web150412

Online information at www.pilz.com

Coded safety switch PSENcode for position mon

Three positions – one safe sensor: one coded safety switch type is suitable for monitoring up to three positions safely. In this economical solution, PSENcode also distinguishes safely between positions.

IP67

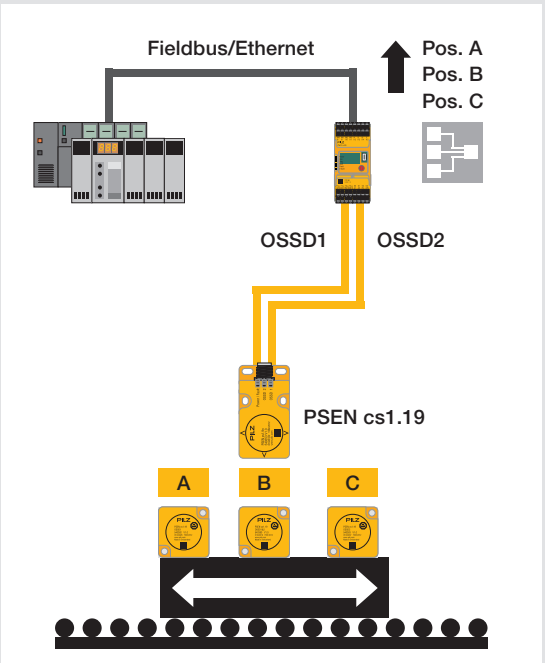
PSEN cs3.19n

PSEN cs1.19n

The coded safety switch PSEN csx.19n enables quick, user-friendly diagnostics via LED display, whether you use the compact or the large design. Thanks to the connection type (M12 connector, 5-pin), the new PSENcode fits perfectly into any system environment.

Solution for standard and safety

Previously, two standard proximity switches and one safe sensor were necessary to monitor three positions within an application. The coded safety switch PSEN csx.19n enables a more efficient solution because it can replace two standard sensors. The coded safety switch PSENcode simplifies the application considerably. Actuator arms, sensor wiring and I/O channels are surplus to requirements, as are proximity switches. As a result you can reduce the costs and effort involved in standard and safety-related position detection.



PSENcode offers great potential savings as a solution for safety and automation.

itoring

Selection guide – coded safety switch PSENcode – Sets

Common features

- Mode of operation: RFID transponder technology
- Type of coding: coded
- Diagnostic interface: 3 LEDs (active actuator, supply voltage/fault)
- Connection: connector, M12, 5-pin
- Design: compact or large
- Outputs: 2 safety outputs
- Inputs: 2 safety inputs
- Protection type: IP67
- Typical switching distance:
  - PSEN cs1.19n/PSEN cs1.19: 15 mm
  - PSEN cs3.19n/PSEN cs3.19: 11 mm

Type (switch/ actuator)	Certification	Order number (Unit)		
		Sensor with 3 actuators (OSSD 1, OSSD 2, OSSD 1&2)	Sensor with 2 actuators (OSSD 1, OSSD 2)	Sensor with 1 actuator (OSSD 1&2)
Large design				
PSEN cs1.19n/ PSEN cs1.19	EAC, FCC [1], IC [1], TÜV, cULus Listed [1]	540303	540305	540304
Compact design				
PSEN cs3.19n/ PSEN cs3.19	EAC, FCC [1], IC [1], TÜV, cULus Listed [1]	541303	541305	541304

[1] FCC, IC and cULus Listed certification applies only to individual components contained within the set

Selection guide – coded safety switch PSENcode

PSEN cs3.19n – 1switch

Type	Certification	Order number
PSEN cs1.19n – 1switch	EAC, FCC [1], IC [1], TÜV, cULus Listed [1]	540353
PSEN cs1.19 – OSSD 1&2 – 1actuator	EAC, TÜV, cULus Listed [1]	540380
PSEN cs1.19 – OSSD 1 – 1actuator	EAC, TÜV, cULus Listed [1]	540382
PSEN cs1.19 – OSSD 2 – 1actuator	EAC, TÜV, cULus Listed [1]	540383
PSEN cs3.19n – 1switch	EAC, FCC [1], IC [1], TÜV, cULus Listed [1]	541353
PSEN cs3.19 – OSSD 1&2 – 1actuator	EAC, TÜV, cULus Listed [1]	541380
PSEN cs3.19 – OSSD 1 – 1actuator	EAC, TÜV, cULus Listed [1]	541382
PSEN cs3.19 – OSSD 2 – 1actuator	EAC, TÜV, cULus Listed [1]	541383

[1] FCC, IC and cULus Listed certification applies only to individual components contained within the set

Achievable safety level in accordance with EN ISO 13849-1 (per actuator)

Actuator used	OSSD 1&2	OSSD 1	OSSD 2
OSSD 1&2	PL e	-	-
OSSD 1, OSSD 2	-	PL d [2]	PL d [2]
OSSD 1&2, OSSD 1, OSSD 2	PL d [2]	PL c	PL c

[2] With additional diagnostics, stuck-at-faults and wiring errors such as short circuits and shorts across contacts are detected (plausibility check).

Keep up-to-date on coded safety switches PSENcode:

Webcode: web150412

Online information at www.pilz.com

Safety bolt PSENbolt

The safety bolt PSENbolt comprises a mechanical bolt, a handle and a safety switch that can be flexibly combined. This removes the need for expensive in-house engineering.

PSEN b5
(with PSEN me5)

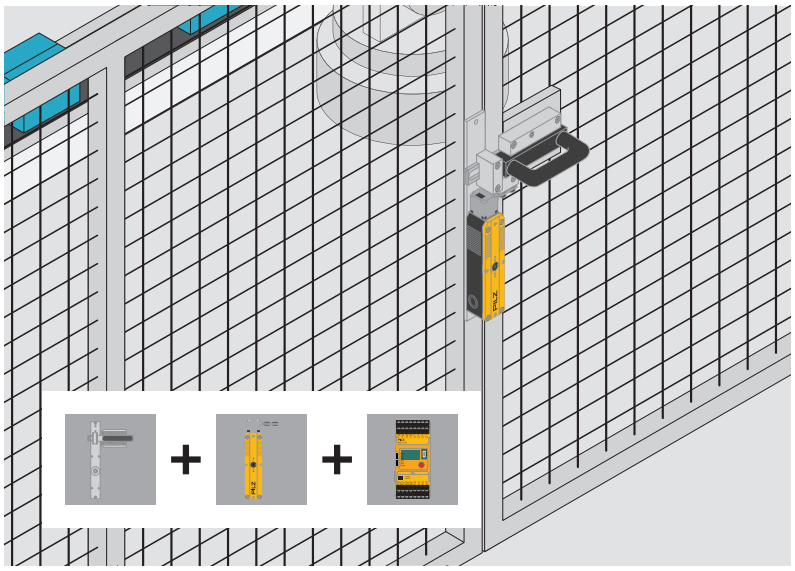
The combinable solution
for secure safety gate monitoring

Depending on which sensor is used, PSENbolt ensures safety gate monitoring – up to the highest category PL e of EN ISO 13849-1 or SIL CL 3 of EN IEC 62061. The safety bolt PSENbolt is ideally suited for safety gates that are difficult to adjust and safety gates that are exposed to heavy vibration. The safety bolt is also ideal for areas where safety gates are opened and closed frequently. It meets the highest requirements for protection against defeat and manipulation and offers a long service life. Combining with the safety relay PNOZsigma or the configurable safe small controllers PNOZmulti 2, it also offers a cost-effective, complete, one-stop solution.

Type code for PSENbolt

PSEN b5/me5

Product area Pilz **SEN**sors	**Escape release/ locking pin/key**		**Can be combined with**
Product group **b – PSENbolt**	1	Without escape release, without locking pin	▸ Mechanical safety switches PSENmech with guard locking (PSEN me1 series) ▸ Non-contact, coded safety switches PSENcode (series PSEN cs1, PSEN cs2)
Operation Depends on the selected safety switch: ▸ Mechanical ▸ Magnetic ▸ Coded	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, coded safety switches PSENcode (series PSEN cs3, PSEN cs4)
	4	With escape release, with locking pin, can be deactivated	
	4.1	With escape release, with locking pin, cannot be deactivated	
	5	Without escape release, without locking pin	▸ Mechanical safety switch PSEN me1 and non-contact, coded safety switches PSENcode (PSEN cs3, PSEN cs4) ▸ Mechanical safety gate system PSENmech with guard locking (PSEN me5), coded safety switches PSENcode (PSEN cs3.1, PSEN cs4.1, PSEN cs4.2)
	5/me5	**With escape release, without key, without locking pin**	
	/me5 key adv	With escape release, with key, with locking pin	
	5/me5/cs	With escape release, without key, without locking pin	
	5/me5 key	Without escape release, with key, with locking pin	



The economical complete solution for safety gate guarding: Safety bolt PSENbolt in combination with the mechanical safety gate system PSENmech with guard locking (PSEN me5) and configurable safe small controller PNOZmulti 2.

Your benefits at a glance

- Reduced development and installation expense
- Cost-optimised solution comprising safety switch, handle and bolt
- Simple combination of up to two switches
- Long service life thanks to mechanical protection and robust material
- Locking pin protects the bolt from closing unintentionally

Various safety gate applications can be safeguarded using the safety bolt PSENbolt, depending on the action principle of the applied safety switch:

Selection guide – safety bolt PSENbolt

Combination with	PSENmech	PSENmag (1.4)	PSENcode	PSENmech and PSENcode
Operating principle	Mechanical/ mechanical	Mechanical/ magnetic	Mechanical/ coded	Mechanical/ coded
Performance Level of EN ISO 13849-1	PL d	PL e	PL e	PL e
SIL CL of EN IEC 62061	2	3	3	3

Keep up-to-date on safety bolts PSENbolt:

Webcode: web150411

Online information at www.pilz.com

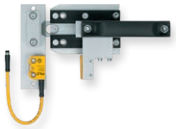
Selection guide – PSENbolt

Selection guide – safety bolt PSENbolt

Common features

- Complete solution made up of PSEN me5, mechanical bolt and appropriate handle
- Designed for applications up to PL e of EN ISO 13849-1 or SIL CL 3 of EN IEC 62061 with a coded safety switch, e.g. PSENcode
- Escape release available as an accessory
- Versions with and without key
- Option of attaching padlocks to mechanically prevent closing of the gate
- Protection type: IP67
- Door stop: right or left
- Material: anodised aluminium

PSEN b1



PSEN b3

PSEN b5/me5

Type
PSEN b1
PSEN b2
PSEN b2.1
PSEN b3
PSEN b4
PSEN b4.1
PSEN b5
PSEN b1
PSEN b2
PSEN b5/me5
PSEN b5/me5 key adv
PSEN b5/me5/cs
PSEN b5/me5 key
PSEN b5/me5 escape pin

Can be combined with	Key	Escape release	Locking pin	Order number
▸ PSEN me1 ▸ PSEN cs1 ▸ PSEN cs2				540010
		◆	◆ [1]	540020
		◆	◆ [2]	540021
▸ PSEN ma1.4 ▸ PSEN cs3 ▸ PSEN cs4				540030
		◆	◆ [1]	540040
		◆	◆ [2]	540041
▸ PSEN me1 and PSEN ma1.4 ▸ PSEN cs3 ▸ PSEN cs4				540015
▸ PSEN me1 ▸ PSEN cs1 ▸ PSEN cs2				540010
		◆	◆ [1]	540020
▸ PSEN me5 ▸ PSEN cs3.1 ▸ PSEN cs4.1 ▸ PSEN cs4.2		◆		6L000023
	◆	◆	◆	6L000024
		◆		6L000025
	◆		◆	6L000027
				6L000026

[1] Can be deactivated
[2] Cannot be deactivated

Note: The safety switches (PSENmech, PSENmag, PSENcode) are not supplied and must be ordered separately.

Cable selection:

From page 174

Keep up-to-date on safety bolts PSENbolt:

Webcode: web150411

Online information at www.pilz.com

Safety gate systems

Safety gate systems such as PSENmech with guard locking, PSENslock, PSENmlock and PSENsgate are used for guard protection. They monitor doors in safety fences as well as covers and flaps. Our safety gate systems provide you with a cost-optimised, effective solution, which meets the requirements of EN ISO 14119.

PSENmech

PSENslock

PSENmlock

PSENsgate

Your benefits at a glance

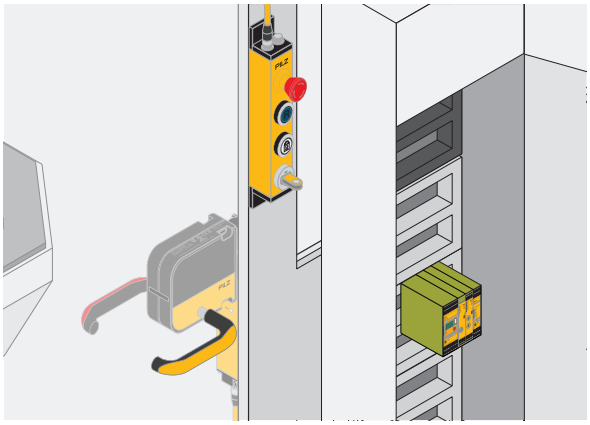
- Protects against hazardous movements and flying plant and machine parts by shutting down machine movements
- Prevents restart in accordance with EN ISO 14119
- Protective equipment is highly protected against manipulation
- Safe, complete solution with Pilz control technology
- Energy efficient – thanks to reduced power consumption

Selection guide – Safety gate systems

	PSENmech with guard locking	PSENslock	PSENmlock	PSENsgate
Applications	Covers, flaps, swing and sliding gates	Covers, flaps, swing and sliding gates	Covers, flaps, swing and sliding gates	Large, accessible swing gates and sliding gates
Operating principle	Electromechanical	Transponder	Transponder	Transponder
Guard locking principle	Normally de-energised mode, normally energised mode	Normally de-energised mode	Bistable principle	Bistable principle
Safety functions	Personnel protection, process protection	Process protection	Personnel protection, process protection	Personnel protection, process protection
Interlock classification in accordance with EN ISO 13849-1 (gate monitoring)	PL c, with fault exclusion PL d	PL e	PL e	PL e
Guard locking classification in accordance with EN ISO 13849-1 (guard locking monitoring)	PL c, with fault exclusion PL d	-	PL e	PL e
Holding force	1 500 N	500 or 1 000 N	7 500 N	2 000 N
Manipulation protection	Low	Up to high	Up to high	Up to high
Auxiliary release	Integrated	-	Integrated	Integrated
Escape release	Optional (only PSEN me5)	-	Optional	Integrated
Emergency unlocking	Optional (only PSEN me5)	-	Optional (only on versions with power reset)	-

Complete safety gate solution with the modular safety gate system

The modular safety gate system offers you an individual safety gate solution that is ideally tailored to your application. That means you can flexibly combine individual components to suit your requirements: from the safety gate sensor, door handle modules and escape releases, to the diagnostic system and the suitable evaluation device. You benefit from flexible fitting options, fast installation and configuration and simple operation and diagnostics.



Keep up-to-date on safety gate systems:

Webcode: web150524

Online information at www.pilz.com

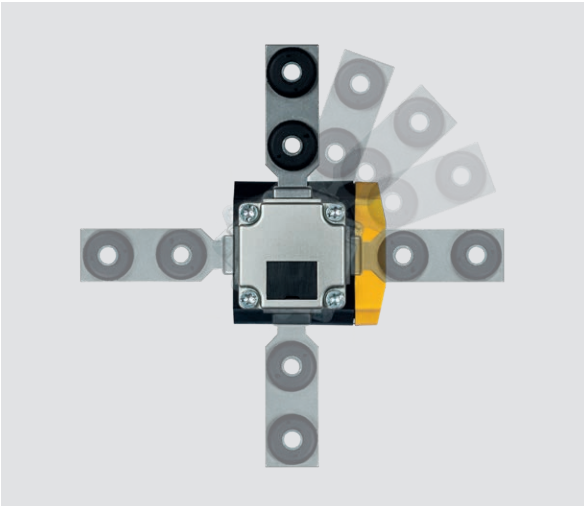
Mechanical safety gate system PSENmech with guard

The safe mechanical safety gate system PSENmech offers an economical basic solution for the safe monitoring of moving guards with integrated guard locking.

PSENmech

Economical basic solution for safety gate monitoring with safe guard locking

PSENmech with guard locking offers an economic alternative for safety gate monitoring. The safety gate is safely locked until the hazardous machine movement stops. As a result, it is suitable for protecting personnel and processes and can be used in numerous industries and applications. The safety gate system PSENmech with guard locking can be supplemented with an escape release or emergency unlocking device. Together with the configurable safe small controllers PNOZmulti 2, it serves as a cost-effective, complete, one-stop solution.



Multiple actuation directions provide flexibility during installation.

Type code for PSENmech

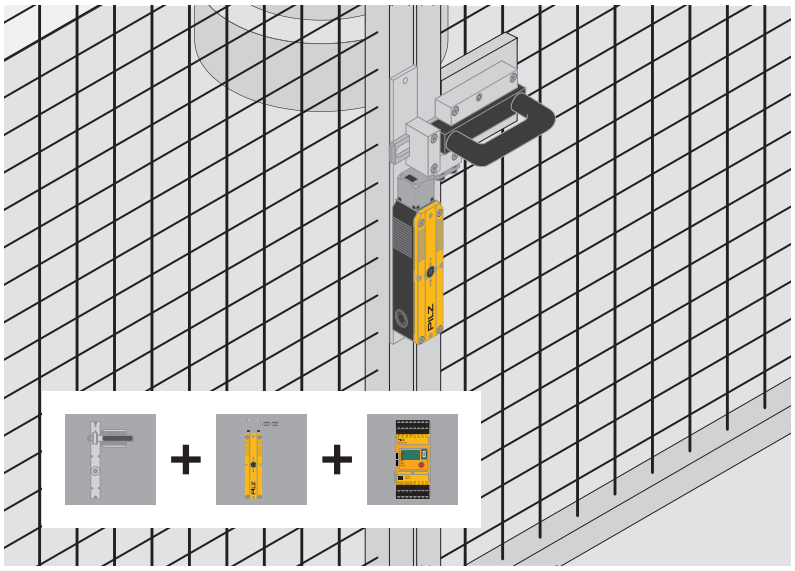
PSEN me5S NC.NC-NC M12/8 1switch

Product area Pilz **SEN**sors	Product series	Type of guard locking	Interlock contacts	Guard locking contacts	Connection	Product type
Product group me – PSENmech	**5 With guard locking** dimensions: 193 x 42 x 44 mm	**S** Spring force M Magnet	**N/C** **normally closed** [1] N/O normally open	**N/C** **normally closed** [2] N/O normally open	_ Standard **M12/8 M12, 8-pin** N M12, 5-pin	**1switch Switch**
Operation ▸ Mechanical ▸ With guard locking						

[1] Default status is the locked switch

[2] Default status is the guard locked switch

locking



Components for your safe solution	Order number
Sensor: PSEN me5S NC.NC-NC M12/8 1switch	6L000019
Connection: cable, depending on function, e.g. M12-8 x 0.5 mm²	-
Evaluation device: e.g. PNOZmulti 2	772 100
Required accessories: PSEN b5/me5	6L000023

The optimum solution: safety gate monitoring with guard locking with the safe mechanical safety gate system PSENmech, safety bolt PSENbolt and configurable safe small controller PNOZmulti 2.

Your benefits at a glance

- Economical basic solution for safety gate monitoring with safe guard locking
- Suitable for accessible doors thanks to escape release and emergency unlocking device options
- Flexible and fast installation thanks to various actuators and an M12 connection
- Long product service life thanks to the head and the 3D actuator being made of metal
- Housing is insensitive to dirt and dust and is also waterproof
- Suitable for connection to decentralised modules such as PDP67 or PSS67 thanks to M12, 5-pin product variants
- Safe complete solution, e.g. with configurable safe small controllers PNOZmulti 2

Keep up-to-date on the mechanical safety gate system PSENmech with guard locking:

Webcode: web216048

Online information at www.pilz.com

Selection guide – PSENmech

Common features

- Position monitoring of movable guards in accordance with EN 60947-5-1
- Designed for applications up to:
  - PL e of EN ISO 138491
  - SIL CL 3 of EN IEC 62061, two devices must be used to meet the highest requirements
- Holding force: 1 500 N
- Extraction force: 10 N
- Directions of actuation: 5
- Dimensions (H x W x D, without actuator) in mm: 192 x 42 x 44
- Ambient temperature: –30 … +80 °C
- Protection type: IP67

Mechanical safety gate system PSENmech with guard locking – switch

PSEN me5S NC-NC-NC.NC 1switch

Type
PSEN me5S NC-NC-NC.NC 1switch
PSEN me5M NC-NC-NC.NC 1switch
PSEN me5S NC.NC-NC-NC 1switch
PSEN me5M NC.NC-NC-NC 1switch
PSEN me5S NC-NC-NO.NC 1switch
PSEN me5M NC-NC-NO.NC 1switch
PSEN me5S NC-NO.NC-NO 1switch
PSEN me5M NC-NO.NC-NO 1switch
PSEN me5S NC-NC.NC-NC 1switch
PSEN me5S NC.NC-NC M12/8 1switch
PSEN me5M NC.NC-NC M12/8 1switch
PSEN me5M NC.NC n 1switch
PSEN me5S NC.NC n 1switch

Mechanical safety gate system PSENmech with guard locking – actuator

PSEN me5 AS

PSEN me5 AA

Type
PSEN me5 AS
PSEN me5 AA
PSEN me5 AR
PSEN me5 AF

Mechanical safety gate system PSENmech with guard locking – actuator

PSEN me5 escape release

PSEN me5 emergency release front

Type
PSEN me5 escape release
PSEN me5 20mm extension
PSEN me5 40mm extension
PSEN me5 emergency release front
PSEN me5 emergency release back

Actuator type	Connection	Supply voltage	Certification	Order number (switch)
Spring force	Standard	24 VAC/DC	-	6L000010
Magnet	Standard	24 VAC/DC	-	6L000011
Spring force	Standard	24 VAC/DC	-	6L000012
Magnet	Standard	24 VAC/DC	-	6L000013
Spring force	Standard	24 VAC/DC	-	6L000014
Magnet	Standard	24 VAC/DC	-	6L000015
Spring force	Standard	24 VAC/DC	-	6L000016
Magnet	Standard	24 VAC/DC	-	6L000017
Spring force	Standard	24 VAC/DC	-	6L000018
Spring force	M12, 8-pin	24 VAC/DC	-	6L000019
Magnet	M12, 8-pin	24 VAC/DC	-	6L000020
Magnet	M12, 5-pin	24 VAC/DC	-	6L000021
Spring force	M12, 5-pin	24 VAC/DC	-	6L000022

Features	Certification	Order number (actuator)
Standard actuator	-	6L000001
Transverse actuator	-	6L000002
Radius actuator	-	6L000003
Flexible actuator	-	6L000004

Features	Certification	Order number
Basis set for the escape release	-	6L000005
Expansion module length: 20 mm	-	6L000006
Expansion module length: 40 mm	-	6L000007
Front emergency unlocking device	-	6L000008
Rear emergency unlocking device	-	6L000009

Cable selection:

From page 174

Keep up-to-date on the mechanical safety gate system PSENmech with guard locking:

Webcode: web216048

Online information at www.pilz.com

Safety gate system PSENslock

The safety gate system PSENslock offers secure safety gate monitoring based on the non-contact, coded safety switch with electromagnetic process guarding of 500 N or 1000 N (BG GS-ET 19).

IP67

PSEN sl-0.5p

PSEN sl-1.0p ... VA

Stringent protection of human and machine

PSENslock is a safe alternative to existing mechanical technology for safety gate monitoring. Highest possible manipulation protection and low wear and tear ensure a long service life and protect your investment. Combined with Pilz control technology, the result is a safe, complete solution for guard monitoring.

Whether separately or in series, PSENslock is configured for the highest categories in safety gate monitoring.

Save time and costs during commissioning

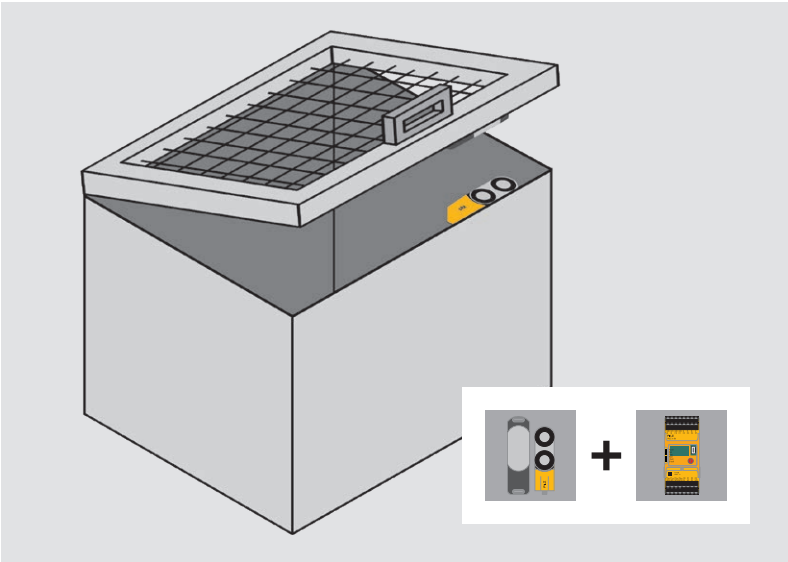
Thanks to its different assembly directions, PSENslock can be installed and commissioned quickly and easily. It is optimised for mounting on the popular 45 mm profiles.

With the free-moving anchor plate (free moving actuator), even gates requiring high tolerances can be monitored and locked.

Type code for PSENslock

PSEN sl-1.0fm p 2.2

Product area Pilz **SEN**sors	Magnetic force	Actuator	Connection	Coding/Firmware	Material
Product group **sl – PSENslock**	0.5 500 N **1.0 1 000 N**	**fm free moving**	**p Connector, M12, 8-pin (series connection integrated in sensor)** n Connector, M12, 5-pin	1.1 Basic software, coded 2.1 Basic software, fully coded **2.2 Basic software, uniquely coded** 3.1 OSSDs independent of guard locking, coded 4.1 OSSDs independent of guard locking, fully coded 4.2 OSSDs independent of guard locking, uniquely coded 6.1 Extended diagnostic functions, fully coded	VA With stainless steel elements - Base plate - Connector
Operation ▸ Non-contact, coded ▸ Transponder (RFID) ▸ With safe semiconductor outputs					



Components for your safe solution	Order number
Sensor: PSEN sl-1.0p 2.2/PSEN sl-1.0	570 602
Connection: PSEN cable, M12, 8-pin, 5 m	540 320
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772 100 751 008

The optimum solution: guard locking on the flap using the safety gate system PSENslock, evaluated using the configurable safe small controllers PNOZmulti 2.

Your benefits at a glance

- Secure safety gate monitoring for the highest safety requirements
- High availability for your plant:
  - Highest level of manipulation protection (coding)
  - Process protection via magnetic guard locking
- Rapid commissioning:
  - Four assembly directions
  - Tolerant to gate misalignment
  - Flexible connection via connector
- User-friendly diagnostics via double-sided LED display
- Saves power, as the magnet on PSENslock is optimised for energy efficiency

PSENslock with free-moving anchor plate (free-moving actuator).

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

Webcode: web150408

Online information at www.pilz.com

Selection guide – PSENslock

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 with magnetic guard locking for process protection tasks
- Series connection up to PL e of EN ISO 13849-1:
  - PSENcode, PSENslock with 5-pin connection for decentralised module PDP67 F8 DI ION
  - PSENslock and Pilz sensor technology with 8-pin connection for passive junction PDP67 F 4 code or PSEN Y junction (cable separator)
- Electrical data:
  - Supply voltage: 24 VDC
  - Voltage tolerance: –15 … +10 %
  - Outputs: 2 safety outputs and 1 signal output
- Mechanical data:
  - Vertical and lateral offset: +/–3 / +/–5 mm
  - Protection type: IP67
- Dimensions (H x W x D) in mm:
  - Safety guard locking device: 500 N: 122 x 45 x 44, 1 000 N: 172 x 45 x 44
  - Actuator: 500 N: 138 x 52 x 23, 1 000 N: 188 x 52 x 23

Safety gate system PSENslock

PSEN sl-0.5

PSEN sl-0.5 … fm

PSEN sl-1.0p 1.1 VA/ PSEN sl-1.0

Type (switch/actuator)	Type of coding
Holding force: 500 N	
PSEN sl-0.5p 1.1/PSEN sl-0.5	Coded [4]
PSEN sl-0.5p 1.1/PSEN sl-0.5fm [3]	Coded [4]
PSEN sl-0.5p 2.1/PSEN sl-0.5	Fully coded [5]
PSEN sl-0.5p 2.1/PSEN sl-0.5fm [3]	Fully coded [5]
PSEN sl-0.5p 2.2/PSEN sl-0.5	Uniquely coded [6]
PSEN sl-0.5p 2.2/PSEN sl-0.5fm [3]	Uniquely coded [6]
PSEN sl-0.5p 3.1/PSEN sl-0.5	Coded [4]
PSEN sl-0.5p 3.1/PSEN sl-0.5fm [3]	Coded [4]
PSEN sl-0.5p 4.1/PSEN sl-0.5	Fully coded [5]
PSEN sl-0.5p 4.1/PSEN sl-0.5fm [3]	Fully coded [5]
PSEN sl-0.5n 1.1/PSEN sl-0.5	Coded [4]
PSEN sl-0.5n 1.1/PSEN sl-0.5fm [3]	Coded [4]
PSEN sl-0.5n 2.1/PSEN sl-0.5	Fully coded [5]
Holding force: 1 000 N	
PSEN sl-1.0p 1.1/PSEN sl-1.0	Coded [4]
PSEN sl-1.0p 2.2/PSEN sl-1.0	Uniquely coded [6]
PSEN sl-1.0p 2.2/PSEN sl-1.0fm [3]	Uniquely coded [6]
PSEN sl-1.0p 4.2/PSEN sl-1.0	Uniquely coded [6]
PSEN sl-1.0n 1.1/PSEN sl-1.0	Coded [4]
Version with stainless steel components, holding force: 1 000 N [8]	
PSEN sl-1.0p 1.1 VA/PSEN sl-1.0	Coded [4]

Power consumption[1]	Connection type (connector)	Actuator type		Certification	Order number (Unit)[2]
		Rigid	Flexibly mounted		
4.8 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570500
4.8 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570560
4.8 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570501
4.8 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570561
4.8 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570502
4.8 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570562
4.8 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570570
4.8 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570573
4.8 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570571
4.8 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570574
4.8 W	M12, 5-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570503
4.8 W	M12, 5-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570563
4.8 W	M12, 5-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570504
7.2 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570600
7.2 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570602
7.2 W	M12, 8-pin		◆	EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570662
7.2 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570672
7.2 W	M12, 5-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570603
7.2 W	M12, 8-pin	◆		EAC, FCC[7], IC[7], TÜV, cULus Listed[7]	570630

[1] Gate locked [2] Unit comprising switch and actuator [3] Free-moving
[4] Switch accepts any PSENslock actuator
[5] Switch accepts only one PSENslock actuator, teach-in up to 8 times
[6] Switch accepts only one PSENslock actuator, no teach-in facility
[7] FCC, IC and cULus Listed certification applies only to individual components contained within the set
[8] Base plate, screws and connector

Cable selection:

From page 174

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

Webcode: web150408

Online information at www.pilz.com

Selection guide – PSENslock

Accessories – safety gate system PSENslock

PSEN sl bracket
sliding door

PSEN sl restart interlock

Description Type
One-way screw to secure the actuator **PSEN screw M5x20**
Mounting bracket for sensors **PSEN sl bracket sliding door** **PSEN sl bracket swing door**
Reset lock **PSEN sl restart interlock (padlock)**

Features	Quantity	Order number
▸ Stainless steel ▸ Drive: one-way slot (safety screw) ▸ M5, 20 mm ▸ Suitable for PSEN sl	10	540312
For sliding gate	2	570551
For swing gate	1	570550
▸ Mechanical add-on module for attachment to PSEN sl-0.5 or PSEN sl-1.0 ▸ Enables up to 2 padlocks or carabiners to be attached to stop the gate closing and so prevent the machine from restarting ▸ Certification: TÜV	1	570552

Cable selection:

From page 174

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

Webcode: web150408

Online information at www.pilz.com

Safety gate system PSENmlock

The safety gate system PSENmlock offers you safe interlocking and safe guard locking for protection of personnel and processes up to the highest category PL e. PSENmlock is available in versions with power reset and automatic reset.

PSEN ml b 1.1 switch

PSEN ml DHM

Safe interlocking with safe guard locking

PSENmlock provides secure safety gate monitoring and safe guard locking in one product. The latter is enabled by dual-channel operation of the guard locking device. The switch is therefore especially suitable for machines with dangerous run-on, in which safe guard locking is also necessary up to PL d or PL e. Thanks to LEDs on three sides of the housing, diagnostics are easily visible in all installation positions. The flexibly mounted actuator ensures a high tolerance compensation – even with sagging gates.

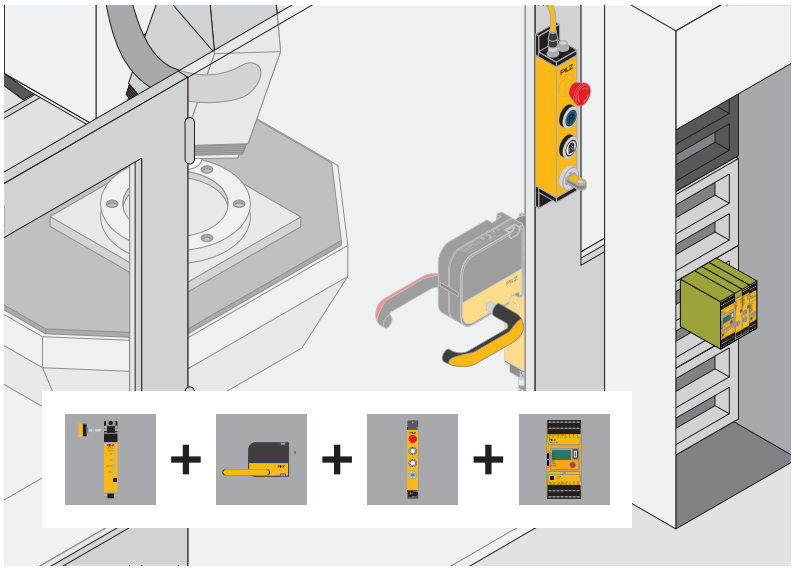
Handle with integrated actuator and escape release

The PSENmlock handle module offers you a handle with integrated actuator and integrated escape release – suitable for safety gate system PSENmlock. The yellow handle (outside) enables extension of the actuator to open or close the door. The escape release is actuated with the red handle (inside). The door handle module is suitable for fitting on the inside and the outside of the gate as well as for right-hinged and left-hinged gates. It has a locking insert for up to five locks to prevent the machine from restarting. The door handle module can be used with coded and fully coded PSENmlock switches. In addition to the door handle module, separate handles and escape releases are also available as optional accessories.

Type code for PSENmlock

PSEN ml ba 1.1

Product area Pilz **SEN**sors	Version	Reset	Coding
Product group **ml – PSENmlock**	**b Base version** s Series connection (SDD-capable) _ Actuator	_ With power reset **a With automatic reset (without power reset)**	**1.1 Coded** 2.1 Fully coded 2.2 Uniquely coded
Operation ▸ Mechanical ▸ Transponder (RFID) ▸ With safe guard locking and safety gate monitoring			



Components for your safe solution	Order number
Sensor: PSEN ml b 1.1 switch	570 401
Handle actuator: PSEN ml door handle module	6O0000005
Pushbutton unit: PIT gb RLLE y up ETH	G1000020
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772 100 751 008

The optimum solution: the safety gate system PSENmlock in combination with the PSENmlock handle module, the pushbutton unit PITgatebox with integrated PITreader and the configurable safe small controller PNOZmulti 2.

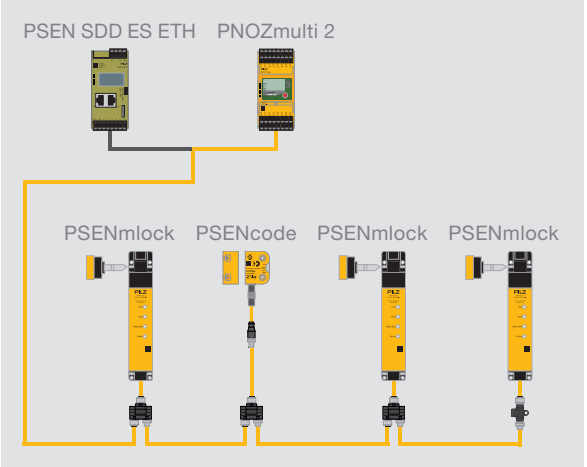
Your benefits at a glance

- Maximum safety:
  - Safe guard locking up to PL e
  - Safe interlocking up to PL e
- High holding force of 7 500 N
- Easily visible diagnostics: LEDs in three sides of the housing
- Compact design: suitable for all 40 mm profiles, among others
- Flexible actuator: for a high tolerance compensation – even with sagging gates
- No inadvertent activation of the guard locking due to the integral restart interlock
- Long service life: robust housing and mechanically robust
- Energy efficient: reduced power consumption during operation
- SDD-capable

SDD
SAFETY DEVICE DIAGNOSTICS

PSENmlock with series connection

With the series connection versions, you benefit from an economical installation thanks to reduced wiring work and series connection of the safe input and output signals. In combination with Safety Device Diagnostics (SDD), guard locking of individual sensors in the chain can be activated in a targeted manner – and all this without expensive individual wiring in the control cabinet. The SDD also enables simple and comprehensive diagnostics of the safety switches, reducing downtimes.



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

Webcode: web150409

Online information at www.pilz.com

Selection guide – PSENmlock

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
- Electrical data:
  - Supply voltage: 24 VDC
  - 2 outputs: semiconductor, max. 100 mA each
  - Signal output: 100 mA
  - 2 inputs: 0.5 A, 150 ms
  - Voltage tolerance: –15 … +20 %
- Mechanical data:
  - Max. vertical offset: +/–3 mm
  - Max. lateral offset: +/–3 mm
  - Max. angular offset: +/–1.5°
  - Max. angular offset about the x-axis: +/–2°
  - Max. angular offset about the y-axis: +/–2.5°
  - Max. angular offset about the z-axis: +/–7.5°
  - Max. offset in the closing direction: +/–2 mm
  - Integral latching force: 30 N
  - Protection type: IP67
- Type of coding:
  - Coded (Version 1.1)
  - Fully coded (Version 2.1)
  - Uniquely coded (Version 2.2)
- Additional unlocking options:
  - Auxiliary release: yes
  - Emergency unlocking: optional (only on versions with power reset)
  - Escape release: optional

Safety gate system PSENmlock – Base version, with power reset

PSEN ml b 1.1 unit

PSEN ml b 1.1 switch

PSEN ml 2.1 actuator

Type (switch/actuator)	Holding force
Unit	
PSEN ml b 1.1 unit	7 500 N
PSEN ml b 2.1 unit	7 500 N
PSEN ml b 2.2 unit	7 500 N
Switch	
PSEN ml b 1.1 switch	7 500 N
PSEN ml b 2.1 switch	7 500 N
Actuator	
PSEN ml 1.1 actuator	7 500 N
PSEN ml 2.1 actuator	7 500 N
PSEN ml 1.1 round actuator	7 500 N
PSEN ml 2.1 round actuator	7 500 N

Safety gate system PSENmlock – Base version, automatic reset

PSEN ml ba 1.1 unit

Type	Holding force
Unit	
PSEN ml ba 1.1 unit	7 500 N
PSEN ml ba 2.1 unit	7 500 N
PSEN ml ba 2.2 unit	7 500 N
Switch	
PSEN ml ba 1.1 switch	7 500 N
PSEN ml ba 2.1 switch	7 500 N
PSEN ml ba 2.2 switch	7 500 N

Type of coding	Dimensions (H x W x D) in mm	Certification	Connection type (connector)	Order number
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570400[1]
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570402[1]
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570404[1]
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570401
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570403
Coded	63.5 x 40 x 67.2	FCC[2], IC[2], TÜV, cULus Listed[2]	-	570480
Fully coded	63.5 x 40 x 67.2	FCC[2], IC[2], TÜV, cULus Listed[2]	-	570481
Coded	63.5 x 40 x 61.5	FCC[2], IC[2], TÜV, cULus Listed[2]	-	570482
Fully coded	63.5 x 40 x 61.5	FCC[2], IC[2], TÜV, cULus Listed[2]	-	570483

Type of coding	Dimensions (H x W x D) in mm	Certification	Connection type (connector)	Order number
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570424[1]
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570426[1]
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570428[1]
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570425
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570427
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570429

[1] Set comprising switch and actuator

[2] FCC, IC and cULus Listed certification applies only to individual components contained within the set

Cable selection:

From page 174

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

Webcode: web150409

Online information at www.pilz.com

Selection guide – PSENmlock

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
- Electrical data:
  - Supply voltage: 24 VDC
  - 2 outputs: semiconductor, max. 100 mA each
  - Signal output: 100 mA
  - 2 inputs: 0.5 A, 150 ms
  - Voltage tolerance: –15 … +20 %
- Mechanical data:
  - Max. vertical offset: +/–3 mm
  - Max. lateral offset: +/–3 mm
  - Max. angular offset: +/–1.5°
  - Max. angular offset about the x-axis: +/–2°
  - Max. angular offset about the y-axis: +/–2.5°
  - Max. angular offset about the z-axis: +/–7.5°
  - Max. offset in the closing direction: +/–2 mm
  - Integral latching force: 30 N
  - Protection type: IP67
- Type of coding:
  - Coded (Version 1.1)
  - Fully coded (Version 2.1)
  - Uniquely coded (Version 2.2)
- Additional unlocking options:
  - Auxiliary release: yes
  - Emergency unlocking: optional (only on versions with power reset)
  - Escape release: optional

Safety gate system PSENmlock – Series connection, with power reset

PSEN ml s 1.1 unit

PSEN ml s 1.1 switch

Type	Holding force
Unit	
PSEN ml s 1.1 unit	7 500 N
PSEN ml s 2.1 unit	7 500 N
PSEN ml s 2.2 unit	7 500 N
Switch	
PSEN ml s 1.1 switch	7 500 N
PSEN ml s 2.1 switch	7 500 N
PSEN ml s 2.2 switch	7 500 N

Safety gate system PSENmlock – Series connection, automatic reset

PSEN ml sa 1.1 unit

Type	Holding force
Unit	
PSEN ml sa 1.1 unit	7 500 N
PSEN ml sa 2.1 unit	7 500 N
PSEN ml sa 2.2 unit	7 500 N
Switch	
PSEN ml sa 1.1 switch	7 500 N
PSEN ml sa 2.1 switch	7 500 N
PSEN ml sa 2.2 switch	7 500 N

Type of coding	Dimensions (H x W x D) in mm	Certification	Connection type (connector)	Order number
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570406[1]
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570408[1]
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570410[1]
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570407
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570409
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 12-pin, pigtail	570411

Type of coding	Dimensions (H x W x D) in mm	Certification	Connection type (connector)	Order number
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570430[1]
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570432[1]
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570434[1]
Coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570431
Fully coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570433
Uniquely coded	217.2 x 40 x 40	FCC[2], IC[2], TÜV, cULus Listed[2]	M12, 8-pin, pigtail	570435

[1] Set comprising switch and actuator

[2] FCC, IC and cULus Listed certification applies only to individual components contained within the set

Cable selection:

From page 174

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

Webcode: web150409

Online information at www.pilz.com

Selection guide – PSENmlock

Safety gate system PSENmlock – Actuator

PSEN ml 1.1 actuator

PSEN ml 1.1 round actuator

Type
PSEN ml 1.1 actuator
PSEN ml 2.1 actuator
PSEN ml 1.1 round actuator
PSEN ml 2.1 round actuator

Safety gate system PSENmlock – PSENmlock door handle module

Common features

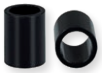
- Handle module for use with PSENmlock
- Yellow handle (outside): extension of the actuator
- Red handle (inside): actuation of the escape release
- Flexible installation on the inside or outside of the door
- Suitable for left and right-hinged gates
- For versions with cable outlet from PSENmlock toward the top or bottom
- For coded and fully coded PSENmlock

PSEN ml DHM down l 2.1

Type
PSEN ml DHM up l 1.1
PSEN ml DHM up l 2.1
PSEN ml DHM up r 1.1
PSEN ml DHM up r 2.2
PSEN ml DHM down l 1.1
PSEN ml DHM down l 2.1
PSEN ml DHM down r 1.1
PSEN ml DHM down r 2.1

Accessories – safety gate system PSENmlock – PSENmlock door handle module

PSEN ml DHM extensions



PSEN ml DHM extension covers

PSEN ml DHM mounting plate

PSEN ml DHM mounting flaps

Type
PSEN ml DHM extensions
PSEN ml DHM handle yellow
PSEN ml DHM handle red
PSEN ml DHM extension covers
PSEN ml DHM mounting plate
PSEN ml DHM mounting flaps

Features	Quantity	Order number
Coded, dimensions (H x W x D) in mm: 63.5 x 40 x 67.2	1	570480
Fully coded, dimensions (H x W x D) in mm: 63.5 x 40 x 67.2	1	570481
Round actuator, coded, dimensions (H x W x D) in mm: 63.5 x 40 x 61.5	1	570482
Round actuator, fully coded, dimensions (H x W x D) in mm: 63.5 x 40 x 61.5	1	570483

Features	Quantity	Order number
Can be used with coded PSENmlock versions and cable outlet toward the top, left-hinged gates	1	6O000001
Can be used with fully coded PSENmlock versions and cable outlet toward the top, left-hinged gates	1	6O000002
Can be used with coded PSENmlock versions and cable outlet toward the top, right-hinged gates	1	6O000003
Can be used with fully coded PSENmlock versions and cable outlet toward the top, right-hinged gates	1	6O000004
Can be used with coded PSENmlock versions and cable outlet toward the bottom, left-hinged gates	1	6O000005
Can be used with fully coded PSENmlock versions and cable outlet toward the bottom, left-hinged gates	1	6O000006
Can be used with coded PSENmlock versions and cable outlet toward the bottom, right-hinged gates	1	6O000007
Can be used with fully coded PSENmlock versions and cable outlet toward the bottom, right-hinged gates	1	6O000008

Features	Quantity	Order number
Extensions (25 mm each) for the handle	2	6O000009
Yellow handle for outside actuation	1	6O000010
Red handle for actuation of the escape release	1	6O000011
Covers for 6O000009	2	6O000012
Adjusting plate for PSEN ml door handle module when using 10 mm mounting plate 570490 with PSENmlock	1	6O000013
Mounting flaps for installation on sliding gates	2	6O000014

Cable selection:

From page 174

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

Webcode: web150409

Online information at www.pilz.com

Selection guide – PSENmlock

Selection guide installation accessory

Type of gate	Handle	Use of the mounting plate for standard profiles (570490)		Order number
Swing gate	No	No		PSEN ml bracket swinging door 70 ____ 570493 [1]
		Yes		PSEN ml bracket swinging door 80 ____ 570494 [1]
	Yes	No		PSEN ml door handle swinging door 70 ____ 570496 [1]
		Yes		PSEN ml door handle swinging door 80 ____ 570497 [1]
Sliding gates	No	No		PSEN ml bracket sliding door ____ 570492 [1]
	Yes	No		PSEN ml door handle sliding door ____ 570495 [1]

[1] Actuators are not supplied with the device

Accessories – safety gate system PSENmlock

PSEN ml mounting plate

PSEN ml mounting plate angled

Description Type	Features	Quantity	Order number
Mounting plate **PSEN ml mounting plate**	For assembly on the standard profile	1	570490
PSEN ml mounting plate angled	Angled mounting plate	1	570476
Screw set **PSEN screw set bracket swinging door**	For swing gate mounting bracket	1	570498
PSEN screw set bracket sliding door	For sliding gate mounting bracket	1	570499
PSEN screw M5x10	For PSENmlock actuator	10	540311
PSEN screw M5x20	For PSENmlock actuator	10	540312

Accessories – safety gate system PSENmlock

PSEN ml escape release

PSEN ml escape release cordset 2,0m

Description Type	Features	Quantity	Order number
PSEN ml escape release	Suitable for PSEN ml b, PSEN ml s	1	570460
PSEN ml auxiliary release hd1	Suitable for PSEN ml b, PSEN ml s	1	570461
PSEN ml escape release extension	Suitable for PSEN ml b, PSEN ml s	1	570462
PSEN ml escape release cordset 1.5m hd1	Suitable for PSEN ml b, PSEN ml s, length: 1.5 m	1	570463
PSEN ml escape release cordset 0.5m	Suitable for PSEN ml b, PSEN ml s, length: 0.5 m	1	570466
PSEN ml escape release cordset 0.75m	Suitable for PSEN ml b, PSEN ml s, length: 0.75 m	1	570467
PSEN ml escape release cordset 1.0m	Suitable for PSEN ml b, PSEN ml s, length: 1.0 m	1	570468
PSEN ml escape release cordset 1.25m	Suitable for PSEN ml b, PSEN ml s, length: 1.25 m	1	570469
PSEN ml escape release cordset 1.5m	Suitable for PSEN ml b, PSEN ml s, length: 1.5 m	1	570470
PSEN ml escape release cordset 2.0m	Suitable for PSEN ml b, PSEN ml s, length: 2.0 m	1	570471
PSEN ml escape release cordset 2.5m	Suitable for PSEN ml b, PSEN ml s, length: 2.5 m	1	570472
PSEN ml escape release cordset 3.0m	Suitable for PSEN ml b, PSEN ml s, length: 3.0 m	1	570473
PSEN ml escape release cordset 3.5m	Suitable for PSEN ml b, PSEN ml s, length: 3.5 m	1	570474
PSEN ml escape release cordset 4.0m	Suitable for PSEN ml b, PSEN ml s, length: 4.0 m	1	570475
Actuator **PSEN ml actuator 10° adapter**	Adapter for aligning the PSENmlock actuator for small gates, radius: 300 – 500 mm	1	570484
PSEN ml actuator center ring	5 centring rings for PSENmlock actuator, especially suited for small gates	1	570485

Cable selection:

From page 174

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

Webcode: web150409

Online information at www.pilz.com

Safety gate system PSENsgate

PSENsgate provides secure safety gate monitoring, protecting personnel and plant to the highest category PL e in one system.

PSEN sg2c-3LPE

PSEN sg2c-5LPLLE

Save time and components

You benefit from a high savings potential: use just one turnkey system and all your safety functions and control elements are integrated.

A number of new system types are available to select, with optional integratable control and operator elements such as pushbuttons, key switches, illuminated buttons, section stop, emergency stop or escape release.

Economical solution

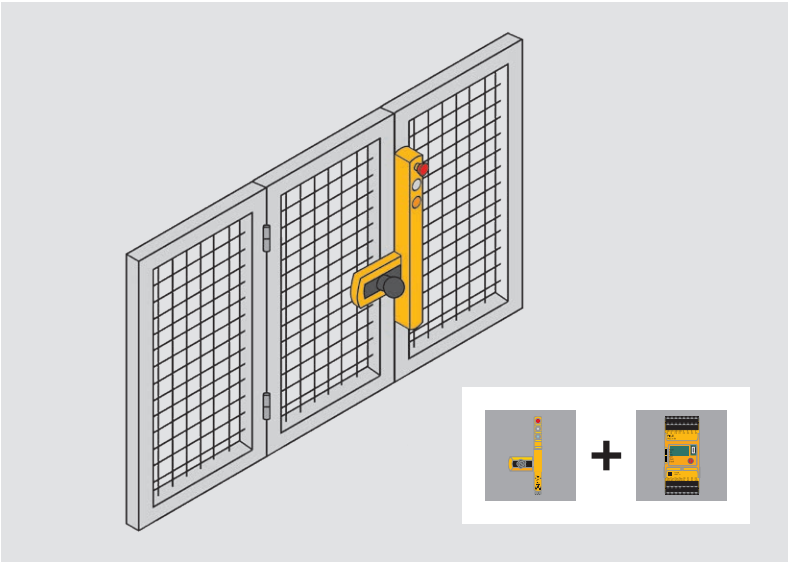
When combined with safe control technology from Pilz, what you get is a complete safety gate monitoring solution that's safe and economical. PSENsgate is also easy to connect in series with many other sensors PSENcode and PSENslock. The robust design is another impressive feature of the PSENsgate.

Type code PSENsgate

PSEN sg2c-5LBLLE-M12/5

Product area Pilz **SEN**sors	Generation	Connection via	Design/elements	Operator elements/ emergency stop [1]	Connection type [2]
Product group **sg – PSENsgate**	**2**	**c Spring-loaded terminal, plug in**	3 Short design, 3 elements **5 Long design, 5 elements**	_ Not present P Pushbutton **L Illuminated pushbutton** **B Key switch** C Blind cover **E E-STOP**	_ Not present **M12/5 Connector, M12, 5-pin**
Operation ▸ Mechanical ▸ Transponder (RFID) ▸ With safe guard locking and safety gate monitoring					

[1] Sequence: key assignment from bottom to top
[2] Connection only for large design

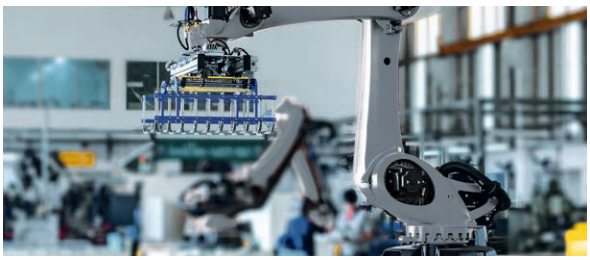


Components for your safe solution	Order number
Sensor: PSEN sg2c-3LPE	570 800
Connection: PSEN cable 200m-8x0.25mm²	570 793
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772 100 751 008

The optimum solution: monitoring a safety gate using the safety gate system PSENsgate and the configurable safe small controllers PNOZmulti 2.

Your benefits at a glance

- Greater flexibility: large selection of different control and operator elements, e.g. key switches, emergency stops, plus the ability to connect enabling switches
- Maximum safety: just one switch per safety gate for personnel and plant protection up to PL e
- Engineering and costs are minimised: one product rather than several individual components
- Time saving: reduced installation and wiring effort thanks to a turnkey system with integratable control elements and emergency stop (optional)
- Simple assembly: for right and left-hinged gates
- For universal use: suitable for all 45 mm profiles
- Energy efficient: reduced current consumption (gate lock max. 2 W)



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

Webcode: web150407

Online information at www.pilz.com

Selection guide – PSENsgate

Safety gate system PSENsgate

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
- Series connection in combination with PSENsgate, PSENcode, PSENslock up to PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061:
  - With 8-pin connector via Y junction (cable separator) or PDP67 F 4 code
- Electrical data:
  - Supply voltage: 24 VDC
  - Outputs: 2 (semiconductor, each max. 500 mA)
  - Signal output: 500 mA
  - “Safe range” input (solenoid pin): 1.5 A, 150 ms
  - Power consumption depends on configuration (door locked): max. 2 W
  - Voltage tolerance: –15/+10 %
- Mechanical data:
  - Vertical and lateral offset: +/–5 / +/–5 mm
  - Holding force, swing gate: 2000 N
  - Connection type: plug-in spring-loaded terminals
  - Protection type: IP65/54
- Type of coding:
  - Coded
  - Uniquely coded (Version 2.2)
- PSENsgate must be used in conjunction with the auxiliary release; the escape release is optional
- Scope: sensing device with pushbuttons including coloured caps and escape release bar as well as actuator (bolt) for left or right-hinged gates

PSEN sg2c-3LPE

PSEN sg2c-5LPLLE

Type
Short unit type
PSEN sg2c-3LPE
PSEN sg2c-3LBE
PSEN sg2c-3LPC
PSEN sg2c-3LPE 2.2
Long unit type
PSEN sg2c-5LPLLE
PSEN sg2c-5LBLLE
PSEN sg2c-5LPLLE 2.2
Freely configurable unit type (2 freely assignable buttons)
PSEN sg2c-5CCLLE

No. of pushbuttons			Dimensions (H x W x D) in mm	Type of coding	Certification	Order number
E-STOP	Pushbutton	Key-operated pushbutton				
1	2	-	445 x 200 x 105	Coded	FCC [1], TÜV, cULus Listed [1]	570800
1	1	1	445 x 200 x 105	Coded	FCC [1], TÜV, cULus Listed [1]	570802
-	2	-	445 x 200 x 105	Coded	FCC [1], TÜV, cULus Listed [1]	570808
1	2	-	445 x 200 x 105	Uniquely coded	FCC [1], TÜV, cULus Listed [1]	570880
1	4	-	546 x 200 x 105	Coded	FCC [1], TÜV, cULus Listed [1]	570812
1	3	1	546 x 200 x 105	Coded	FCC [1], TÜV, cULus Listed [1]	570814
1	4	-	546 x 200 x 105	Uniquely coded	FCC [1], TÜV, cULus Listed [1]	570882
1	2	-	555 x 200 x 108	Coded	FCC [1], TÜV, cULus Listed	570836

[1] FCC and cULus Listed certification applies only to individual components contained within the set

Cable selection:

From page 174

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

Webcode: web150407

Online information at www.pilz.com

Selection guide – PSENsgate

Accessories – safety gate system PSENsgate

PSEN sg escape release pin

PSEN sg auxiliary release pin

PSEN sg color covers (push button)

Description Type
Escape release **PSEN sg escape release pin**
Auxiliary release **PSEN sg auxiliary release pin**
Cover **PSEN sg2 cover**
Colour control elements **PSEN sg color covers (push button)**
Connection cable 200 m **PSEN cable 200m-8x0.25mm²**
Connector set in spring force version **PSEN sg2c Set spring loaded terminals**

Features	Quantity	Order number
Certification: TÜV	1	570870
Certification: TÜV	1	570871
Certification: TÜV	1	570773
Certification: TÜV	6	570875
-	1	570793
-	1	570777

Cable selection:

From page 174

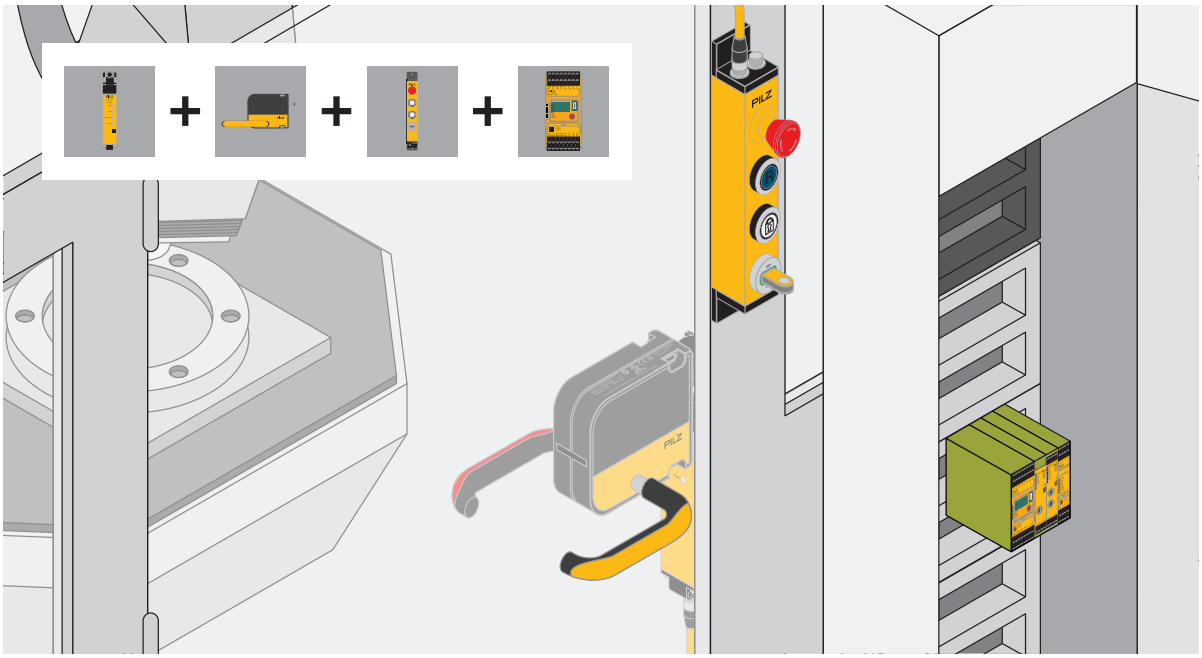
Keep up-to-date on safety gate systems PSENsgate:

Webcode: web150407

Online information at www.pilz.com

Modular safety gate system – the complete solution

The modular safety gate system offers you an individual safety gate solution that is ideally tailored to your application. That means you can combine individual components flexibly to suit your own particular requirements. Put together your safety gate monitoring system.



The complete solution for the safety gate: the modular safety gate system, comprising the PSENmlock, PSENmlock handle module, pushbutton unit PITgatebox with integrated PITreader and configurable safe small controller PNOZmulti 2.

Components: from safety gate monitoring to access control

- Safety gate sensor PSENslock for safe position monitoring with process guarding. It can be used up to the highest category and in series connection
- Safety gate sensor PSENmlock for safe interlocking and safe guard locking up to PL e. Different versions are available for series connection and with and without power reset (page 62)
- PSENmlock handle module with integrated actuator and integrated escape release as well as flexible installation on the inside and outside of the safety gate for accessible safety gates (page 62)
- Escape releases and suitable handles for the safety gate system PSENmlock
- Pushbutton unit PITgatebox for simple operation of the safety gate system
- PITgatebox versions with integrated access permission system PITreader for preventing machine downtimes or loss of quality (page 148)
- Safety Device Diagnostics for comprehensive diagnostic and status information as well as for the safe series connection of safety sensors and targeted individual control of the guard locking of individual switches in the series

Combining with the configurable safe small controller PNOZmulti 2 gives you a cost-effective, complete, one-stop solution.

for the safety gate

Modular safety gate system – components

Sensor	**PSENmlock (safety guard locking device)** ▸ PSENmlock base version (with/without auto. reset) ▸ PSENmlock series connection (with/without auto. reset)		
Handle	**Handle module** Integrated escape release, for swing/sliding gates	**Handles** For swing gates 	For sliding gates 
Escape release		**Escape releases** Classic escape release 	Remote escape release 
Pushbutton unit	**PITgatebox** [1]		
Pushbutton unit with access permission system	**PITgatebox with PITreader**		
Evaluation device	**Configurable safe small controller PNOZmulti 2**		
Diagnostics and control	**Safety Device Diagnostics**		

[1] Figure shows only a selection. Additional versions are available.

Your benefits at a glance

- Individual safety gate solution tailored to the application
- Comprehensive modular portfolio with many different combination options
- Combination of safety gate monitoring and access control
- Authentication of users with integrated access permission system PITreader
- Rapid and flexible integration in your system
- User-friendly operation
- Simple and economical series connection of the safety sensors
- Comprehensive diagnostics of the safety switches
- Safe, complete solution when combined with Pilz safe control technology

Keep up-to-date on the modular safety gate system:

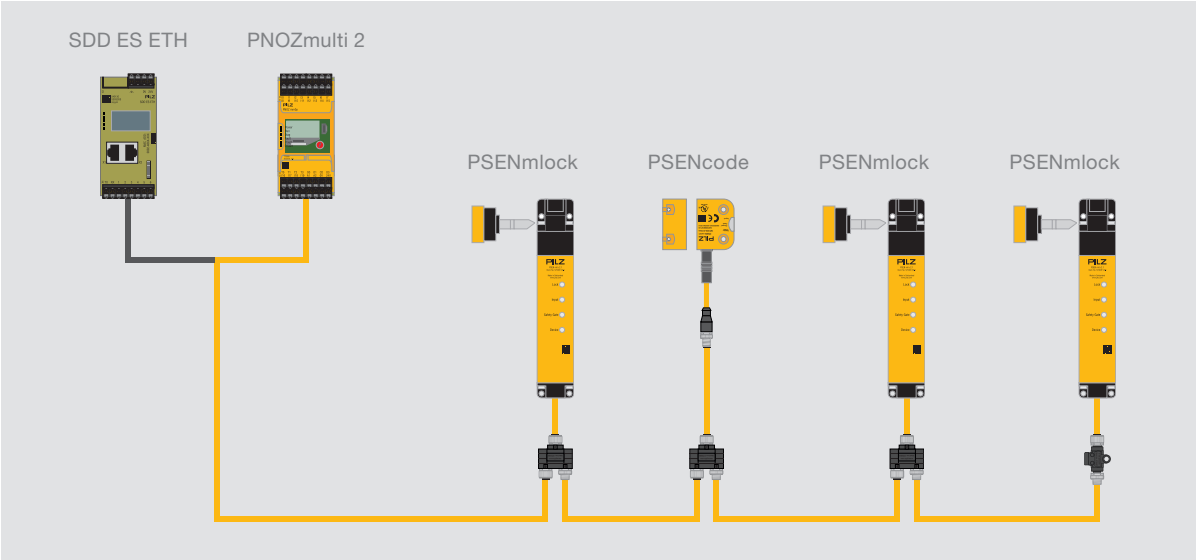
Webcode: web194460

Online information at www.pilz.com

Safety Device Diagnostics (SDD)

Safety Device Diagnostics (SDD) provides simple and comprehensive diagnostics for safety devices. The function of the signal I/Os of the safety devices, such as PSENcode for example, is extended. Status information is queried, configuration parameters read and actions performed. Safety Device Diagnostics is the ideal solution for your application as it provides you with an overview of the safety devices at all times and from any location.

SDD
SAFETY DEVICE DIAGNOSTICS



Fewer service calls, greater availability

The availability of plant and machinery is also determined by safety devices. The extended diagnostic possibilities of Pilz safety devices with Safety Device Diagnostics can reduce service calls to your customers. End users benefit from a higher machine availability thanks to faster fault diagnostics. Safety Device Diagnostics can also provide an interface to the plant bus for all safety devices. Thanks to its expandability, Safety Device Diagnostics supports a modular machine structure.

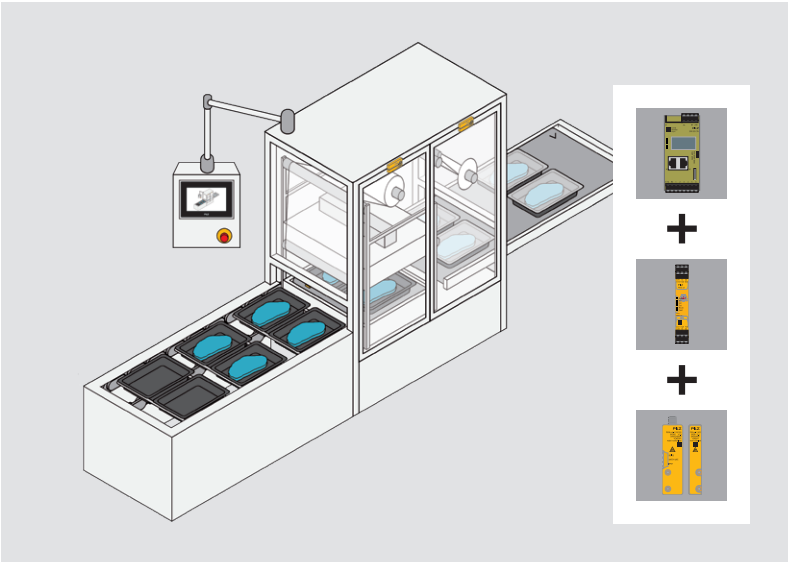
Same sensor, extended diagnostics

Safety Device Diagnostics consists of a fieldbus module plus junction and safety devices (e.g. sensors). The safety devices are automatically activated by the fieldbus module so that the signal contacts for the Safety Device Diagnostics are enabled. For example, a simple series connection of sensors in the field and remote maintenance via web server are possible. The solution using Safety Device Diagnostics therefore provides many more advantages than a conventional wiring of signal contacts: You decide which solution is optimum for your needs. The sensor remains the same.

Type code for Safety Device Diagnostics

SDD ES ETH

Product group **S**afety **D**evice **D**iagnostics	**Version**	
SDD ES – Safety Device Diagnostics electronic module standard	**ETH**	**Communication module with ETH interface**
	PROFIBUS	Communication module with PROFIBUS interface
	PROFINET	Communication module with PROFINET interface
	EIP	Communication module with EtherNet/IP interface



Components for your safe solution	Order number
Sensor: PSEN cs6.11	542 111
Connection: PSEN cable, M12, 8-pin, 5 m junction IP20	540 320 535 112
Evaluation device: PNOZ s3	751 103
Fieldbus module: SDD ES ETH - spring-loaded terminals - plug-in screw terminals	540 130 540 121 540 120

The coded safety switches PSENcode or PSENmlock, which are often connected in series, are ideal here.

Your benefits at a glance

- Comprehensive diagnostics for reducing down times and number of service calls
- Simple diagnostics thanks to use of the same sensors and optional IP67 cabling
- Information is received directly via the display on the fieldbus module
- Targeted activation of individual sensors in the chain
- Quick and easy installation due to series connection in the field
- Third-party devices can be connected directly via the I/Os on the fieldbus module
- Cost-effective complete solution, e.g. with PNOZ X, PNOZsigma, PNOZmulti 2, PSS 4000

SDD

Selection guide – Safety Device Diagnostics

Type	Features	Order number
SDD ES ETH Starter Set	Communication module with ETH connection, 2 PSENcode sensors, junction, PSEN cable, Ethernet cable, power supply, spring-loaded terminals	540 110
SDD ES ETH	Communication module with ETH connection	540 130
SDD ES PROFIBUS	Communication module with PROFIBUS connection	540 132
SDD ES PROFINET	Communication module with PROFINET connection	540 138
SDD ES EIP	Communication module with EtherNet/IP connection	540 137
SDD ES Set Screw Terminals	Plug-in screw terminals	540 120
SDD ES Set Spring Loaded Terminals	Spring-loaded terminals	540 121

Common features

- System consisting of fieldbus module, junction and safety devices (e.g. PSENcode, PSENmlock)
- Safety devices activated automatically via the fieldbus module
- Suitable for 16 sensors wired in series or individually wired
- 6 additional configurable I/Os
- Cable lengths:
  - Overall max. 900 m
  - Device 1 to device 2: 50 m
  - Last device to communication module: 150 m
- Reaction times (not safety-related):
  - Safety-related data: see individual safety device
  - Diagnostic data: < 2 seconds

Cable selection:

From page 174

Keep up-to-date on Safety Device Diagnostics:

Webcode: web150456

Online information at www.pilz.com

Safety light curtains

When the production process requires active intervention, safety light curtains from the product range PSENopt provide optimum protection for plant and machinery. PSENopt provide finger, hand and body protection in accordance with EN IEC 61496-1/-2, depending on the requirement. A comprehensive range of accessories and safety light curtains with advanced functionalities such as muting, blanking or cascading support flexible, contactless application on any machine.

Access guarding

Body protection

Hand protection

Finger protection

PSENopt Configurator

PSEN opII3F...

PSEN op2H-A...

PSEN op2H-SL...

PSENopt II – second generation
With a high level of robustness of 50 g, safety light curtains PSENopt II are ideally suited for rugged industrial environments. In addition to the first Type 3 version, they are also available for Type 4 applications. Their full functionality can be used in conjunction with the configurable safe small controllers PNOZmulti 2 (see page 87).

PSENopt Advanced
The safety light curtains PSENopt Advanced enable maximum flexibility thanks to their multifunctionality: Depending on the requirement, either muting or blanking is implemented, with or without cascading, using the same safety light curtain (see page 96).

PSENopt slim
Safety light curtains PSENopt slim can be used above all in applications where space is at a premium thanks to their slimline design (see page 102).

Simple commissioning
As single beams can be shown in the software tool PSENopt Configurator, it is much easier and more convenient to align and monitor the safety light curtains. The reaction times can be reduced to a minimum through rapid diagnostics.

For safe access to the production process

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 appropriate compliant PSENopt

Carry out a safety assessment and evaluate the risk in accordance with EN IEC 61496-1/-2. You can then use this information to work out the appropriate safety light curtain resolution for your application, in accordance with EN ISO 13855.

Safety light curtain as protective device

Technology	Measuring principle, function	Applications	Benefits
Safety light curtain (optical)	▸ Laser or infrared ▸ Detects static objects ▸ 2D area monitoring ▸ Static installation	▸ Entry and access protection ▸ Safeguarding manual insertion points ▸ Protection against encroachment from behind	▸ Finger, hand, body protection ▸ Wide operating range ▸ Short reaction times ▸ Expanded functions: muting, blanking, cascading

A comparison of danger zone safeguarding:

Webcode: web187956

Keep up-to-date on safety light curtains PSENopt:

Webcode: web150525

Online information at www.pilz.com

Selection guide – Safety light curtains

Selection guide – for every application, the right safety light curtains PSENopt

PSENopt II

PSENopt Advanced

PSENopt slim

Type
Resolution
Approved in accordance with EN IEC 61496
Can be used in applications in accordance with
EN ISO 13849-1
EN IEC 62061
Resolution
Finger protection
Hand protection
Body protection
Height of protected field
Range
Response time
Protection type
Dimensions
Features/functions
Connection type

Type code, using PSENopt II as an example

PSEN opII3H-s-30-045

Product area Pilz **SEN**sors	Approval	Resolution	Functions	Resolution	Height of protected field
Product group **opII – PSENopt II**	**3 Type 3** [1] 4 Type 4 [1]	B Body protection **H Hand protection** F Finger protection	**s Standard**	14 14 mm **30 30 mm** 170 170 mm [2] 300 300 mm [3]	015 150 mm 030 300 mm **045 450 mm** 060 600 mm 075 750 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
Operation ▸ Non-contact, optical, 2D (area monitoring) ▸ With safe semi-conductor outputs					

[1] Certified in accordance with EN IEC 61496-1/-2, information is available under webcode web83347

[2] With a range of 0.2 … 15 m [3] With a range of 10 … 55 m

PSENopt II – second generation		PSENopt Advanced		PSENopt slim	
Finger, hand, body protection		Finger and hand protection		Finger and hand protection	
Type 3	Type 4	Type 2	Type 4	Type 2	Type 4
PL d	PL e	PL c	PL e	PL c	PL e
SIL CL 2	SIL CL 3	SIL CL 1	SIL CL 3	SIL CL 1	SIL CL 3
14 mm		14 mm		14 mm	
30 mm		30 mm		24 mm	
▸ 170 mm (operating range 0.2 … 15 m) ▸ 300 mm (operating range 10 … 55 m)		-		-	
150 … 1 800 mm		300 … 1 800 mm		150 … 1 200 mm	
8/18/55 m		7/20 m		6 m	
6 … 20 ms (without coding)		13 … 33 ms		7 … 17 ms	
IP65		IP65		IP65	
35 x 40 mm		35 x 40.8 mm		15.4 x 32.6 mm	
▸ Diagnostics ▸ High level of robustness ▸ Freedom from dead zones ▸ PDP67 connection compatibility ▸ Coding ▸ Simple wiring		▸ Feedback loop monitoring ▸ Reset ▸ Acknowledgement ▸ Diagnostics and muting ▸ Blanking ▸ Cascading ▸ Manual restart ▸ Configuration via software possible ▸ Freedom from dead zones		▸ Feedback loop monitoring ▸ Diagnostics ▸ Cascading ▸ Slimline design ▸ Freedom from dead zones	
5-pin		12-pin/5-pin		5-pin	

DAkkS Deutsche Akkreditierungsstelle D-IS-12033-01-00

Inspection of safeguards

The independent inspection body of Pilz GmbH & Co. KG, Ostfildern, accredited by the German Accreditation Body DAkkS to EN ISO/IEC 17020:2012, supports you as a partner in conducting the internationally valid safety inspection of your electrosensitive protective equipment.

Keep up-to-date on safety light curtains PSENopt:

Webcode: web150525

Online information at www.pilz.com

Safety light curtains PSENopt II – second generation

The second generation of safety light curtains PSENopt II is mainly characterised by the high level of robustness and is suitable for all Type 3 and Type 4 applications in accordance with EN IEC 61496.

Body protection

Hand protection

Finger protection

PSEN opII3F...

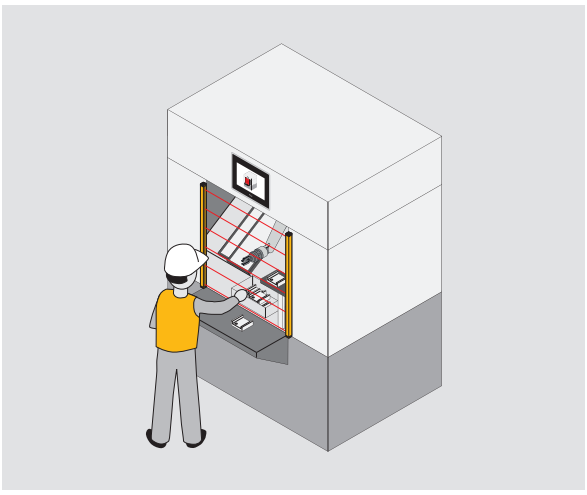
High level of robustness for reducing downtimes

With a shock resistance of 50 g, PSENopt II are extremely robust with regard to shock, vibration and collision. They are also resistant to dust and cold (up to –10 °C), making them ideal for use in rugged industrial environments. The operator can evaluate the essential causes and system defects responsible for the machine stopping by means of the LEDs. This reduces downtimes.

Shock, vibration, collision

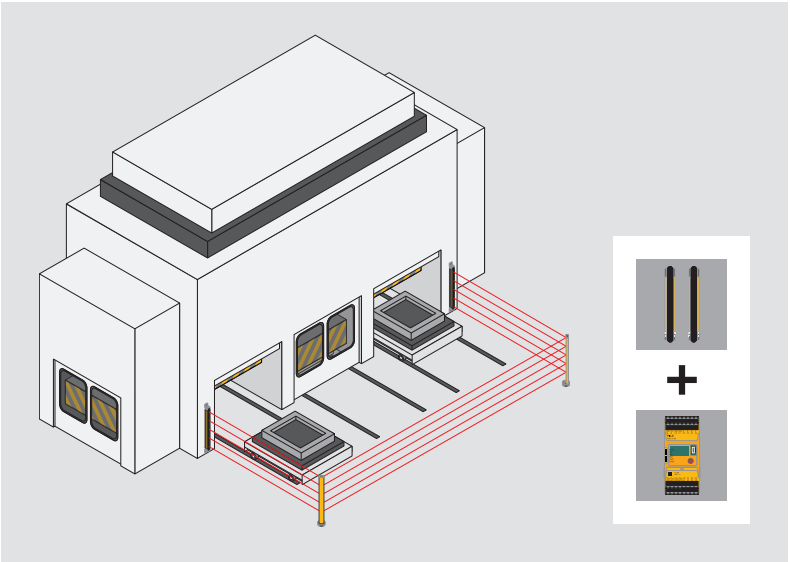
Cold

Dust



Safety light curtain PSENopt II – application areas

Protect your workers and your capital goods with PSENopt II! The safety light curtains protect the danger zones with an invisible protected field of infrared beams. If the infrared light beam is interrupted, a safe shutdown command is issued immediately. PSENopt II safety light curtains are especially suitable in industry for manual workstations, access guarding, inserting/removing materials or materials handling next to robots.

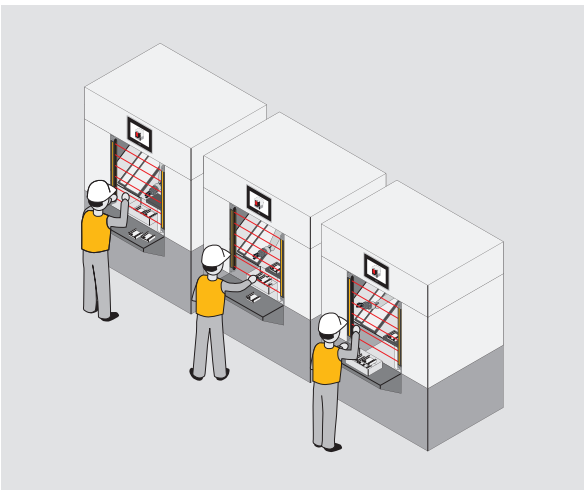


Components for your safe solution	Order number
Sensor: PSEN opII4H-s-30-150	632 069
Mirror columns: PSEN opII mirror column-165 Set	632 010
Connection: ▸ PSEN op cable M12-5sf 10 m (2 x)	 630 312
Evaluation device: PNOZ m B0 (PNOZmulti 2) - 1 set of spring-loaded terminals	772 100 751 008

The optimum solution: securing several sides of a danger zone with safety light curtains PSENopt II and compatible mirror columns.

Your benefits at a glance

- Finger, hand and body protection for applications up to PL e
- Highly robust for protection against shock, collision and vibration
- User-friendly diagnostics via LEDs to reduce downtimes
- Rapid and simple assembly, installation and commissioning
- Flexible use with enhanced safety – thanks to freedom from dead zones
- One-stop shop – economical all-in-one solution with safe control technology
- Safeguarding work stations in close proximity through integrated coding
- Safeguarding several sides of a danger zone with mirror columns
- Comprehensive range of accessories



Greater safety through coding

There are no limits to the physical arrangement of your safety light curtains. Thanks to coding, the light curtain sensors do not interfere with one another, even with close physical proximity. This applies in particular if the transmitter of the first pair of light curtains emits beams in the direction of the receiver of the second pair of light curtains. In this case, simply configure the pairs of light curtains with different beam codes! The following are available: “Code A”, “Code B” and “not coded”. The coding is integrated into all PSENopt II safety light curtains.

Accessories:
From page 110

Cable selection:
From page 174

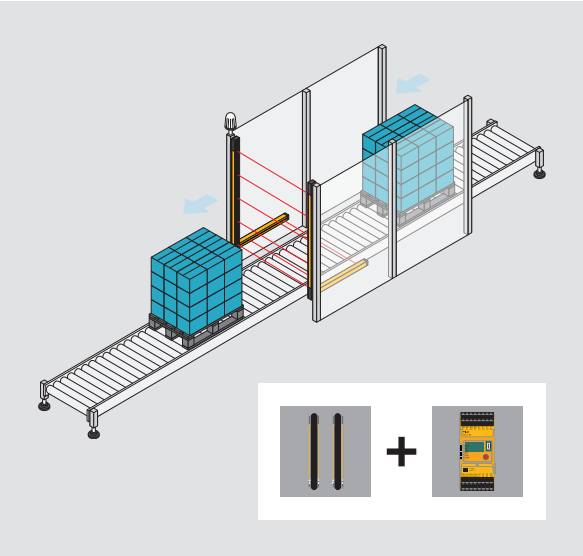
Keep up-to-date on safety light curtains PSENopt II:

Webcode: web150418

Online information at www.pilz.com

Safety light curtains PSENopt II – use and accessories

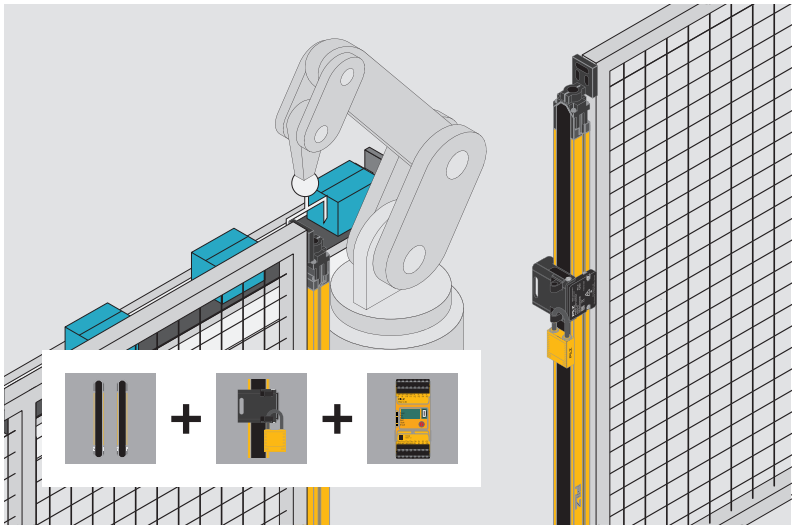
With safety light curtains PSENopt II you can protect your staff and capital goods – safely, efficiently and economically. The electrosensitive protective equipment is used in a number of industries and in various applications.



Safely monitor L-muting: solution comprising safe small controller PNOZmulti 2 in combination with safety light curtain PSENopt II.

Muting functions

Muting ensures problem-free operation when material is supplied or removed by a conveyor belt. Combine the safety light curtains PSENopt II with the safe small controllers PNOZmulti 2. This allows your implementation of light curtain applications in the logistics segment – such as monitoring conveyor belts and palletising or controlling the discharge of packages – to be better tailored to the application and thus more productive. Example: with L-muting, transport of material is only possible in one direction (forwards). The muting element of the software tool PNOZmulti Configurator contains all functions of the L-muting, including the deactivation/ activation of the light curtain and activation of the muting lamp.



Safe small controller PNOZmulti 2 in combination with PSENopt II lockout prevents unintended restart of a machine.

Restart interlock PSENopt II lockout

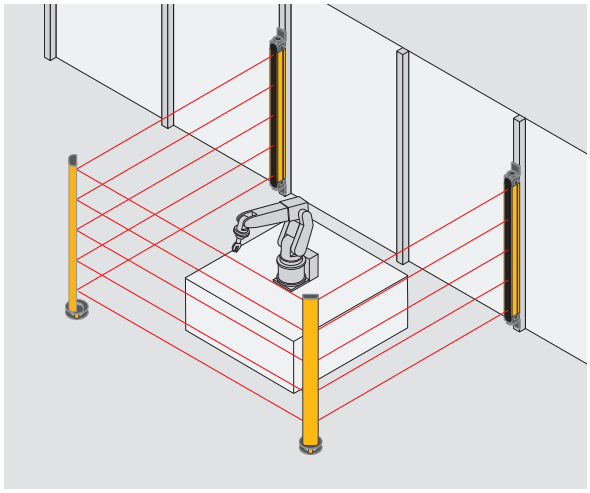
PSENopt II lockout prevents the unintentional restart of a machine, for example if maintenance work is performed in the danger zone. Previously the restart could only be prevented by means of additional safety sensors in the danger zone or by means of visual inspection.

PSENopt II lockout consists of an assembly unit that is attached to the side of the safety light curtain as well as a swivel arm. If someone enters the danger zone, the swivel arm can be positioned in front of the field of vision and equipped with a lock. Because there is no longer a free field of vision, the restart is prevented. With PSENopt II lockout you get a safe and economical solution to prevent the unintended restart of your machine and thus save additional costs for further safety sensors.

The world's first UL-certified Type 3 safety light curtains PSENopt II

The safety light curtains PSENopt II Type 3 are currently the world's first to receive approval from the global test organisation Underwriters Laboratories (UL) based in Northbrook, United States. The certification confirms that the light curtains meet the national safety standards of the United States and Canada. This is beneficial for you as a machine builder, especially if you export to these markets. Furthermore UL certification supports you as a company or user with introducing products and systems into the North American market.

c UL us
LISTED
AOPD
3TFV



Instead of safety fences, you can also safeguard robots with a combination of safety light curtains PSENopt II and mirror columns.

Securing several sides of a danger zone – PSENopt II mirror columns

In order to secure several sides of a danger zone, you can combine the safety light curtains with PSENopt II mirror columns. Up to three access sides can be monitored with just one pair of light curtains and two mirror columns. This saves you wiring work, installation time, space and money. Mirror columns also only have a loss of 10 %, which leads to a greater operating range for the light curtain. Integrated in a robust housing, the mirror is well protected.

Protection against damage – PSENopt II protective columns

The protective columns PSENopt II protective column offer the ideal protection for your safety light curtains from damage, such as that caused by collisions. The protective columns can also be used for the installation of safety light curtains in an open space. For easy attachment to uneven surfaces, the protective column can be combined with the PSENopt II adjustable base unit. This optional accessory offers you additional protection against strong mechanical impact. It is also ideal for installing the mirror columns on uneven surfaces.

Protective column PSEN opII protective column 60

Additional applications under:

Webcode: web194510

Keep up-to-date on safety light curtains PSENopt II:

Webcode: web150418

Online information at www.pilz.com

Selection guide – PSENopt II

Body protection: Type 3 – safety light curtains PSEN opII3B

Common features
- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1: Type 3
- For use in applications up to:
  - PL d of EN ISO 13849-1
  - SIL CL 2 of EN IEC 62061
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring

PSEN opII3B-s-…

Type	Resolution
Body protection	
PSEN opII3B-s-170-045	170 mm
PSEN opII3B-s-170-060	170 mm
PSEN opII3B-s-170-075	170 mm
PSEN opII3B-s-170-090	170 mm
PSEN opII3B-s-170-120	170 mm
PSEN opII3B-s-170-150	170 mm
PSEN opII3B-s-300-045	300 mm
PSEN opII3B-s-300-060	300 mm
PSEN opII3B-s-300-075	300 mm
PSEN opII3B-s-300-090	300 mm
PSEN opII3B-s-300-120	300 mm
PSEN opII3B-s-300-150	300 mm

Body protection: Type 4 – safety light curtains PSEN opII4B

Common features
- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring

PSEN opII4B-s-…

Type	Resolution
Body protection	
PSEN opII4B-s-170-045	170 mm
PSEN opII4B-s-170-060	170 mm
PSEN opII4B-s-170-075	170 mm
PSEN opII4B-s-170-090	170 mm
PSEN opII4B-s-170-120	170 mm
PSEN opII4B-s-170-150	170 mm
PSEN opII4B-s-300-045	300 mm
PSEN opII4B-s-300-060	300 mm
PSEN opII4B-s-300-075	300 mm
PSEN opII4B-s-300-090	300 mm
PSEN opII4B-s-300-120	300 mm
PSEN opII4B-s-300-150	300 mm

Height of protected field	Range	Certification	Order number[1)]
450 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 100
600 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 101
750 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 102
900 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 103
1 200 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 104
1 500 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 105
450 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 110
600 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 111
750 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 112
900 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 113
1 200 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 114
1 500 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 115

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

Height of protected field	Range	Certification	Order number[1)]
450 mm	0,2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 120
600 mm	0,2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 121
750 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 122
900 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 123
1 200 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 124
1 500 mm	0.2 …15 m	CE, cULus Listed, KCs, TÜV, EAC	632 125
450 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 130
600 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 131
750 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 132
900 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 133
1 200 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 134
1 500 mm	10 … 55 m	CE, cULus Listed, KCs, TÜV, EAC	632 135

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

Accessories:

From page 110

Cable selection:

From page 174

Keep up-to-date on safety light curtains PSENopt II:

Webcode: web150418

Online information at www.pilz.com

Selection guide – PSENopt II

Hand protection: Type 3 – safety light curtains PSEN opII3H

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1: Type 3
- For use in applications up to:
  - PL d of EN ISO 13849-1
  - SIL CL 2 of EN IEC 62061
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring

PSEN opII3H-s-…

Type	Resolution
Hand protection	
PSEN opII3H-s-30-015	30 mm
PSEN opII3H-s-30-030	30 mm
PSEN opII3H-s-30-045	30 mm
PSEN opII3H-s-30-060	30 mm
PSEN opII3H-s-30-075	30 mm
PSEN opII3H-s-30-090	30 mm
PSEN opII3H-s-30-105	30 mm
PSEN opII3H-s-30-120	30 mm
PSEN opII3H-s-30-135	30 mm
PSEN opII3H-s-30-150	30 mm
PSEN opII3H-s-30-165	30 mm
PSEN opII3H-s-30-180	30 mm

Hand protection: Type 4 – safety light curtains PSEN opII4H

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring

PSEN opII4H-s-…

Type	Resolution
Hand protection	
PSEN opII4H-s-30-015	30 mm
PSEN opII4H-s-30-030	30 mm
PSEN opII4H-s-30-045	30 mm
PSEN opII4H-s-30-060	30 mm
PSEN opII4H-s-30-075	30 mm
PSEN opII4H-s-30-090	30 mm
PSEN opII4H-s-30-105	30 mm
PSEN opII4H-s-30-120	30 mm
PSEN opII4H-s-30-135	30 mm
PSEN opII4H-s-30-150	30 mm
PSEN opII4H-s-30-165	30 mm
PSEN opII4H-s-30-180	30 mm

Height of protected field	Range	Certification	Order number [1]
150 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632020
300 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632021
450 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632022
600 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632023
750 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632024
900 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632025
1050 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632026
1200 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632027
1350 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632028
1500 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632029
1650 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632030
1800 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632031

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

Height of protected field	Range	Certification	Order number [1]
150 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632060
300 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632061
450 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632062
600 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632063
750 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632064
900 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632065
1050 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632066
1200 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632067
1350 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632068
1500 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632069
1650 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632070
1800 mm	0.2 … 18 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632071

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

Accessories:
From page 110

Cable selection:
From page 174

Keep up-to-date on safety light curtains PSENopt II:

Webcode: web150418

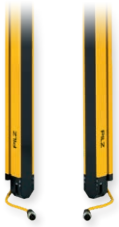
Online information at www.pilz.com

Selection guide – PSENopt II

Finger protection: Type 3 – safety light curtains PSEN opII3F

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1: Type 3
- For use in applications up to:
  - PL d of EN ISO 13849-1
  - SIL CL 2 of EN IEC 62061
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring



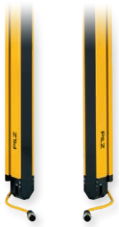
PSEN opII3F-s-…

Type	Resolution
Finger protection	
PSEN opII3F-s-14-015	14 mm
PSEN opII3F-s-14-030	14 mm
PSEN opII3F-s-14-045	14 mm
PSEN opII3F-s-14-060	14 mm
PSEN opII3F-s-14-075	14 mm
PSEN opII3F-s-14-090	14 mm
PSEN opII3F-s-14-105	14 mm
PSEN opII3F-s-14-120	14 mm
PSEN opII3F-s-14-135	14 mm
PSEN opII3F-s-14-150	14 mm
PSEN opII3F-s-14-165	14 mm
PSEN opII3F-s-14-180	14 mm

Finger protection: Type 4 – safety light curtains PSEN opII4F

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- No dead zones (except with protected field height 150 mm)
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 35 x 40 mm
- For response times see data sheet
- Coding “Code A”, “Code B”, “not coded”
- Simple wiring



PSEN opII4F-s-…

Type	Resolution
Finger protection	
PSEN opII4F-s-14-015	14 mm
PSEN opII4F-s-14-030	14 mm
PSEN opII4F-s-14-045	14 mm
PSEN opII4F-s-14-060	14 mm
PSEN opII4F-s-14-075	14 mm
PSEN opII4F-s-14-090	14 mm
PSEN opII4F-s-14-105	14 mm
PSEN opII4F-s-14-120	14 mm
PSEN opII4F-s-14-135	14 mm
PSEN opII4F-s-14-150	14 mm
PSEN opII4F-s-14-165	14 mm
PSEN opII4F-s-14-180	14 mm

Height of protected field	Range	Certification	Order number [1]
150 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632040
300 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632041
450 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632042
600 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632043
750 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632044
900 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632045
1050 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632046
1200 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632047
1350 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632048
1500 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632049
1650 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632050
1800 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632051

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

Height of protected field	Range	Certification	Order number [1]
150 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632080
300 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632081
450 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632082
600 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632083
750 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632084
900 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632085
1050 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632086
1200 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632087
1350 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632088
1500 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632089
1650 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632090
1800 mm	0.2 … 8 m	CE, cULus Listed, KCs, KOSHA, TÜV, EAC	632091

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

Accessories:

From page 110

Cable selection:

From page 174

Keep up-to-date on safety light curtains PSENopt II:

Webcode: web150418

Online information at www.pilz.com

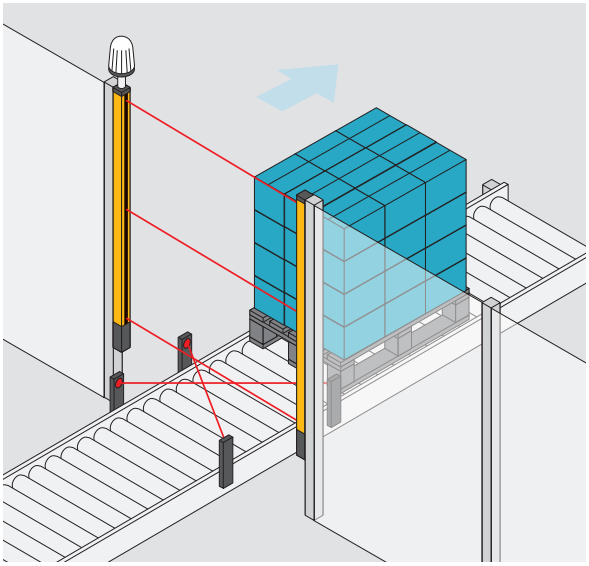
Safety light curtains PSENopt Advanced

The multifunctional safety light curtains PSENopt Advanced are used for the advanced functions muting, blanking and/or cascading. Configuration is intuitive via the software PSENopt Configurator. Reaction times can be reduced to a minimum through rapid diagnostics.

Hand protection

Finger protection

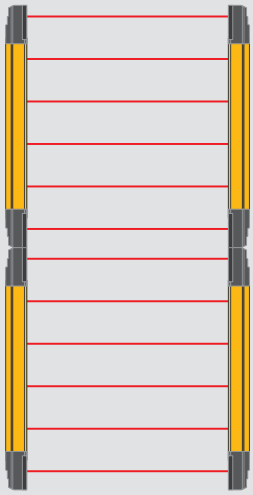
PSEN op2H-A…



Muting with crossed muting sensors.

Rapid commissioning
Safety light curtains PSENopt Advanced are easy to commission using the software PSENopt Configurator. You can also take advantage of short reaction times thanks to rapid diagnostics.

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.



Continuous single beams during cascading, without dead zones, increase safety.

Your benefits at a glance

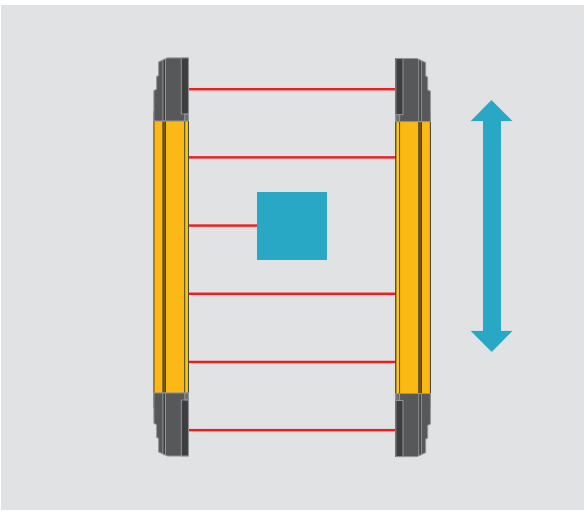
- Simple operation and commissioning with the new software PSENopt Configurator
- Short reaction times thanks to rapid diagnosis of fault states
- High flexibility:
  - Three functionalities in one safety light curtain: muting, blanking, cascading
  - Flexible installation thanks to coding
  - Higher level of safety as there are no dead zones

Cascading function without dead zones for effective protection against encroachment into and behind the protected area

Adjacent protected fields can easily be safeguarded using the cascading function. Just connect the two pairs of light curtain 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 safety light curtain. 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: one beam is blanked out. Any object that interrupts more than one beam will be detected.

Accessories:

From page 114

Cable selection:

From page 174

Keep up-to-date on safety light curtains PSENopt Advanced:

Webcode: web150423

Online information at www.pilz.com

Selection guide – PSENopt Advanced

Hand protection, muting: Type 2 – safety light curtains PSEN op2H-A

Common features
- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1/-2: Type 2
- For use in applications up to:
  - PL c of EN ISO 13849-1
  - SIL CL 1 of EN IEC 62061
- Function selection:
  - Manual/automatic restart
  - Muting (total/partial) via soft keys
  - Feedback loop monitoring (EDM)
  - Override function
  - Operating range reduction
- Semiconductor outputs: 2x
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver Rx:
    1 x connector, M12, 12-pin;
    1 x connector, M12, 5-pin
  - Transmitter Tx:
    1 x connector, M12, 5-pin
- Dimensions: 35 x 40.8 mm
- For response times see data sheet

PSEN op2H-A-30-…

Type	Resolution
Hand protection, muting	
PSEN op2H-A-30-030/1	30 mm
PSEN op2H-A-30-045/1	30 mm
PSEN op2H-A-30-060/1	30 mm
PSEN op2H-A-30-075/1	30 mm
PSEN op2H-A-30-090/1	30 mm
PSEN op2H-A-30-105/1	30 mm
PSEN op2H-A-30-120/1	30 mm
PSEN op2H-A-30-135/1	30 mm
PSEN op2H-A-30-150/1	30 mm
PSEN op2H-A-30-165/1	30 mm
PSEN op2H-A-30-180/1	30 mm

Hand protection, muting, blanking, cascading: Type 4 – safety light curtains PSEN op4H-A

Common features
- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- Function selection:
  - Manual/automatic restart
  - Muting (total/partial) via soft keys/software
  - Fixed/floating blanking via soft keys/software
  - Cascading
  - Feedback loop monitoring (EDM)
  - Beam coding
  - Override function
  - Operating range reduction
  - Programming software (online/offline) and monitoring
- Semiconductor outputs: 2x
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver Rx:
    1 x connector, M12, 12-pin;
    1 x connector, M12, 5-pin
    (for muting only)
  - Transmitter Tx:
    1 x connector, M12, 5-pin
- Dimensions: 35 x 40.8 mm
- For response times see data sheet

PSEN op4H-A-30-…

Type	Resolution
Hand protection, muting, blanking, cascading	
PSEN op4H-A-30-030/1	30 mm
PSEN op4H-A-30-045/1	30 mm
PSEN op4H-A-30-060/1	30 mm
PSEN op4H-A-30-075/1	30 mm
PSEN op4H-A-30-090/1	30 mm
PSEN op4H-A-30-105/1	30 mm
PSEN op4H-A-30-120/1	30 mm
PSEN op4H-A-30-135/1	30 mm
PSEN op4H-A-30-150/1	30 mm
PSEN op4H-A-30-165/1	30 mm
PSEN op4H-A-30-180/1	30 mm

Height of protected field	Range	Certification	Order number[1)]
300 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 040
450 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 041
600 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 042
750 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 043
900 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 044
1 050 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 045
1 200 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 046
1 350 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 047
1 500 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 048
1 650 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 049
1 800 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 050

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

Height of protected field	Range	Certification	Order number[1)]
300 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 020
450 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 021
600 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 022
750 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 023
900 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 024
1 050 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 025
1 200 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 026
1 350 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 027
1 500 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 028
1 650 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 029
1 800 mm	0.2 … 20 m	CE, cULus Listed, TÜV, EAC	631 030

[1)] Order number for transmitter, receiver and mounting bracket respectively (one unit); cables are not supplied with the device.

Accessories:
From page 114

Cable selection:
From page 174

Keep up-to-date on safety light curtains PSENopt Advanced:

Webcode: web150423

Online information at www.pilz.com

Selection guide – PSENopt Advanced

Finger protection, muting, blanking, cascading: Type 4 – safety light curtains PSEN op4F-A

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- Function selection:
  - Manual/automatic restart
  - Muting (total/partial) via soft keys/software
  - Fixed/floating blanking via soft keys/software
  - Cascading
  - Feedback loop monitoring (EDM)
  - Beam coding
  - Override function
  - Operating range reduction
  - Programming software (online/offline) and monitoring
- Semiconductor outputs: 2x
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver Rx: 1 x connector, M12, 12-pin; 1 x connector, M12, 5-pin (for muting only)
  - Transmitter Tx: 1 x connector, M12, 5-pin
- Dimensions: 35 x 40.8 mm
- For response times see data sheet

PSEN op4F-A-14-…

Type	Resolution
Finger protection, muting, blanking, cascading	
PSEN op4F-A-14-030/1	14 mm
PSEN op4F-A-14-045/1	14 mm
PSEN op4F-A-14-060/1	14 mm
PSEN op4F-A-14-075/1	14 mm
PSEN op4F-A-14-090/1	14 mm
PSEN op4F-A-14-105/1	14 mm
PSEN op4F-A-14-120/1	14 mm
PSEN op4F-A-14-135/1	14 mm
PSEN op4F-A-14-150/1	14 mm
PSEN op4F-A-14-165/1	14 mm
PSEN op4F-A-14-180/1	14 mm

Height of protected field	Range	Certification	Order number[1)]
300 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 000
450 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 001
600 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 002
750 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 003
900 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 004
1 050 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 005
1 200 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 006
1 350 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 007
1 500 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 008
1 650 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 009
1 800 mm	0.2 … 7 m	CE, cULus Listed, TÜV, EAC	631 010

[1)] Order number for transmitter, receiver and mounting bracket respectively (one unit); cables are not supplied with the device.

Accessories:
From page 114

Cable selection:
From page 174

Keep up-to-date on safety light curtains PSENopt Advanced:

Webcode: web150423

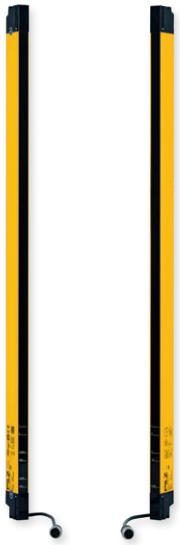
Online information at www.pilz.com

Safety light curtains PSENopt slim

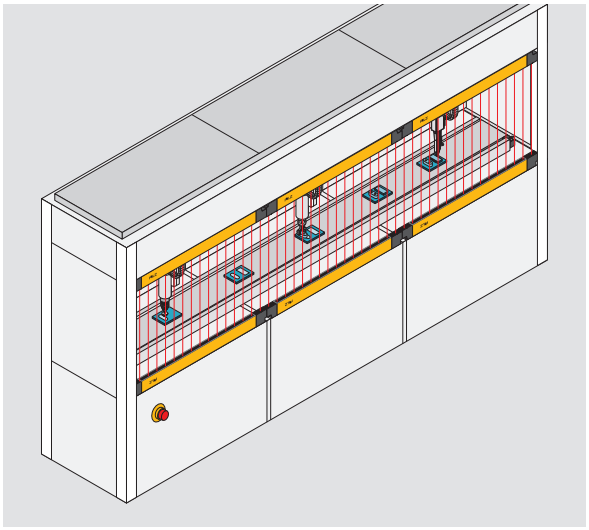
Thanks to their slimline design, safety light curtains PSENopt slim are perfect for applications where space is at a premium.

Hand protection

Finger protection



PSEN op2H-SL...



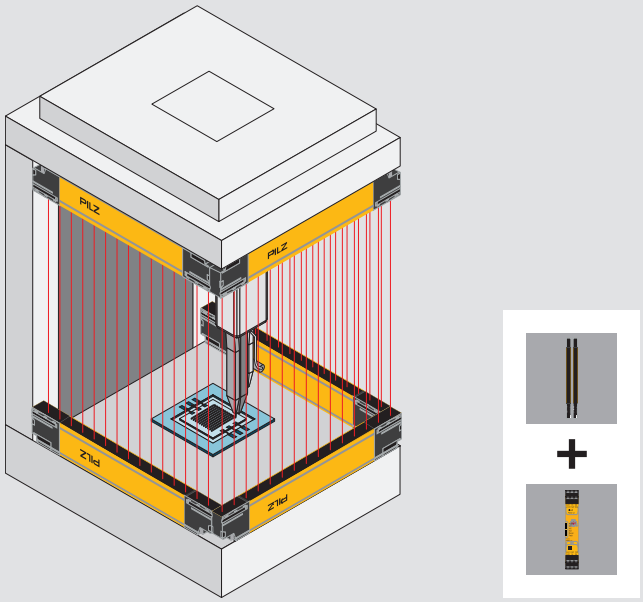
Linear cascading.

Slimline design, high safety

With their slimline design, PSENopt slim can be used above all in applications where space is at a premium. In this case, the Type 2 and Type 4 safety light curtains provide finger and hand protection, depending on the requirement. The operator can evaluate the essential causes and system defects responsible for the machine stopping by means of the LEDs. This reduces downtimes.

Linear cascading without dead zones

Thanks to the cascading function with no dead zones, PSENopt slim provide effective protection against encroachment into and behind the protected area. Adjacent protected fields can easily be safeguarded using the cascading function.



Your benefits at a glance

- Finger and hand protection for applications up to PL c and PL e
- Slimline design saves space and costs
- Cascading function without dead zones for effective protection against encroachment into and behind the protected area
- User-friendly diagnostics via LEDs to reduce downtimes
- Rapid and simple assembly, installation and commissioning
- Safe and economical one-stop solution e.g. with PNOZsigma or PNOZmulti

Components for your safe solution	Order number
Sensor: 3 x PSEN op4F-SL-14-105/1	631157
Connection: ▸ PSEN cable M12-5sf 5m ▸ 2 x PSEN op SL cascading 0.1m	 630311 631183
Evaluation device: ▸ PNOZ s3	 750103
Test rod for ESPE: PSEN op Testpiece F 14m	630345

The optimum solution: monitoring of space-critical applications with cascaded safety light curtains PSENopt slim and safety relay PNOZsigma/configurable safe small controllers PNOZmulti 2.

Accessories:
From page 114

Cable selection:
From page 174

Keep up-to-date on safety light curtains PSENopt slim:

Webcode: web150423

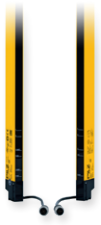
Online information at www.pilz.com

Selection guide – PSENopt slim

Hand protection: Type 2 – safety light curtains PSEN op2H-SL

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1/-2: Type 2
- For use in applications up to:
  - PL c of EN ISO 13849-1
  - SIL CL 1 of EN IEC 62061
- Function selection:
  - Manual/automatic restart
  - Feedback loop monitoring (EDM)
  - Cascading
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 15.4 x 32.6 mm
- For response times see data sheet



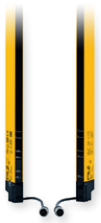
PSEN op2H-SL-24-…

Type	Resolution
PSEN op2H-SL-24-015/1	24 mm
PSEN op2H-SL-24-030/1	24 mm
PSEN op2H-SL-24-045/1	24 mm
PSEN op2H-SL-24-060/1	24 mm
PSEN op2H-SL-24-075/1	24 mm
PSEN op2H-SL-24-090/1	24 mm
PSEN op2H-SL-24-105/1	24 mm
PSEN op2H-SL-24-120/1	24 mm

Hand protection: Type 4 – safety light curtains PSEN op4H-SL

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- Function selection:
  - Manual/automatic restart
  - Feedback loop monitoring (EDM)
  - Cascading
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 15.4 x 32.6 mm
- For response times see data sheet



PSEN op4H-SL-24-…

Type	Resolution
PSEN op4H-SL-24-015/1	24 mm
PSEN op4H-SL-24-030/1	24 mm
PSEN op4H-SL-24-045/1	24 mm
PSEN op4H-SL-24-060/1	24 mm
PSEN op4H-SL-24-075/1	24 mm
PSEN op4H-SL-24-090/1	24 mm
PSEN op4H-SL-24-105/1	24 mm
PSEN op4H-SL-24-120/1	24 mm

Height of protected field	Range	Certification	Order number[1)]
150 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 100
300 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 101
450 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 102
600 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 103
750 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 104
900 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 105
1 050 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 106
1 200 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 107

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

Height of protected field	Range	Certification	Order number[1)]
150 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 120
300 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 121
450 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 122
600 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 123
750 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 124
900 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 125
1 050 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 126
1 200 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 127

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

Accessories:

From page 114

Cable selection:

From page 174

Keep up-to-date on safety light curtains PSENopt slim:

Webcode: web150423

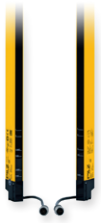
Online information at www.pilz.com

Selection guide – PSENopt slim, PSENopt single-

Finger protection: Type 4 – safety light curtains PSEN op4F-SL

Common features

- Compliant and certified in accordance with:
  - EN IEC 61508
  - 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
- Function selection:
  - Manual/automatic restart
  - Feedback loop monitoring (EDM)
  - Cascading
- No dead zones
- Supply voltage: 24 VDC
- Connection:
  - Receiver: 1 x pigtail, M12, 5-pin
  - Transmitter: 1 x pigtail, M12, 5-pin
- Dimensions: 15.4 x 32.6 mm
- For response times see data sheet



PSEN op4F-SL-14-…

Type	Resolution
PSEN op4F-SL-14-015/1	14 mm
PSEN op4F-SL-14-021/1	14 mm
PSEN op4F-SL-14-030/1	14 mm
PSEN op4F-SL-14-036/1	14 mm
PSEN op4F-SL-14-042/1	14 mm
PSEN op4F-SL-14-045/1	14 mm
PSEN op4F-SL-14-048/1	14 mm
PSEN op4F-SL-14-054/1	14 mm
PSEN op4F-SL-14-060/1	14 mm
PSEN op4F-SL-14-066/1	14 mm
PSEN op4F-SL-14-072/1	14 mm
PSEN op4F-SL-14-075/1	14 mm
PSEN op4F-SL-14-078/1	14 mm
PSEN op4F-SL-14-084/1	14 mm
PSEN op4F-SL-14-090/1	14 mm
PSEN op4F-SL-14-096/1	14 mm
PSEN op4F-SL-14-102/1	14 mm
PSEN op4F-SL-14-105/1	14 mm
PSEN op4F-SL-14-108/1	14 mm
PSEN op4F-SL-14-114/1	14 mm
PSEN op4F-SL-14-120/1	14 mm

Single-beam safety light barriers PSEN op2S/4S

Common features

- PL e/SIL CL 3 in conjunction with:
  - Safety relay PNOZ e7p
  - Configurable safe small controllers PNOZmulti 2
- Supply voltage: 20 … 30 VDC
- Design: M18
- Connection: connector, M12, 4-pin
- For response times see data sheet

PSEN op4S-1-2

Type	Resolution/ No. of beams
PSEN op2S-1-1	Access guarding (1 beam)
PSEN op4S-1-1	Access guarding (1 beam)
PSEN op4S-1-2	Access guarding (1 beam)

beam safety light barriers

Height of protected field	Range	Certification	Order number[1)]
150 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 140
210 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 141
300 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 142
360 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 143
420 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 144
450 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 145
480 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 146
540 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 147
600 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 148
660 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 149
720 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 150
750 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 151
780 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 152
840 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 153
900 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 154
960 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 155
1 020 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 156
1 050 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 157
1 080 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 158
1 140 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 159
1 200 mm	0.2 … 6 m	CE, cULus Listed, TÜV	631 160

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

Approved in acc. with EN IEC 61496-1/-2	Features	Range	Certification	Order number[1)]
Type 2	Infrared	0 … 8 m	CE, cULus Listed, TÜV, EAC	630 380
Type 4	Infrared	0 … 8 m	CE, cULus Listed, TÜV, EAC	630 381
Type 4	Laser	0 … 40 m	CE, cULus Listed, TÜV, EAC	630 382

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

Accessories:

From page 114

Cable selection:

From page 174

Keep up-to-date on safety light curtains PSENopt slim and PSENopt single-beam safety light barriers:

Webcode: web150423

Online information at www.pilz.com

Selection guide – Safety light curtains PSENopt body

Common features
- Compliant and certified in accordance with:
  - EN IEC 61508
  - EN IEC 61496-1/-2: Type 2
- For use in applications up to:
  - PL c of EN ISO 13849-1
  - SIL CL 1 of EN IEC 62061
- Function selection:
  - Manual/automatic restart
  - Muting (total/partial) via DIP switch
  - Override function
- 2 x semiconductor outputs
- Supply voltage: 24 VDC
- Dimensions: 35 x 41.2 mm
- For response times see data sheet
- Connection:
  - Receiver:
    Voltage supply:
    1 x connector, M12, 8-pin;
    Muting sensor connection:
    1 x connector, M12, 5-pin
  - Transmitter:
    Voltage supply:
    1 x connector, M12, 4-pin;
    Muting sensor connection:
    1 x connector, M12, 5-pin

Additional features of sets
- Sets contain safety light curtains with height of protected field 500/800 mm, muting arm in L- / T-configuration plus bracket
- Benefits of the set:
  - Pre-configured muting sensors
  - Simple connection

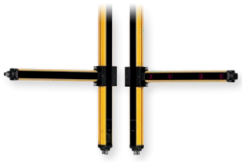
Body protection: Type 2 – safety light curtains PSEN op2B

PSEN op2B-3-080/1

Type	Resolution/ No. of beams
PSEN op2B-2-050/1	2 beams
PSEN op2B-3-080/1	3 beams
PSEN op2B-4-090/1	4 beams
PSEN op2B-4-120/1	4 beams

Body protection: Type 4 – safety light curtains PSEN op4B

PSEN op4B-2-050/1



PSEN op4B-L-050/1

Type	Resolution/ No. of beams
Body protection, muting	
PSEN op4B-2-050/1	2 beams
PSEN op4B-3-080/1	3 beams
PSEN op4B-4-090/1	4 beams
PSEN op4B-4-120/1	4 beams
Sets comprising safety light curtains, muting arm and bracket [3)]	
PSEN op4B-L-050/1	2 beams
PSEN op4B-L-080/1	3 beams
PSEN op4B-T-050/1	2 beams
PSEN op4B-T-080/1	3 beams

protection

Height of protected field	Range	Certification	Order number[1]
500 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630804
800 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630805
900 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630806
1200 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630807

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

Height of protected field	Range	Certification	Order number[1]
500 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630800
800 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630801
900 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630802
1200 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630803
500 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630808
800 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630809
500 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630810
800 mm	0.5 … 50 m[2]	CE, cULus Listed, TÜV	630811

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] Only 3 m when using muting arms
[3] Muting arms can also be ordered separately (see page 115)

Accessories:
From page 114

Cable selection:
From page 174

Keep up-to-date on safety light curtains PSENopt:

Webcode: web150423

Online information at www.pilz.com

Selection guide – Accessories for safety light curtains

Accessories for PSENopt, PSENopt II – mirror columns

PSEN opII mirror column-060

Type	Features	Length of mirror column/up to a protected field length of	Order number	
			Mirror column	PSEN opII mirror column-XXX-Set
PSEN opII mirror column-060	▸ Robust housing with integrated mirror: for protection against shock, collision and vibration ▸ PSEN opII mirror column-XXX-Set: mirror column sets comprising mirror column PSEN opII mirror column-XXX, height-adjustable base PSEN opII adjustable base unit and ground anchor PSEN screw set mirror column ▸ Can be used with PSENopt II and PSENopt ▸ Optional accessory PSEN opII adjustable base unit can also be ordered separately	600 mm/450 mm	632 032	632 007
PSEN opII mirror column-090		900 mm/750 mm	632 033	632 008
PSEN opII mirror column-120		1 200 mm/1 050 mm	632 034	632 009
PSEN opII mirror column-165		1 650 mm/1 500 mm	632 035	632 010
PSEN opII mirror column-195		1 950 mm/1 800 mm	632 036	632 011

Accessories for PSENopt II, PSENopt – protective columns, protective column sets

PSEN opII protective column-060

Type	Features	Height of safety light curtain for protected field heights of … to …	Order number	
			Protective column	PSEN opII protective column-XXX-Set
PSEN opII protective column-060	▸ Protective columns “PSEN opII protective column-XXX” for safety light curtain PSENopt II: protection of light curtains from strong mechanical impact ▸ Sets comprise a protective column “PSEN opII protective column-XXX” for safety light curtain PSENopt II, fixing screws and “PSEN opII adjustable base unit” ▸ Optional accessory PSEN opII adjustable base unit can also be ordered separately	600 mm for 150 … 450 mm	632 500	632 505
PSEN opII protective column-090		900 mm for 150 … 750 mm	632 501	632 506
PSEN opII protective column-120		1 200 mm for 150 … 1 050 mm	632 502	632 507
PSEN opII protective column-165		1 650 mm for 150 … 1 500 mm	632 503	632 508
PSEN opII protective column-195		1 950 mm for 150 … 1 800 mm	632 504	632 509

PSENopt II

Optional accessories for mirror columns and protective columns PSENopt II

PSEN opII adjustable base unit

PSEN screw set mirror column

Type	Features	Quantity	Order number
PSEN opII adjustable base unit	▸ Optional accessories for PSEN opII mirror column or PSEN opII protective column ▸ Provides additional protection against strong mechanical impact ▸ Can be adjusted and adapted to uneven conditions	1	632037
PSEN screw set mirror column	▸ Screw set for securing a mirror column PSEN opII mirror column, a protective column PSEN opII protective column or a height-adjustable base PSEN opII adjustable base unit to the floor ▸ 3 x M10	3	632012

Accessories for PSENopt II – hand and finger protection

PSEN opII Adv Bracket Kit-3

Type	Features	Quantity	Order number
PSEN opII Laserpointer	▸ Laser pointer ▸ Certification: CE	1	632014
PSEN opII Bracket Kit	Flexible bracket	2	632015
PSEN opII Adv Bracket Kit-2	Dead-zone-free attachment with degrees of freedom in 3 axes, 4 mounting plates	4	632016
PSEN opII Adv Bracket Kit-3	Dead-zone-free attachment with degrees of freedom in 3 axes, 6 mounting plates	6	632017
PSEN opII Testpiece F 14 mm	Test rod for finger resolution	1	632018
PSEN opII Testpiece H 30 mm	Test rod for hand resolution	1	632019

Selection guide – Accessories for safety light curtains

Accessories for PSENopt II – lockout

PSEN opII lockout

Type	Features	Quantity	Order number
PSEN opII lockout	▸ Restart interlock for use with light curtains PSENopt II ▸ Comprising assembly unit and swivel arm (including installation accessories) ▸ Lateral mounting at the light curtain ▸ Dimensions (H x W x D) in mm: 66.0 x 55.0 x 22.0	1	632 510

Accessories for PSENopt II – muting

PSEN opII L-Muting Set

PSEN opII T-Muting Set

Type	Features of muting sets	Quantity	Order number
PSEN opII L-Muting Set	L-muting set: ▸ 2 x muting sensors PSEN op3.3 ▸ 2 x PSEN op reflector ▸ 2 x PDP67 cable M12-5sf M12-5sm, 1 m ▸ 1 x PSEN opII muting box ▸ 1 x PIT si2.1 LED muting lamp ▸ 1 x PSEN opII muting arm ▸ 1 x PSEN opII muting arm bracket kit	1	6C000182
PSEN opII T-Muting Set	T-muting set: ▸ 4 x muting sensors PSEN op3.3 ▸ 4 x PSEN op reflector ▸ 4 x PDP67 cable M12-5sf M12-5sm, 1 m ▸ 1 x PSEN opII muting box ▸ 1 x PIT si2.1 LED muting lamp ▸ 2 x PSEN opII muting arm ▸ 2 x PSEN opII muting arm bracket kit	1	6C000183
PSEN opII X-Muting Set	X-muting set: ▸ 2 x muting sensors PSEN op3.3 ▸ 2 x PSEN op reflector ▸ 2 x PDP67 cable M12-5sf M12-5sm, 1 m ▸ 1 x PSEN opII muting box ▸ 1 x PIT si2.1 LED muting lamp ▸ 2 x PSEN opII muting arm ▸ 1 x PSEN opII muting arm bracket kit	1	6C000184

PSENopt II

Accessories for PSENopt II – muting

PSEN op3.3
Reflex NO/NC M12

PSEN opII muting box

PSEN opII muting arm

Type	Features of muting accessories	Quantity	Order number
Muting sensors	▸ Output: PNP, N/O and N/C ▸ Supply voltage: 10 … 30 VDC ▸ Connection: connector, M12, 4-pin		
PSEN op3.2 Emitter M12	Transmitter: ▸ Suitable for PSEN opII ▸ Suitable for muting applications, with higher ranges”	1	630832
PSEN op3.1 Receiver NO/NC M12	Receiver: ▸ Suitable for PSEN opII ▸ Suitable for muting applications, with higher ranges	1	630831
PSEN op3.3 Reflex NO/NC M12	▸ Reflected light sensor with N/O / N/C outputs can be used as muting sensor ▸ Supply voltage 24 V ▸ Connector plug M12, 4-pin ▸ Reflector (630323) must be ordered separately!	1	630830
PSEN op Reflector	Prism reflector ▸ Suitable for PSEN opII ▸ Suitable for all common muting applications ▸ No further connection cables required	1	630323
PDP67 cable M12-5sf M12-5sm, 1m	Cable junction box for muting sensor	1	380711
PIT si2.1 LED muting lamp	▸ PITsign LED muting lamp including LED and wall holder ▸ U_B = 24 VDC/4 W/< 200 mA ▸ Protection type, housing: IP65 ▸ Diameter: 90 mm ▸ Height: 125 mm ▸ Signal lamp for muting mode	1	620015
PSEN opII muting box	▸ Wiring aid for PSEN opII safety light curtains for combining receiver, muting sensors, muting lamp, override switch, reset button etc. ▸ The wiring box can be used to considerably reduce the wiring effort	1	6C000181
PSEN opII muting arm	▸ Muting arms are installed at the light curtain and make it easier to install the muting sensors ▸ Scope: 2 muting arms for transmitter and receiver	2	6C000185
PSEN opII muting arm bracket kit	▸ Brackets for installation of muting sensors on the muting arms (6C000185) ▸ Scope: 4 brackets	4	6C000186

Selection guide – Accessories for PSENopt

Accessories for PSENopt Advanced – hand and finger protection

PSEN op Advanced Programming Adapter

Description Type	Features	Quantity	Order number
Mounting bracket **PSEN op cascading bracket**	▸ Corner fixture for 2 light curtains	1	631 061
Adapter **PSEN op Advanced Programming Adapter**	▸ Programming adapter for PSENopt Configurator [1], use with PSEN op Ethernet cable (see page 196)	1	631 070

[1] To use the software, the adapter must be ordered.

Accessories for PSENopt slim – hand and finger protection

PSEN op SL Bracket O

Type	Features	Quantity	Order number
PSEN op SL Bracket C	Fastening kit PSENopt slim C-shape	1	631 180
PSEN op SL Bracket L	Fastening kit PSENopt slim L-shape	1	631 181
PSEN op SL Bracket O	Fastening kit PSENopt slim O-shape	1	631 182
PSEN op SL Testpiece F 24 mm	Test rod, diameter 24 mm	1	631 186

Accessories for PSENopt (1st generation) – single-beam safety light barriers

PSEN 2S/4S bracket

Description Type	Features	Quantity	Order number
Deviating mirror **PSEN op mirror-015/1**	▸ 80 mm wide with length of 15 cm ▸ Can be used with all light curtains from the PSENopt range ▸ Also available in the lengths 60/90/120/165/190 cm	1	630 900
Mounting bracket **PSEN 2S/4S bracket**	Suitable for light barriers PSEN op2S/4S	2	630 712

Accessories for PSENopt (1st generation) – muting

PSEN op3.1 Receiver

PSEN op3.3
Reflex NO/NC M12

PSEN op2.1
L-Muting Set

PSEN op2.4
L-Reflector

PSEN op muting
bracket kit

Description Type	Features	Quantity	Order number
Muting sensors	▸ Output: PNP, N/O and N/C ▸ Supply voltage: 10 … 30 VDC ▸ Connection: connector, M12, 4-pin		
PSEN op3.2 Emitter M12	Transmitter: ▸ Suitable for PSEN op4, PSEN op2B ▸ Suitable for muting applications, with higher ranges	1	630832
PSEN op3.1 Receiver NO/NC M12	Receiver: ▸ Suitable for PSEN op4, PSEN op2B ▸ Suitable for muting applications, with higher ranges	1	630831
PSEN op3.3 Reflex NO/NC M12	▸ Retroreflective sensor with NO/NC outputs can be used as muting sensor ▸ Supply voltage 24 V ▸ Connector M12, 4-pin ▸ Reflector (630 323) must be ordered separately!	1	630830
PSEN op Reflector	Prism reflector: ▸ Suitable for PSEN op4, PSEN op2B ▸ Suitable for all common muting applications ▸ No further connection cables required	1	630323
Muting sets			
PSEN op2.1 L-muting set	Complete muting set for L-muting, incl. cable and bracket	1	630820
PSEN op2.2 T-muting set	Complete muting set for T-muting, incl. cable and bracket	1	630821
Muting arms			
PSEN op2.3 L-Reflex	Single muting arm, active (transmitter/receiver)	1	630822
PSEN op2.4 L-Reflector	Single muting arm, passive (reflector)	1	630823
Mounting profile **PSEN op muting bracket kit**	Mounting profile for fitting the integrated muting arms on a suitable light curtain	1	630824

Safety laser scanner PSENscan

Not only for stationary or mobile area guarding, but also access guarding and protection against encroachment behind the protected area: the safety laser scanner PSENscan offers the ideal solution for two-dimensional area monitoring.

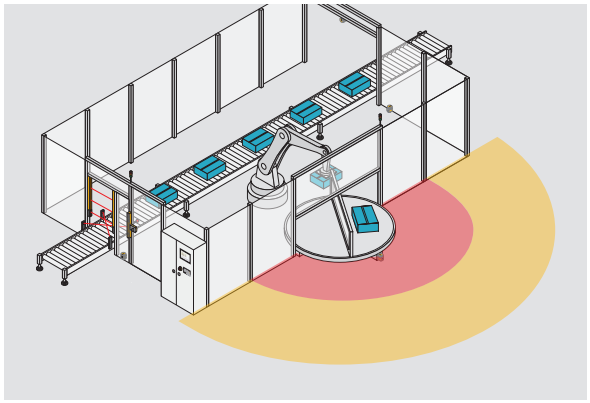
PSEN sc 5.5

Simple configuration

The safety laser scanner PSENscan offers two-dimensional area monitoring with an opening angle of 275 degrees and a protected field range of up to 5.5 metres. Thanks to the free configuration of warning fields and protected fields as well as adaptation to structural conditions, the scanner can be optimally integrated into the widest range of applications. The PSENscan Configurator enables fast and simple configuration.

Simultaneous monitoring of up to three safety zones

With PSENscan, up to three safety zones can be monitored simultaneously and independently of each other. Only the plant section that a person accesses is stopped. As a result, safety distances on your plant can be optimised. This ensures increased productivity and improved ergonomics for your plant – with optimum safety.



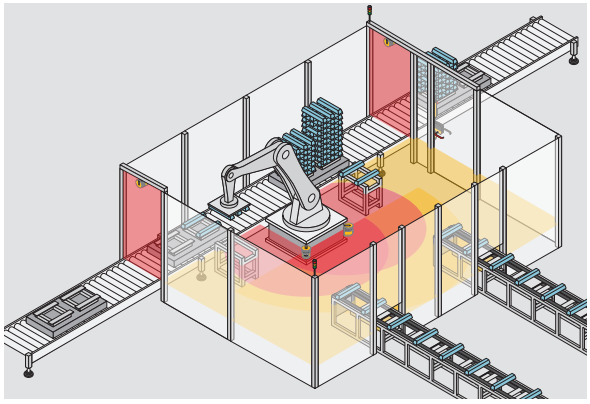
Stationary safeguarding of danger zones.

PSENscan are masters of partial dynamic muting

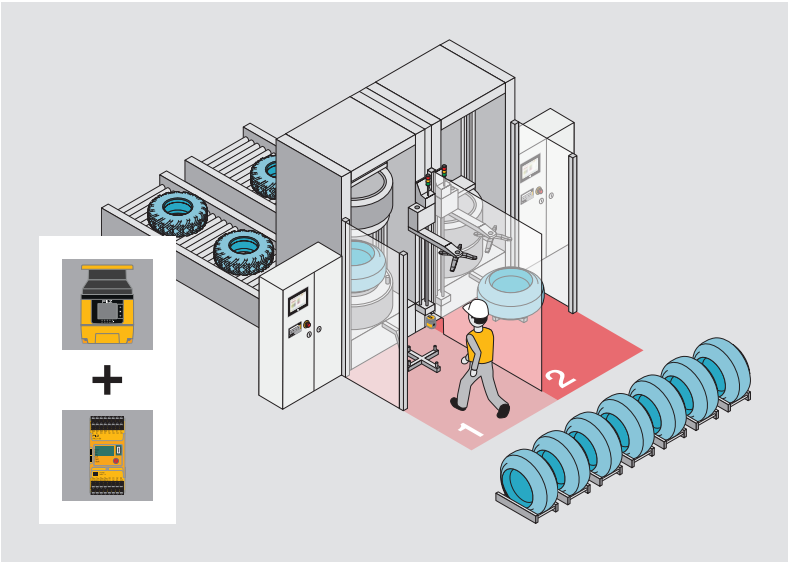
Safety laser scanners PSENscan have partial dynamic muting. This means that both partial muting and a change of the safety zones is possible. The function is used when feeding material in order to be able to move the transported product into the protected area under specific previously defined conditions without resulting in a machine stop. This thus also guarantees high availability in addition to operator protection.

Coding ensures a “failure-free neighbourhood”

The new beam coding from PSENscan also offers benefits: if two safety laser scanners not connected in series are working in one plant, there is no risk of mutual interference. Two independently used safety laser scanners can thus be used flexibly in close proximity to one another. This increases the plant’s availability and shortens the production time.



Access guarding and protection against encroachment behind the protected area.



Components for your safe solution	Order number
Sensor: PSEN sc M 5.5 08-17	6D000019
Installation assistance: PSEN sc bracket PR	6D000002
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772 100 751 008

The optimum solution: two-dimensional area monitoring of up to three safety zones simultaneously with safety laser scanners PSENscan and configurable safe small controllers PNOZmulti 2.

Productive area monitoring – including in series

Up to four safety laser scanners PSENscan can be connected with one another. In this case the configuration is made centrally on the master scanner and is then passed to the subscriber.

Your benefits at a glance

- Protected field ranges of up to 5.5 m
- Compact housing
- Free configuration of the protected fields and warning fields, adaptation to structural conditions
- Integrated operator display
- Robust to dust
- Easy to assemble and align with the appropriate accessories
- Fast and simple configuration with the PSENscan Configurator
- Simultaneous monitoring of up to three separate zones with only one scanner
- Up to 70 switchable configurations can be set up
- Series connection of up to four scanners
- Exchangeable storage medium for transferring the configuration

PSEN

Fast and simple configuration with the PSENscan Configurator.

Type code for PSENscan

PSEN sc L 3.0 08-12

Product area Pilz **SEN**sors	Type	Safety zone	Expansions
Product group **sc – PSENscan**	**L** **Light** M Master S Subscriber	**3.0** **3.0 m** 5.5 5.5 m	_ 8-pin storage medium **08-12** **8 or 12-pin exchangeable storage medium** 08-17 8 and 17-pin exchangeable storage medium
Operation Non-contact, optical, 2D (area monitoring)			

Keep up-to-date on safety laser scanners PSENscan:

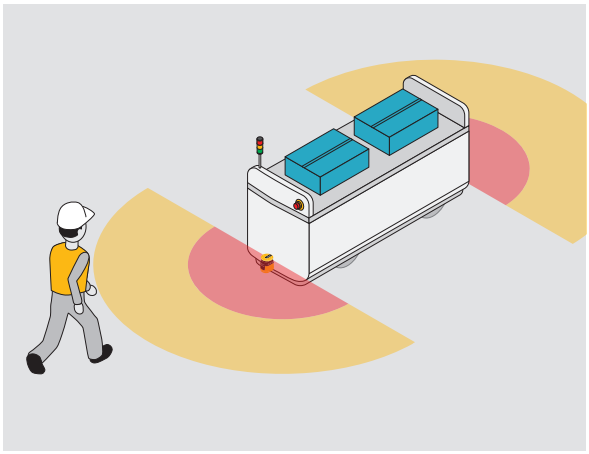
Webcode: web181395

Online information at www.pilz.com

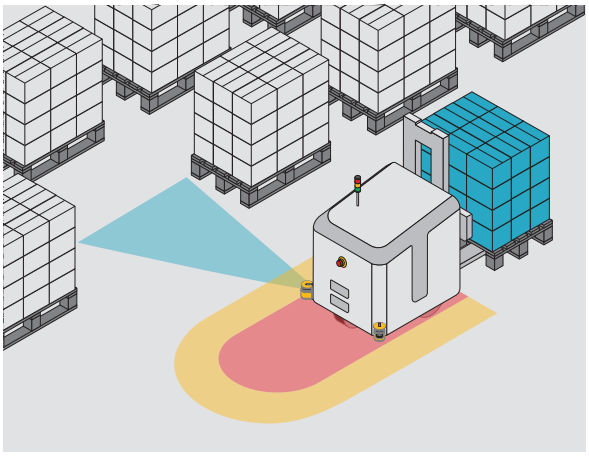
Safety laser scanner for safeguarding automated

Reliable safeguarding of automated guided vehicle (AGV) systems is required in order to protect people and objects from harm. Safety laser scanners PSENscan detect obstacles on the vehicle's route and guarantee maximum safety, even at high speeds.

ROS



All-round protection of AGV systems with two safety laser scanners.

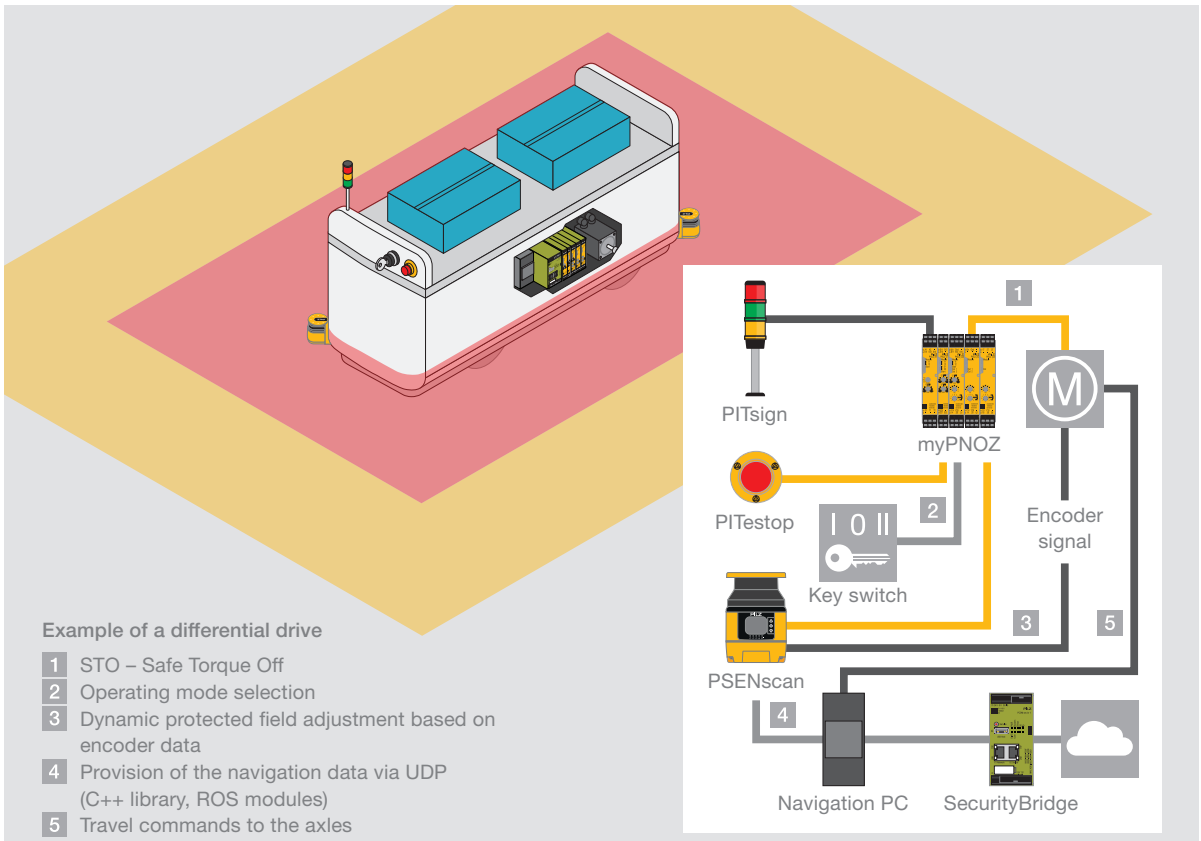


Direct navigation thanks to monitoring of the environment.

We make your automated guided vehicle system safe!
The safety laser scanner PSENscan takes care of surface monitoring and the provision of data for the navigation of mobile platforms. Adjustment of the dynamic protected field is performed by directly analysing the encoder inputs in the laser scanner. When combined with the modular safety relay myPNOZ and the control and signal devices PITestop and PITsign, you get a cost-optimised solution. The Security Bridge ensures that no one can access the internal IT network of the mobile platform without authorisation during operation.

Starting faster thanks to ready-made ROS packages
All data required for navigation is available in a ROS-compliant format, without any additional programming. As a result, a SLAM algorithm (Simultaneous Localisation and Mapping) can be fed in, for example. So maps of the environment are produced for dynamic navigation and the AGV avoids e.g. obstacles. You benefit from a more dynamic and therefore safe implementation of mobile applications in production environments.

guided vehicle (AGV) systems



Example of a differential drive

1. STO – Safe Torque Off
2. Operating mode selection
3. Dynamic protected field adjustment based on encoder data
4. Provision of the navigation data via UDP (C++ library, ROS modules)
5. Travel commands to the axles

Components for your safe solution	Order number
Sensor: PSENsc ME 5.5 08-17	6D000034
Evaluation device: modular safety relay myPNOZ	myPNOZ.73.CKA360EB640XA445AA058AC011
SecurityBridge firewall	311 501

Safe automation of AGV systems.

Provision of data for navigation via C++ Library and ROS interface.
Free download of the ROS modules:
https://github.com/PilzDE/psen_scan_v2

Your benefits at a glance

- Aligning the AGV system application with the requirements of ISO 3691-4
- Complete one-stop safety solution saves time and money
- Rapid implementation of the navigation data from laser scanners PSENscan via UDP
- Time saving thanks to dynamic protected field adjustment, which is performed by directly evaluating the encoder inputs in the laser scanner
- International conformity assessment, e.g. CE marking for AGV systems and for the entire application where necessary, as well as training and consulting

Selection guide – PSENscan

Safety laser scanner PSENscan

Common features

- Compliant and approved in accordance with:
  - EN IEC 61496-1: Type 3
  - EN ISO 13849-1: PL d
  - IEC 61508: SIL 2
- Opening angle: 275°
- Operating range: 3.0 or 5.5 m safety zone, 40 m warning zone
- Reaction time: 62 ms
- Protection type IP65
- Dimensions (H x W x D) in mm: 152 x 102 x 112.5
- Additional functions for the light, master and subscriber versions:
  - Muting
  - EDM
  - Override
- Additional functions for the master and subscriber versions:
  - Restart in accordance with EN IEC 61496-3
  - Vertical applications

PSEN sc M 5.5 08-17

Type	Variant
PSEN sc L 3.0 08-12	Light
PSEN sc L 5.5 08-12	Light
PSEN sc M 3.0 08-12	Master
PSEN sc M 5.5 08-12	Master
PSEN sc M 5.5 08-17	Master
PSEN sc ME 5.5 08-17	Master encoder
PSEN sc S 3.0 08-12	Subscriber
PSEN sc S 5.5 08-12	Subscriber

Accessories – safety laser scanner PSENscan

PSEN sc bracket PR

PSEN sc bracket H

PSEN sc head

PSEN sc bracket F

PSEN sc bracket C

Type
PSEN sc bracket PR
PSEN sc bracket P
PSEN sc bracket H
PSEN sc memory 08-17
PSEN sc memory 08-12
PSEN sc head
PSEN sc cleaner
PSEN sc cloth
PSEN sc bracket F
PSEN sc bracket C

Max. safety zones/ max. warning zones	Max. range	Switchable configurations	Certification	Order number
2/2	3.0 m	10	cULus Listed, TÜV	6D000012
2/2	5.5 m	10	cULus Listed, TÜV	6D000013
2/2	3.0 m	10	cULus Listed, TÜV	6D000016
2/2	5.5 m	10	cULus Listed, TÜV	6D000017
3/2	5.5 m	70	cULus Listed, TÜV	6D000019
3/2	5.5 m	70	cULus Listed, TÜV	6D000034
2/2	3.0 m	Depending on the corresponding PSEN sc Master	cULus Listed, TÜV	6D000020
2/2	5.5 m	Depending on the corresponding PSEN sc Master	cULus Listed, TÜV	6D000021

Features	Quantity	Order number
Mounting bracket for tilt angle and roll angle adjustment	1	6D000002
Mounting bracket for tilt angle adjustment	1	6D000003
Accessories for head protection	1	6D000004
Memory module 8 and 17-pin, M12, expansion for 6D000034	1	6D000005
Memory module 8 or 12-pin, M12, expansion for all scanners except 6D000034	1	6D000006
Head module	1	6D000007
Cleaning agent	1	6D000008
Cleaning cloth	1	6D000009
Mounting bracket for floor fastening	1	6D000010
Mounting head for corner fastening	1	6D000011

PSEN

Fast and simple configuration with the PSENscan Configurator.

Keep up-to-date on safety laser scanners PSENscan:

Webcode: web181395

Online information at www.pilz.com

Safe radar system PSENradar

The safe radar system PSENradar together with the configurable safe small controller PNOZmulti 2 offers a safe complete solution for protection zone monitoring in rugged conditions – including conformity assessment for the entire machine.

Dust

Rain

Steam

PSEN rd 1.2 sensor

PNOZmulti 2

Safeguarding robotic applications and protection against encroachment from behind

The radar technology used (FMCW: frequency modulated continuous wave) ensures high availability even where there are external influences such as dust, dirt, rain, light, sparks or vibrations.

With a frequency of 60 GHz or 24 GHz, radar sensors PSENradar can be used for applications up to SIL 2, PL d and Category 3. This is specified in outdoor applications and areas in wood and metal processing as well as in robot applications. The safe complete solution has additional interfaces such as Ethernet and Profisafe and thus also guarantees flexible use of the safe radar sensor.

Simple configuration with the PSENradar Configurator

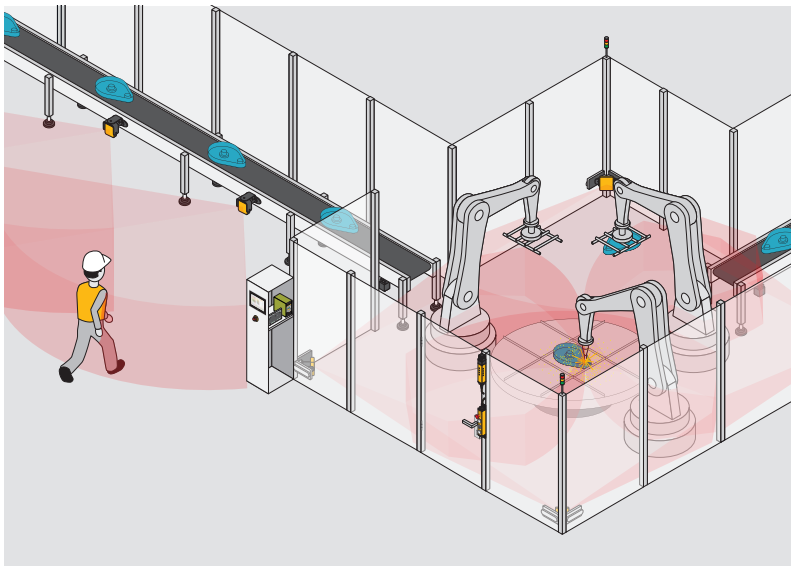
For fast commissioning, the sensors can be easily selected and configured via the appropriate Configurator. Depending on the application, the safe radar sensor solution comprises up to six radar sensors, one control unit and the configurable safe small controller PNOZmulti 2. With the self-teaching background function, it is possible to make changes within the warning or protection zone without requiring a new configuration.

PSEN

Type code for PSENradar

PSEN rd 1.2 sensor

Product area Pilz **SEN**sors	**Version**	
Product group **rd – PSENradar**	1.1 sensor **1.2 sensor**	Frequency: 24 GHz, range: 4 m **Frequency: 60 GHz, range: 5 m**
Operation ▸ Non-contact, radar-based, 2D, 3D		

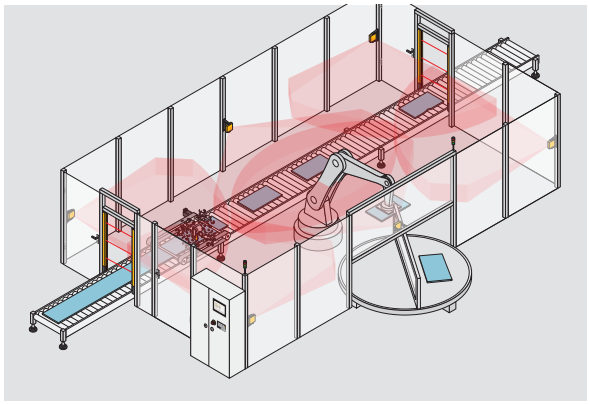


Components for your safe solution	Order number
Sensor: PSENrd 1.2 sensor	6B000003
Evaluation device: PNOZ m B0 - Spring loaded terminals (1 set)	772 100 751 008

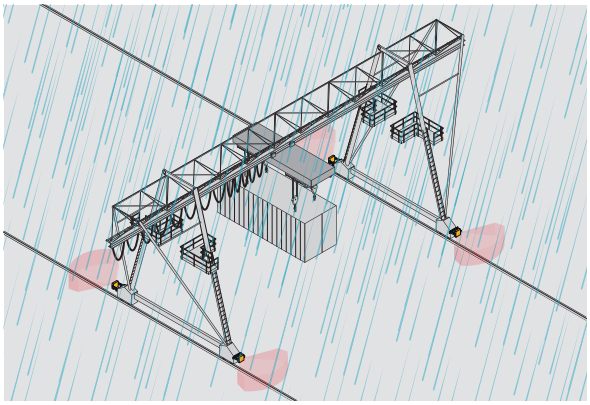
Safe complete solution with safeguarding of danger zones and protection against encroachment from behind (restart interlock).

Your benefits at a glance

- High category Cat. 3/PL d enables safeguarding of robotics applications
- High flexibility thanks to optimised sensor alignment and individual protection zone configuration
- Insensitive to dust, dirt, rain, light, flying sparks, steam and vibrations
- Protection against encroachment from behind to prevent the machine restarting when there are people in the danger zone
- Open for retrofit applications thanks to additional interfaces such as Ethernet or Profisafe



Safely process wood with flying chips.



Use in the outdoor area on the gantry crane.

Keep up-to-date on safe radar systems PSENradar:

Webcode: web199914

Online information at www.pilz.com

Selection guide – Safe radar system PSENradar

Safe radar system PSENradar

Common features

- Maximum adjustable depth of the protection zone:
  - 4 m (PSEN rd 1.1 sensor)
  - 5 m (PSEN rd 1.2 sensor)
- With 6 sensors connected in series, it is possible to monitor one danger zone or several at the same time
- Protection type: IP67

PSEN rd1.1 sensor

PSEN rd1.1 sensor shield kit

PSEN rd1.2 sensor

PSEN rd1.x I/O PN analysing unit

PSEN rd1.x I/O analysing unit

Type
PSEN rd.1.1 sensor
PSEN rd1.1 sensor shield kit
PSEN rd.1.2 sensor
PSEN rd1.x I/O PN analysing unit
PSEN rd1.x I/O analysing unit

PSEN rd 1.1 sensor/PSEN rd 1.2 sensor protection zone

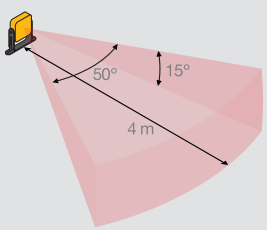
Depending on the size of the area to be monitored, the suitable protection zone can be defined for each sensor. This depends on the arrangement, installation height and inclination of the sensor. In addition to the protection zone, it is also possible to configure a warning zone. If a person breaches the warning zone, this is indicated by an optical signal. High productivity of the plant can thereby always be maintained.

Description	Certification	Order number
▸ Opening angle: - 110° horizontal, 30° vertical (wide) or - 50° horizontal, 15° vertical (narrow) ▸ Operating range: 4 m ▸ Frequency: 24 GHz ▸ Dimensions: 125 x 165 x 53 mm (H x W x D) ▸ For use in applications up to: - SIL 2 (IEC 61508) - PL d (EN ISO 13849-1) - Category 3 when using 2 sensors	RED, CE, TÜV	6B000002
Protective housing kit for sensors PSENrd 1.1 sensor; stainless steel	CE, UKCA, EAC	6B000004
▸ Opening angle: 20 – 100° horizontal, 20° vertical, configurable in 10° steps ▸ Operating range: 5 m ▸ Frequency: 60 GHz ▸ Dimensions: 135 x 158 x 105 mm (H x W x D) ▸ For use in applications up to: - SIL 2 (IEC 61508) - PL d (EN ISO 13849-1) - Category 3	CE, cULus Listed, TÜV	6B000003
▸ Series connection up to 6 sensors ▸ Zone sets: up to 32 ▸ OSSD outputs: up to 4 ▸ Reaction time: max. 100 ms ▸ Dimensions: 103 x 105 x 58 mm (H x W x D) ▸ Connection type: PROFIsafe, Ethernet	RED, CE, TÜV	6B000001
▸ Series connection up to 6 sensors ▸ Zone sets: up to 32 ▸ OSSD outputs: up to 4 ▸ Reaction time: max. 100 ms ▸ Dimensions: 103 x 105 x 58 mm (H x W x D) ▸ Connection type: USB	CE, cULus Listed	6B000005

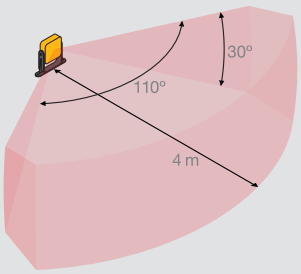
PSEN

Fast and simple configuration with the PSENradar Configurator.

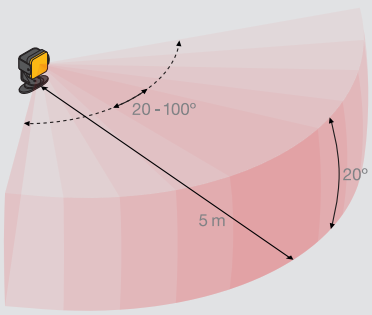
PSEN rd 1.1 sensor
Narrow protection zone



PSEN rd 1.1 sensor
Wide protection zone



PSEN rd 1.2 sensor
Protection zone



Keep up-to-date on safe radar systems PSENradar:

Webcode: web199914

Online information at www.pilz.com

Camera-based protection system PSENvip 2 – The

The camera-based protection system PSENvip 2 is a mobile protection system. It offers safe monitoring of modern press brakes as the highest level of safety and maximum productivity are achieved together with the automation system PSS 4000 thanks to integrated bending angle measurement and fast analysis unit.

PSENvip R E

PSSu H PLC2 FS SN SD

High productivity

PSENvip 2 consists of a transmitter, receiver and an analysis unit integrated in the PSS 4000. The result: fastest shutdown time and shortest overrun distance for the press brake tool.

Simple configuration and commissioning

The PSENvip 2 does not need a device display: all of the commissioning and configuration work is carried out easily and directly via a web interface on the press brake controller. As a result, the user can make all the settings centrally in one place via the web interface.

Resistant LED technology for high robustness

Visible light beams are transmitted to the receiver via a telecentric lens (vision parallel). In rugged conditions such as vibrations, temperature stratification, reflections or external/diffused light, high availability is hereby guaranteed compared to laser-based systems.

Integrated bending angle measurement

The new IPM module for the PSS 4000 forwards usable image data from the camera-based protection system directly to the press control, thereby guaranteeing an efficient press brake process. Both time-consuming manual angle measurement and expensive distance measuring systems are no longer necessary, which saves not only time and money, but also space at the press brake.

Safe monitoring of special purpose presses

With a range of up to 18 metres, the long-range version (LR) is ideal for monitoring tandem presses. The transmitter remains the same, only the receiver has to be swapped.

Programming made simple

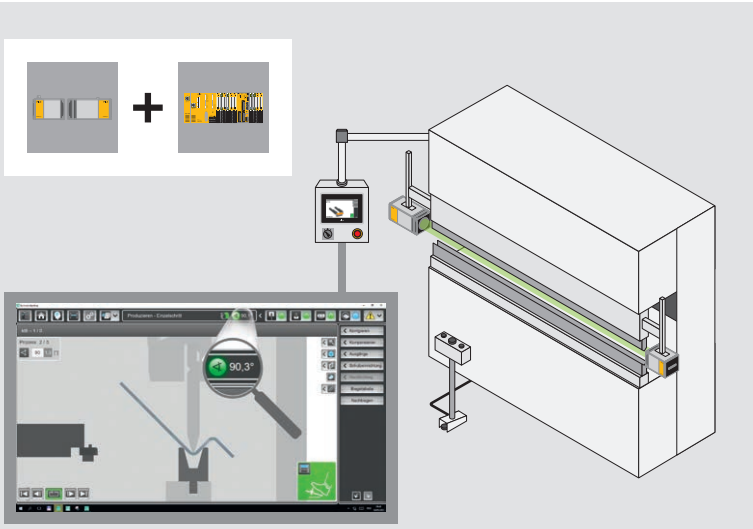
A certified PSENvip 2 function block is now available for the PSS 4000. This makes programming the safety controller considerably easier and enables fast and safe commissioning of the application.

Type code for PSENvip 2

PSENvip R LR

Product area Pilz **SEN**sors	**Transmitter/receiver**	**Range of receiver**
Product group **vip – PSENvip**	E Transmitter **R Receiver**	_ Basic range (13 m) **LR Long range (18 m)**
Operation Non-contact, optical, 2D (area monitoring)		

integrated solution for modern press brakes



Components for your safe solution	Order number
Sensor:	
▸ PSENvip R	584100
▸ PSENvip E	584200
Connection:	
▸ PSEN op cable, shielded, straight, M12, 4-pin, 10 m	630305
▸ PSEN cable, M12-4sm MIOsm MOVE, 10 m	584570
Evaluation device:	
▸ PSSu H PLC2 FS SN SD	312077
▸ PSSu K F FAU P	312421
Bending angle measurement:	
▸ PSENvip IPM Set1	583992

Safe and productive press braking: camera-based protection system PSENvip 2 and automation system PSS 4000 with productive evaluation module and the display of the bending angle on the machine's user interface (HMI).

Your benefits at a glance

- Highest level of safety for press brakes in accordance with the most current safety standards and EN 12622
- Maximum productivity and high machine availability:
  - Innovative optics
  - Cabling work reduced to a minimum
  - Ensuring the shortest shutdown time and the shortest overrun distance due to the Fast Analysis Unit
  - Tolerance to vibration, temperature stratification, reflection, external/diffused light
- Simple handling thanks to
  - Flexible mounting on the right or left of the press brake
  - Settings performed centrally on the web interface on the press brake controller
  - Suitable for tandem presses thanks to protection zone of up to 18 m
  - Hot-plug capability

Cable selection:
From page 174

Keep up-to-date on the camera-based protection system PSENvip 2:
Webcode: web150415

Control system PSSuniversal PLC:
Webcode: web150420

Online information at www.pilz.com

Selection guide – PSENvip 2

Camera-based protection system PSENvip 2

Common features

- Detection zone:
  - Length: 0.1 … 18 m
  - Height: max. 20 mm
  - Width: 44 mm
- Reaction time: 4.65 ms (sensor + FAU)
- Compliant and approved in accordance with EN 12622
- For use in applications up to
  - Type 4 in accordance with EN IEC 61496-1/-2
  - PL e of EN ISO 13849-1
  - SIL CL 3 of EN IEC 61508

PSENvip R

PSENvip E

Type
PSENvip R
PSENvip R LR
PSENvip E

Analysis unit for camera-based protection system PSENvip 2

Common features

- Compact module with failsafe
- 4 digital inputs
- Outputs:
  - 2 digital outputs, 1-pole, 2 A
  - 2 digital outputs, 2-pole, 2 A

PSSu K F FAU P

Type
PSSu K F FAU B
PSSu K F FAU P
PSSu A Con 4 C
PSSu A Con 1/10 C

Cable selection for camera-based protection system PSENvip 2

PSEN cable M12-4sm MIOsm MOVE

PSEN op cable angle M12 4-pole

Type
PSEN cable M12-4sm MIOsm MOVE
PSEN op cable axial M12 4-pole
PSEN op cable angle M12 4-pole

Keep up-to-date on the camera-based protection system PSENvip 2:

Webcode: web150415

Online information at www.pilz.com

Bending angle measurement for camera-based protection system PSENvip 2

PSENvip IPM

Type
PSENvip IPM Set1
PSENvip IPM
Set4 Screw Terminals
Set4 Spring Terminals

Features	Range	Certification	Order number
PSENvip 2 receiver	13 m	EAC, TÜV, cULus Listed	584100 [1]
PSENvip 2 receiver	18 m	EAC, TÜV, cULus Listed	584101
PSENvip 2 transmitter	-	EAC, TÜV, cULus Listed	584200 [1]

[1] Can be used in combination with the control system PSSuniversal PLC and the Fast Analysis Unit

Features	Certification	Order number
Fast Analysis Unit, base version	EAC, TÜV, cULus Listed	312420
Fast Analysis Unit, productive version	TÜV, cULus Listed	312421
1 set of spring-loaded terminals	CE, cULus Listed	313118
1 set of spring-loaded terminals; 2 sets are required per FAU unit	BG, CE, TÜV, cULus Listed	313115

Features	Order number (by length)							
	3 m	5 m	8 m	10 m	15 m	20 m	30 m	50 m
Connection cable for PSENvip 2 receiver ▸ Connection 1: shielded, straight, M12, 4-pin, socket ▸ Connection 2: Mini I/O	-	584568	584569	584570	584571	584572	-	-
Connection cable for PSENvip 2 transmitter ▸ Connection 1: straight, shielded, M12, 4-pin, socket ▸ Connection 2: open cable	630303	630304	-	630305	-	630270	630309	630366
Connection cable for PSENvip 2 transmitter ▸ Connection 1: angled, shielded, M12, 4-pin, socket ▸ Connection 2: open cable	630306	630307	-	630308	-	-	630319	630367

Features	Order number
Bending angle measurement module for PSENvip 2 + 1 set of spring-loaded terminals	583992
Bending angle measurement module for PSENvip 2	584300
1 set of screw terminals	750016
1 set of spring-loaded terminals	751016

Selection guide – Accessories for PSENvip 2

Accessories – camera-based protection systems PSENvip and PSENvip 2

PSENvip ms

PSENvip AT mag

PSENvip TP

PSENvip AP 2

PSENvip AT spring mount

Description Type
Adapter plates **PSENvip MB**
Retaining arms **PSENvip ms**
Adjustment plates **PSENvip AS2 R** **PSENvip AS2 E**
Adjustment templates **PSENvip AT mag** **PSENvip AT mech**
Test piece **PSENvip TP**
Mounting plates **PSENvip AS 2**
Adjustment plates **PSENvip AP 2**
Adjustment templates **PSENvip AT spring mount**

Features	Quantity	Order number
To mount the PSENvip AP/PSENvip AP 2 on to any bracket, with slot	2	583205
Retaining arms (set) for mounting PSENvip and PSENvip 2	2	583206
For PSENvip 2 receiver	1	583215
For PSENvip 2 transmitter	1	583216
With magnet to align PSENvip and PSENvip 2 on a first-time installation	2	583203
For mechanical mounting in the tool holder for the first installation of PSENvip and PSENvip 2	2	583204
For regular function test, finger protection with PSENvip and PSENvip 2	1	583200
For PSENvip 2 transmitter and receiver	2	583210
For PSENvip 2 transmitter and receiver	2	583211
To align PSENvip and PSENvip 2 on a first-time installation	2	583207

Keep up-to-date on the camera-based protection system PSENvip 2:

Webcode: web150415

Online information at www.pilz.com

Control and signal devices

Selection of the correct control and signal devices is a key factor for the safety of human and machine. Pilz control and signal devices are therefore of use in all places that could pose dangerous situations for your staff. They may be used during the commissioning of your system and during regular operation, maintenance or service. We can provide E-STOP pushbuttons, hand-operated control devices, enabling switches and operating mode selection and access permission systems. Our products enable short reaction times and are therefore a safe component for your application!

E-STOP pushbuttons PITestop and PITestop active

In accordance with the Machinery Directive, plant and machinery must be fitted with emergency stop equipment so that a hazard can be averted or reduced in the case of an emergency. That's why you should use the standard-compliant emergency stop pushbutton PITestop to shut down your system in a hazardous situation.

PITestop

PITestop active

Enhanced protection from the safety professionals

In a dangerous situation, emergency stop control devices are operated manually, triggering a signal to halt a potentially hazardous movement. With the emergency stop pushbuttons PITestop and PITestop active, Pilz offers you a comprehensive range of control devices for a variety of application scenarios.

Safe all over the world

Various standards and regulations are to be observed when using emergency stop pushbuttons. The compliance with several IEC and ISO standards is also relevant here in addition to the performance level and safety level of the device. The standards EN IEC 60947-5-1, EN IEC 60947-5-5, EN ISO 13850 and IEC 60204 must be observed. PITestop command buttons can be used for applications up to SIL CL 3 of EN IEC 62061 and PL e of EN ISO 13849-1 and also satisfy the requirements of UL and CE.

Contact block with monitoring

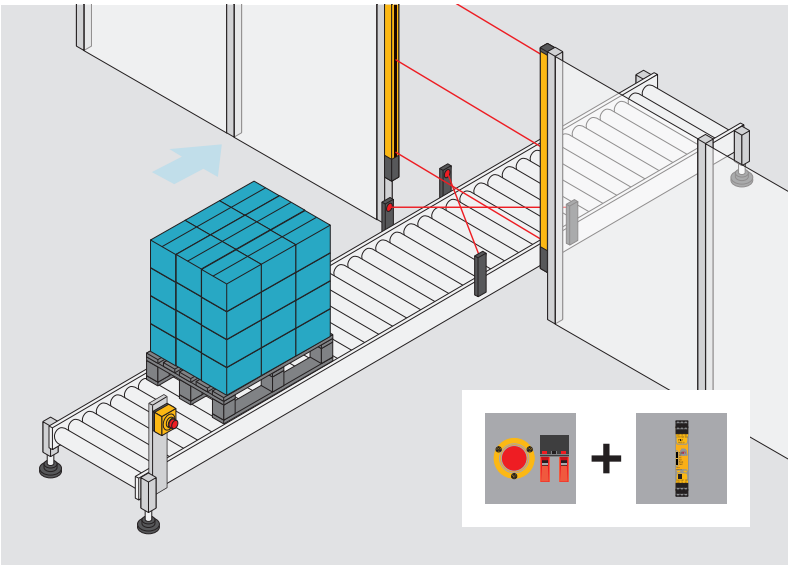
Pilz offers contact blocks with monitoring. “Self monitoring” is a N/O contact connected in series, which breaks the circuit in the event of a fault. This additional function provides a fast, safe solution for panel mount applications, at no extra cost.

Type code for PITestop

PIT es Set1s-5cs

Product area **Pi**lz **T**aster (pushbutton)	Pushbutton	Inscription	Contacts	Connection type	Installation
Product group	**1 Standard**	**s Symbol and logo**	_ Bare	_ Screw connection	_ Panel mounting
es E-STOP pushbutton	2 Large	u Uninscribed	1 N/C with monitoring	**c Spring-loaded terminal**	**s Surface mounting**
esc Emergency stop contact block	3 Illuminated		2 N/C	n Connector, M12, 5-pin	r Rail mounting
es Set E-stop set	4 Illuminated with protective collar		3 N/O		
ef Electronic failsafe	5 Protective collar		4 N/C / N/C / N/C / N/C [1]		
	6 Small		**5 N/C with monitoring/N/C**		
	7 Protection type IP6K9K		6 N/C with monitoring/ N/C / N/O		
	8 Key				
	9 Standard without blocking protection collar				
	10 Illuminated active/inactive				

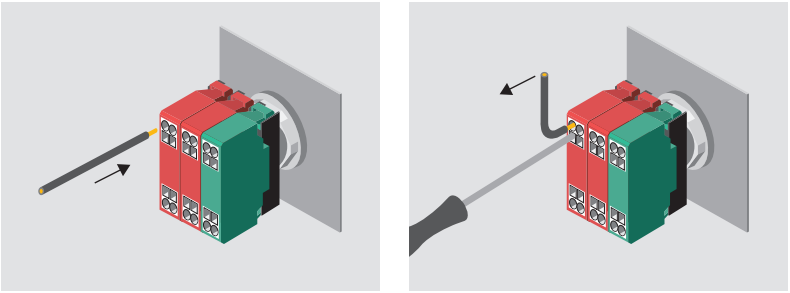
[1] Used for parallel operation of two machines



The optimum solution: emergency stop pushbutton PIT es Set1s-5c and safety relay PNOZ s3.

Push-in technology

Spring-loaded terminals (push-in technology) make PITestop easy to install and robust against vibration.



Reduce installation expense with quick-connect technology (push-in technology).

Your benefits at a glance

- Standard-compliant mush room-type pushbutton for emergency stop
- A variety of emergency stop pushbuttons provide the highest level of safety in every situation: illuminated, with key, for hygiene environments (IP6K9K)
- Fast, easy assembly through panel and surface mount version as well as push-in technology
- Contact blocks and push-buttons can be individually combined thanks to the modular structure
- Emergency stop symbol removes the need for additional labelling in the operator's language
- Enhanced operational safety thanks to the contact block with monitoring (panel mount version)

You can assemble emergency stop pushbuttons PITestop modularly – example:

	PIT pushbutton	Contact block bracket	Contact block	Optional: surface mount housing
				
Type	PIT es1s	PIT MHR 3	PIT esc1	PIT es box
Order number	400131	400330	400315	400203

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

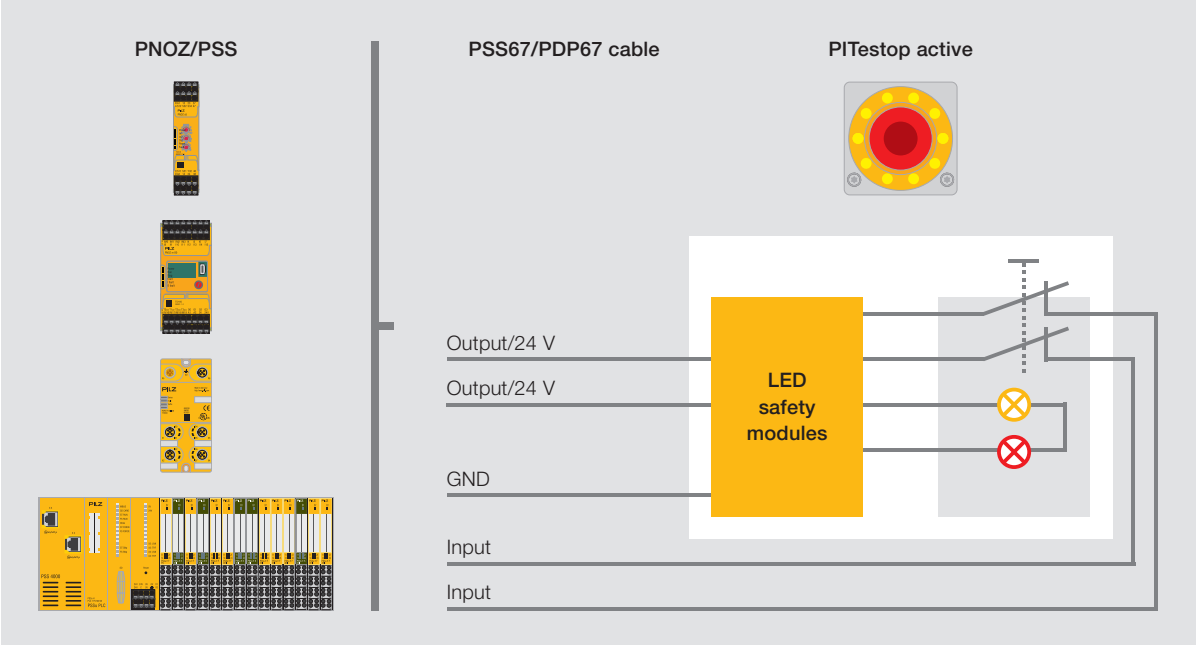
Electrically activated E-STOP pushbutton PITestop

The PITestop active control devices are the new generation of electrically activated E-STOP pushbuttons. The revision of the standards EN ISO 13850 and IEC 60204 enabled this innovation in the emergency stop device sector.

PIT es10s (active)

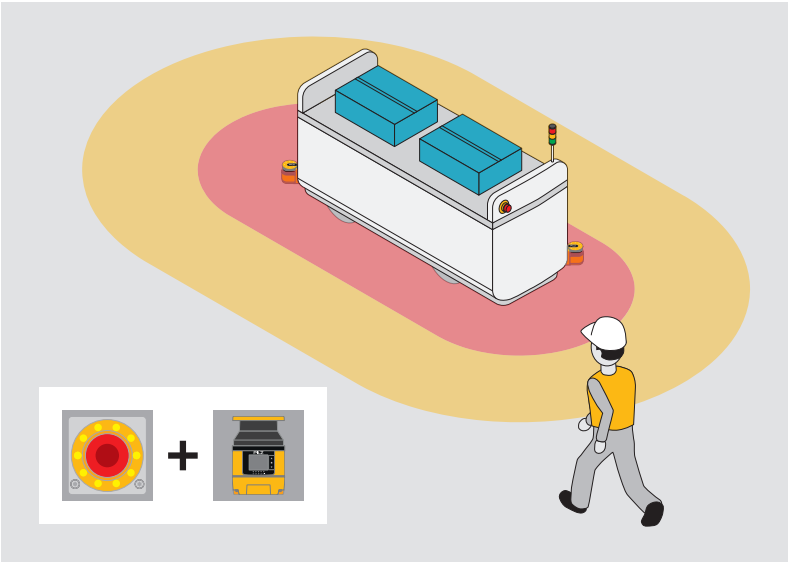
PIT es Set10u-5ns (inactive)

The E-STOP pushbuttons PITestop active conform to the standards and offer the following innovations: they indicate by LED illumination when they are active. When inactive, however, they are not lit and therefore not identifiable as E-STOPs. So they are your perfect solution, in particular for modular plant and machinery in which plant modules can be removed or added. Inactive machine sections can be switched off to save time and energy – without the need to additionally cover the inactive E-STOP push-buttons. In order to guarantee the easiest and most flexible mounting, both a panel mount version as well as a surface mount version are available to you. Our new range of control devices PITestop active supports you with an innovative and flexible solution – and provides customised emergency stop pushbuttons for the smart factory!



Application scenario – PITestop active.

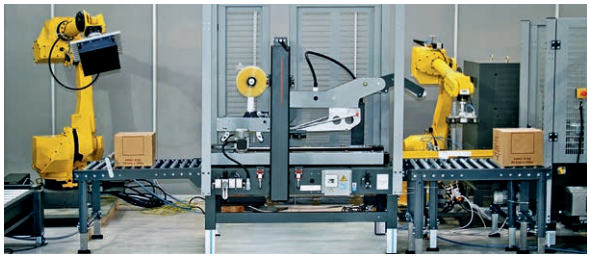
active



The optimum solution: E-STOP pushbutton PITestop active and safety laser scanner PSENscan.

Your benefits at a glance

- Standard-compliant E-STOP pushbuttons in accordance with the Machinery Directive
- E-STOP conforming to EN ISO 13850 and IEC 60204
- Electrically activated
- Indicates its status (active/inactive) through illumination
- No longer necessary to cover over inactive E-STOP pushbuttons
- Integrated solution to signal that the E-STOP pushbutton has been operated, by flashing
- Saves costs and energy by switching off inactive machine parts
- Easier for user to handle, because active machine sections and operator devices are identified
- Simple, flexible installation thanks to panel and surface mount versions
- Increased flexibility as the operating mode for interlinked machines can be changed faster



Keep up-to-date on E-STOP pushbuttons PITestop active:

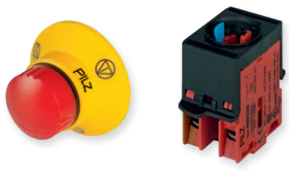
Webcode: web150436

Online information at www.pilz.com

Selection guide – PITestop and PITestop active

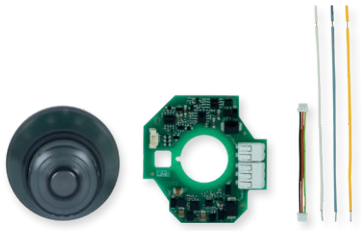
The choice is yours: pre-assembled sets or modular compilation.

Sets – E-STOP pushbuttons PITestop and PITestop active



PIT es Set1s-5

PIT es Set3s-5c



PIT es Set10u-5c PCB

Type	Components
PIT es Set1s-1	PIT es1s, PIT MHR3, PIT esc1
PIT es Set1s-1c	PIT es1s, PIT es holder3c, PIT esc1c
PIT es Set1s-5	PIT es1s, PIT MHR3, PIT esc1, PIT esc2
PIT es Set1s-5c	PIT es1s, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set1s-6	PIT es1s, PIT MHR3, PIT esc1, PIT esc2, PIT esc3
PIT es Set1s-6c	PIT es1s, PIT es holder3c, PIT esc1c, PIT esc2c, PIT esc3c
PIT es Set2s-5	PIT es2s, PIT MHR3, PIT esc1, PIT esc2
PIT es Set2s-5c	PIT es2s, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set3s-5	PIT es3s, PIT MHR3, PIT esc1, PIT esc2
PIT es Set3s-5c	PIT es3s, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set5s-5	PIT es5s, PIT MHR3, PIT esc1, PIT esc2
PIT es Set5s-5c	PIT es5s, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set6.1	PIT es6.10, PIT esb6.10, without monitoring
PIT es Set7u-5	PIT es7u, PIT MHR3, PIT esc1, PIT esc2
PIT es Set7u-5c	PIT es7u, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set8s-5	PIT es8s, PIT MHR3, PIT esc1, PIT esc2
PIT es Set8s-5c	PIT es8s, PIT es holder3c, PIT esc1c, PIT esc2c
PIT es Set9u-5	PIT es9u, PIT MHR3, PIT esc1, PIT esc2
PIT es Set9u-5c	PIT es9u, PIT es holder 3c, PIT esc1c, PIT esc2c
PIT es Set9u-7	PIT es9u, PIT MHR3, PIT esc1, PIT esc2
PIT es Set10u-5c PCB	PITestop active, set comprising E-STOP pushbutton that can be activated/deactivated with flashing function, with contact block with dropout protection in accordance with EN 60947-5-1 and EN 60947-5-5 and with LED safety module PCB
PIT es Set10u-5ns	PITestop active, set comprising E-STOP pushbutton that can be activated/deactivated with flashing function, with contact block with dropout protection in accordance with EN 60947-5-1 and EN 60947-5-5 and with LED safety module PCB in surface mount housing with M12/5-pin connection – PDP67 8DI ION PIN assignment, in quick-connect technology
PIT es Set10u-5ns AIDA	PITestop active, set comprising E-STOP pushbutton that can be activated/deactivated with flashing function, with contact block with dropout protection in accordance with EN 60947-5-1 and EN 60947-5-5 and with LED safety module PCB in surface mount housing with M12/5-pin connection – AIDA PIN assignment, in quick-connect technology

Contacts	Inscribed with emergency stop symbol and logo		Can be combined with surface mount housing	Certification	Order number	
	With	Without			Screw terminal	Spring-loaded terminal
1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400430	-
1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400431
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400432	-
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400433
1 1 2	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400445	-
1 1 2	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400446
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400434	-
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400435
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400436	-
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400437
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400438	-
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400439
1 1		◆		EAC [1], TÜV [1], cULus Listed [1]	400620	-
1 1		◆	◆	EAC [1], TÜV [1], cULus Listed [1]	400441	-
1 1		◆	◆	EAC [1], TÜV [1], cULus Listed [1]	-	400442
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	400443	-
1 1	◆		◆	EAC [1], TÜV [1], cULus Listed [1]	-	400444
1 1		◆	◆	EAC [1], TÜV [1], cULus Listed [1]	400458	-
1 1		◆	◆	EAC [1], TÜV [1], cULus Listed [1]	-	400459
1 1 1		◆	◆	EAC [1], TÜV [1], cULus Listed [1]	400457	-
1 1		◆	◆	DGUV, CE, UKCA	-	400460
1 1		◆		DGUV, CE, UKCA	-	400461
1 1		◆		DGUV, CE, UKCA	-	400462

1 N/C, positive-opening

2 N/O, signal contact

[1] EAC, TÜV and cULus Listed certification applies only to individual components contained within the set

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

Selection guide – PITestop and PITestop active

The choice is yours: pre-assembled sets or modular compilation.

Sets for surface mounting – E-STOP pushbuttons PITestop and PITestop active

PIT es Set1s-5s

PIT es Set6u-5nr

PIT es Set10u-5ns

Type	Components
PIT es Set1s-5s	PIT es1s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set1s-5cs	PIT es1s, PIT es holder3c, PIT esc1c, PIT esc2c, PIT es box
PIT es Set1s-5ns	PIT es1s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set1s-6s	PIT es1s, PIT MHR3, PIT esc1, PIT esc2, PIT esc3, PIT es box
PIT es Set3s-5s	PIT es3s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set3s-5ns	PIT es3s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set3s-5ns AIDA	PIT es3s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set5s-5s	PIT es5s, PIT MHR3, PIT esc1, PIT esc2, PIT es box
PIT es Set6u-5cr	Emergency stop, narrow surface mount housing for rail assembly
PIT es Set6u-5nr	Emergency stop, narrow surface mount housing for rail assembly
PIT es Set10u-5ns	PIT es10u, PIT es holder3c, PIT esc1, PIT esc2, PIT ef LED, PIT es box flex
PIT es Set10u-5ns AIDA	PIT es10u, PIT es holder3c, PIT esc1, PIT esc2, PIT ef LED, PIT es box flex

Contacts	Inscribed with emergency stop symbol and logo		Certification	Order number		
	With	Without		Screw terminal	Spring-loaded terminal	5-pin M12 connection
2	◆		cULus Listed [1]	400447	-	-
2	◆		cULus Listed [1]	-	400448	-
2	◆		cULus Listed [1]	-	-	400453
2 1	◆		cULus Listed [1]	400452	-	-
2	◆		cULus Listed [1]	400449	-	-
2	◆		cULus Listed [1]	-	-	400454
2	◆		cULus Listed [1]	-	-	400465
2	◆		cULus Listed [1]	400450	-	-
2		◆	cULus Listed [1]	-	400451	-
2		◆	cULus Listed [1]	-	-	400455
2		◆	-	-	-	400461
2		◆	-	-	-	400462

2 N/C, positive-opening

1 N/O, signal contact

[1] cULus Listed certification applies only to individual components contained within the set

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

Technical details – PITestop and PITestop active

E-STOP pushbuttons PITestop and PITestop active

Common features

- Application range:
  EN IEC 60947-5-1
  and EN IEC 60947-5-5
- Protection type: IP65; PIT es7u: IP6K9K
- Mounting hole: 22.3 mm
- 127 500 operations
- Connection options:
  connection to contact blocks
  of type PIT esc
- Dimensions:
  see dimensioned drawings
- Pushbutton colour: red
- Twist to release:
  clockwise or anticlockwise;
  PIT es8s and PIT es8u: clockwise only

PIT es1s

PIT es3s

PIT es5s

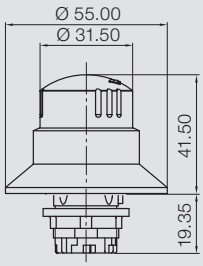

PIT es6.10

PIT es8s

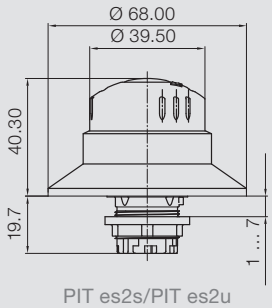

PIT es10u

Type
PIT es1s
PIT es1u
PIT es2s
PIT es2u
PIT es3s
PIT es3s-c
PIT es3u
PIT es3u-c
PIT es4s
PIT es4u
PIT es5s
PIT es5u
PIT es6.10
PIT es7u
PIT es8s
PIT es8u
PIT es9u
PIT es10u

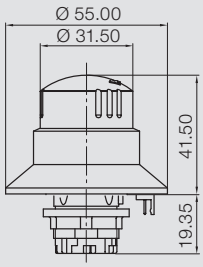
Dimensions (mm)



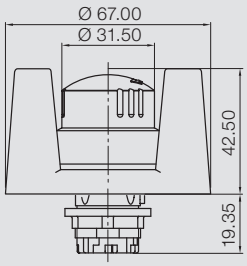
PIT es1s/PIT es1u



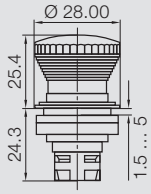
PIT es2s/PIT es2u



PIT es3s/PIT es3u

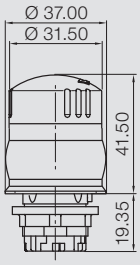


PIT es5s/PIT es5u

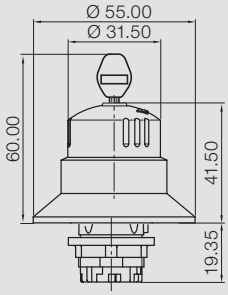


PIT es6.10

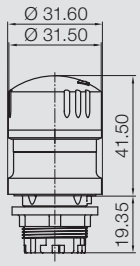
Pushbutton	Certification	Order number	
		Inscribed with emergency stop symbol and logo	
		With	Without
Standard	EAC, TÜV, cULus Listed	400131	-
Standard	EAC, TÜV, cULus Listed	-	400531
Large	EAC, TÜV, cULus Listed	400132	-
Large	EAC, TÜV, cULus Listed	-	400532
Illuminated, incl. contact block (screw terminal)	EAC, TÜV, cULus Listed	400133	-
Illuminated, incl. contact block (spring-loaded terminal)	EAC, TÜV, cULus Listed	400143	-
Illuminated, incl. contact block (screw terminal)	EAC, TÜV, cULus Listed	-	400533
Illuminated, incl. contact block (spring-loaded terminal)	EAC, TÜV, cULus Listed	-	400543
Illuminated with protective collar, incl. contact block (screw terminal)	EAC, TÜV, cULus Listed	400134	-
Illuminated with protective collar, incl. contact block (screw terminal)	EAC, TÜV, cULus Listed	-	400534
With protective collar	EAC, TÜV, cULus Listed	400135	-
With protective collar	EAC, TÜV, cULus Listed	-	400535
Small	EAC, TÜV, cULus Listed	-	400610
Protection type IP6K9K	EAC, TÜV, cULus Listed	-	400537
Key	EAC, TÜV, cULus Listed	400138	-
Key	EAC, TÜV, cULus Listed	-	400538
Standard without blocking protection collar	EAC, TÜV, cULus Listed	-	400539
Illuminated, active/inactive	DGUV	-	400540



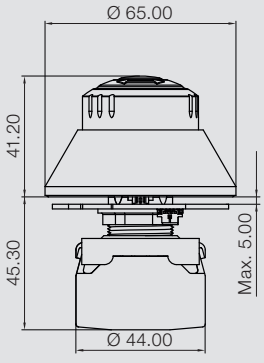
PIT es7u



PIT es8s/PIT es8u



PIT es9u



PIT es10u

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

Technical details – PITestop and PITestop active

Contact blocks for panel and surface mounting – E-STOP pushbuttons PITestop and PITestop active

Common features

- Application range:
  SIL CL 1, 2 or 3 of EN IEC 62061,
  PL c, d or e of EN ISO 13849-1,
  EN IEC 60947-5-1
- Rated operating voltage U_e: 250 VAC (3 A), 24 VDC (2 A)
- Connection:
  screw connections 2 x 2.5 mm², finger-proof in accordance with VBG 4
- Contact material: hard silver Ag/Ni
- Min. current:
  - 1 mA (screw terminals)
  - 5 mA (spring-loaded terminals)
- Min. voltage: 5 V
- Mounting type: panel mounting
- Mounting depth:
  - Screw terminals: 59 mm
  - Spring-loaded terminals: 52 mm

PIT esc1

PIT esc2c

PIT esc3

PIT esb6.10

Type
PIT esc1
PIT esc2
PIT esc3
PIT esc4
PIT esc1c
PIT esc2c
PIT esc3c
PIT esb6.10
PIT ef LED 1PCB

Method	Contacts	Certification	Order number	
			Screw terminal	Spring-loaded terminal
Contact block with monitoring	1	EAC, TÜV, cULus Listed	400315	-
Contact block	1	EAC, TÜV, cULus Listed	400320	-
Contact block	1	EAC, TÜV, cULus Listed	400310	-
4 contact blocks for operation of 2 parallel machines	1 1 1 1	EAC, TÜV, cULus Listed	400324	-
Contact block with monitoring	1	EAC, TÜV, cULus Listed	-	400316
Contact block	1	EAC, TÜV, cULus Listed	-	400321
Contact block	1	EAC, TÜV, cULus Listed	-	400311
Contact block	1 1	EAC, TÜV, cULus Listed	-	400360
LED safety module	1 1	DGUV	-	400342

1 N/C, positive-opening

1 N/O, signal contact

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

Technical details – PITestop and PITestop active

Accessories – E-STOP pushbuttons PITestop and PITestop active

PIT es box flex yellow

PIT es box flex grey

PIT es backplate symbol

PIT MHR3

PIT MHR5

PIT es holder3c

Type	Method
PIT es box	Surface mount housing for use in combination with PITestop pushbuttons and contact blocks
PIT es box flex yellow	Yellow/black surface mount housing
PIT es box flex grey	Light grey surface mount housing
PIT es box flex bracket	Mounting bracket for PIT es box flex
PIT MHR3	Contact block bracket for screw connections
PIT MHR5	
PIT es holder3c	Contact block bracket for spring-loaded connections
PIT es backplate symbol	Backplate with 3 emergency stop symbols
PIT es backplate language	Backplate with emergency stop text in 3 languages: English, French, German

PIT connected to safe control technology (examples)

PSEN ix1

PNOZ s3

Type	Method
PSEN ix1	Multiple interface for PIT es Set1s-5 (400 432), for example
PNOZ s3	Safety relay PNOZsigma, e.g. for monitoring emergency stop pushbutton PIT es Set3s-5 (400 436)

Keep up-to-date on emergency stop pushbuttons PITestop and PITestop active:

Webcode: web150436

Online information at www.pilz.com

Features	Certification	Order number
Protection type: IP65, protection class: II, 2 perforated openings for the stuffing box connection, cable entry ISO 20 mm (PG 13.5), dimensions (H x W x D) in mm: 61.5 x 72 x 72, also available as a pre-assembled set (see page 138)	cULus Listed	400 200
Yellow/black surface mount housing, IP65 for buttons with 22.3 mm mounting hole, including mounting plates, flexible button alignment, cable entries 1 x M20	-	400 203
Light grey surface mount housing, IP65 for buttons with 22.3 mm mounting hole, including mounting plates, flexible button alignment, cable entries 1 x M20	-	400 204
Mounting bracket for PIT es box flex, electrogalvanised steel	-	400 220
3 slots	EAC, TÜV, cULus Listed	400 330
5 slots, max. 3 contact blocks [1] may be fitted to ensure protection against defeat	EAC, TÜV, cULus Listed	400 340
3 slots	EAC, TÜV, cULus Listed	400 331
Suitable for all pushbuttons except PIT es2 and PIT es5 – not suitable for the PIT es box and the narrow surface mount housing	-	400 334
Suitable for all pushbuttons except PIT es2 and PIT es5 – not suitable for the PIT es box and the narrow surface mount housing	-	400 335

[1] Except PIT es4: 4 contact blocks

Features	Certification	Order number
▸ Connection of several emergency stop pushbuttons or safety switches to PNOZ safety relays ▸ Max. 13 PSEN ix1 can be connected in series ▸ Connection of max. 50 emergency stop pushbuttons ▸ Volt-free signal outputs to evaluate the switch status ▸ Connection via spring-loaded terminals	cULus Listed	535 120
▸ 2 instantaneous safety contacts ▸ 1 semiconductor output ▸ Up to PL e/SIL CL 3 ▸ Single- and dual-channel wiring ▸ Detection of shorts across contacts ▸ Monitored/manual/automatic start ▸ Start-up testing ▸ Supply voltage 24 VDC ▸ Outputs: voltage/current/rating DC1: 24 V/6 A/150 W ▸ Dimensions (H x W x D) in mm: 98 x 17.5 x 120	CE, CCC, KOSHA, TÜV, cULus Listed	751 103

Pushbutton unit PITgatebox – Easy operation of

The robust control unit with various combinations of pushbuttons, key switches and E-STOP pushbuttons gives you maximum flexibility for individual application in your safety gate system.

PIT gb LLLE

PIT gb LLLL

PIT gb CLLP y

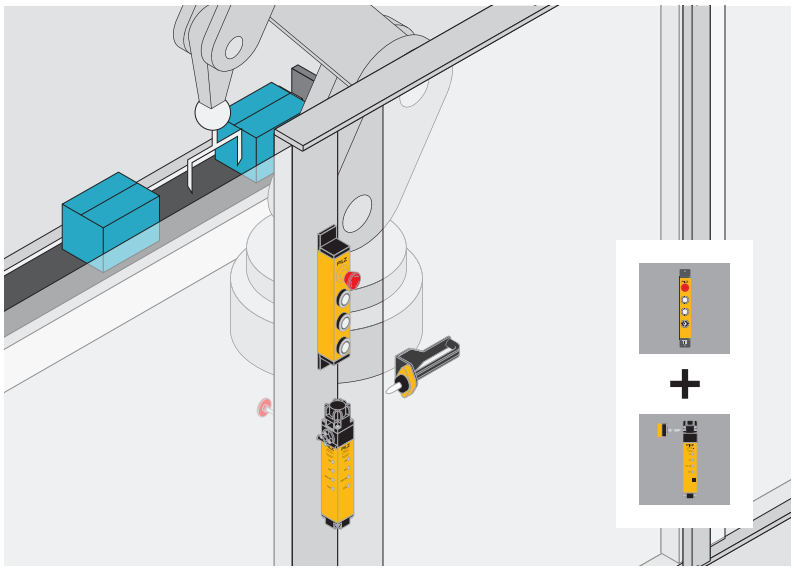
PIT gb WLLE y

PIT gb RLLE up ETH

Simple operating function meets premium quality and design
With the pushbutton unit PITgatebox, you can easily and flexibly control safety gate switches and systems. Commands such as activate, stop or reset your plant or machinery can be controlled. Thanks to the slimline design, the robust control unit can be installed quickly and easily on standard profile systems. Preconfigured versions with various combinations of pushbuttons, key switches and selector switches give you maximum flexibility for your individual application.

Pushbutton unit PITgatebox with PITreader – operating unit with access permission system
The PITgatebox with PITreader combines safety & security aspects for comprehensive safety gate guarding with access permission. Using individual RFID keys and the integrated PITreader, employees can authenticate themselves at the PITgatebox. This ensures that only authorised employees have access to the plant and the functions of the PITgatebox.

your safety gate system



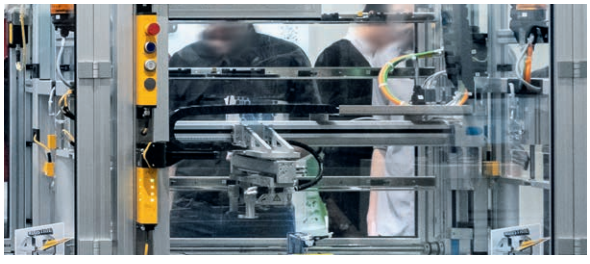
PITgatebox with PSENmlock, escape release and handle in modular safety gate system.

PITgatebox in modular safety gate system

The pushbutton unit PITgatebox can be ideally combined with the safety gate systems PSENslock and PSENmlock. Thanks to the numerous potential combinations, you receive a one-stop modular safety gate solution tailored to your individual needs. Together with the PITgatebox with PITreader, you are also combining safety & security aspects for optimum safety gate guarding with access permission. The modular safety gate system products are ideal for use with safe control technology from Pilz.

Your benefits at a glance

- Simple operating function meets premium quality and design
- High quality die cast zinc metal IP65 housing is highly robust to shock, vibration and collision
- Slimline housing for space-saving installation on standard aluminium profile systems
- Fast, simple installation, no wiring, thanks to M12, 12-pin connection and rotatable end caps
- Integrated access permission system PITreader incl. user authentication via transponder key in RFID technology (NFC) and programming of all functions via integrated web server
- Flexible installation thanks to integrated rotatable mounting bracket
- In the event of repair, easy to exchange the operating elements thanks to compatible spare parts



Keep up-to-date on the pushbutton unit PITgatebox:

Webcode: web194459

Online information at www.pilz.com

Selection guide – Pushbutton unit PITgatebox

Selection guide – Pushbutton unit PITgatebox

Common features

- M12, 12-pin connection
- Robust zinc die cast housing
- Protection type: IP65
- Slimline design: 40 mm profile
- Rotatable end caps (–90°, +90°, +180°)
- Supply voltage: 24 VDC
- Ambient temperature: –20 … +60 °C

PIT gb LLLE

PIT gb BLLE y

PIT gb LLLP

PIT gb RLLE y up ETH

Type
PIT gb LLLE
PIT gb CLLE y
PIT gb BLLE y
PIT gb KLLE
PIT gb LLLL
PIT gb LLUL
PIT gb LLTE
PIT gb CSSE
PIT gb LLLP
PIT gb CLLP y
PIT gb WLLE
PIT gb DLLE y
PIT gb LLME
PIT gb RLLE y up ETH
PIT gb RLLE y down ETH

Technical features	Certification	Order number
Box with emergency stop (2 N/C) and 3 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000001
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000002
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each) as well as 1 key-operated pushbutton (1 N/O)	CE, cULus Listed, EAC, UKCA	G1000003
Box with emergency stop (2 N/C) and 2 illuminated pushbuttons (1 N/O each) as well as 1 key switch (2 N/O)	CE, cULus Listed, EAC, UKCA	G1000004
Box with 4 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000026
Box with red non-illuminated pushbutton (1 N/C) and 3 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000027
Box with emergency stop (2 N/C) and 3 illuminated pushbuttons (1 N/C, two 1 N/O)	CE, cULus Listed, EAC, UKCA	G1000028
Box with emergency stop (2 N/C) and 2 illuminated pushbuttons (2 N/O each)	CE, cULus Listed, EAC, UKCA	G1000029
Box with section stop (2 N/C) and 3 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000030
Box with section stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000031
Box with emergency stop (2 N/C) and 2 illuminated pushbuttons (1 N/O each) as well as selector switch (2 N/O)	CE, cULus Listed, EAC, UKCA	G1000032
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each) as well as 1 non-illuminated pushbutton (1 N/O)	CE, cULus Listed, EAC, UKCA	G1000033
Box with emergency stop (2 N/C) and indicator light as well as 2 illuminated pushbuttons (1 N/O each)	CE, cULus Listed, EAC, UKCA	G1000034
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each) as well as 1 PITreader S, cable outlet at bottom	CE, cULus Listed, EAC, UKCA, FCC, IC	G1000020
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons (1 N/O each) as well as 1 PITreader S, cable outlet at top	CE, cULus Listed, EAC, UKCA, FCC, IC	G1000021

Keep up-to-date on the pushbutton unit PITgatebox:

Webcode: web194459

Online information at www.pilz.com

Selection guide – Pushbutton unit PITgatebox

Accessories and spares – Pushbutton unit PITgatebox

PIT gb es1

PIT gb
push button

PIT gb
pushbutton red

PIT gb
key button

PIT gb
color covers

PITreader
key ye g

Type
PIT gb es1
PIT gb push button
PIT gb pushbutton red
PIT gb stop pushbutton black
PIT gb stop pushbutton black plus 1
PIT gb key button
PIT gb key switch
PIT gb spare part key
PIT gb selector switch 2x 60° latching
PIT gb signal indicator
PIT gb color covers
PIT gb blind cover
PIT gb flat seal set
PIT gb es2
PIT gb fixing spanner
PIT gb color cover wh s1
PIT gb color cover wh s2
PIT gb color cover wh s3
PIT gb color cover wh s4
PIT gb color cover bl s5
PIT gb color cover bl s6
PIT gb color cover bl s4
PITreader key ye g
PITreader key ye 1, 2, 3, 4, 5
PITreader key ye 5 service

Technical features	Order number
E-STOP pushbutton, turn to unlock	G1000005
Pushbutton, illuminated, latching	G1000006
Red pushbutton, protruding colour cover plate, mounting hole: 22.3 mm	G1000035
Black mushroom pushbutton, unlocking by turning, mounting hole: 22.3 mm	G1000036
Black mushroom pushbutton with signal contact, unlocking by turning, mounting hole: 22.3 mm	G1000037
Key-operated pushbutton 1 x 40°, latching	G1000007
Key switch 2 x 90°, latching	G1000008
Spare key, fits key-operated pushbutton/key switch of the product range PITgatebox	G1000040
Selector switch 2 x 60°, mounting hole: 22.3 mm	G1000038
Signal indicator with exchangeable cover plate, mounting hole: 22.3 mm	G1000039
Colour discs for the illuminated pushbuttons and indicator lamps	G1000009
Blind plug, IP65	G1000010
Flat gasket for the PITgatebox incl. spacer sleeves	G1000043
E-STOP pushbutton with signal contact, turn to unlock	G1000011
Fixing spanner for threaded ring	G1000012
Colour discs for the illuminated pushbuttons, white, IEC icon start, pack of 10	G1000013
Colour discs for the illuminated pushbuttons, white, IEC icon ON, pack of 10	G1000014
Colour discs for the illuminated pushbuttons, white, IEC icon unlocking, pack of 10	G1000015
Colour discs for the illuminated pushbuttons, white, IEC icon locking, pack of 10	G1000016
Colour discs for the illuminated pushbuttons, blue, IEC icon request, pack of 10	G1000017
Colour discs for the illuminated pushbuttons, blue, IEC icon reset, pack of 10	G1000018
Colour discs for the illuminated pushbuttons, blue, IEC icon locking, pack of 10	G1000019
Generic transponder key for PITreader, yellow plastic, freely configurable	402260
▸ Transponder key for PITreader, yellow plastic, authorisation 1 ▸ Transponder key for PITreader, yellow plastic, authorisation 2 ▸ Transponder key for PITreader, yellow plastic, authorisation 3 ▸ Transponder key for PITreader, yellow plastic, authorisation 4 ▸ Transponder key for PITreader, yellow plastic, authorisation 5	▸ 402261 ▸ 402262 ▸ 402263 ▸ 402264 ▸ 402265
Transponder key for PITreader, yellow plastic, authorisation 5 service function	402269

Keep up-to-date on the pushbutton unit PITgatebox:

Webcode: web194459

Online information at www.pilz.com

Operating mode selection and access permission

For "Identification and Access Management (I.A.M.)", Pilz offers you safety and security functions in one system with the operating mode selection and access permission system PITmode. The devices enable functionally safe operating mode selection and the control of access permissions on plant and machinery. Incorrect operation and manipulation are thereby prevented and the human and machine are protected. In order to find the perfect solution for individual requirements, the offer includes various hardware and software components for your safety and security solution.

PITmode


PITreader


PITreader card unit

PITgatebox with PITreader

Entry and access protection with PITreader
With **PITreader** you can implement tasks regarding access permissions for plant and machinery. The options range from a simple enable and user authentication to a complex permission matrix and company-specific coding. PITreader is flexible as a standalone device or it can be used in conjunction with a Pilz controller. The transponder keys with RFID technology are available in freely writable versions and also with fixed, stored permissions. The suitable software tools are naturally available for fast and simple programming of the PITreader keys and the PITreader settings.

PITreader S also has an integrated OPC UA server. This not only increases the safety of the communication between server and client, PITreader S also expands the connection options to systems from other manufacturers that also use OPC UA, thereby promising greater safety and usability for access permission. For the best possible safety gate guarding with authentication, PITreader S is also available in the pushbutton unit PITgatebox (see page 148).

PITreader (S) card essentially offers you the same functions as the versions described above, but differs with regard to the type of transponders. With PITreader card and PITreader sticker additional transponders in card and sticker format are used. Other RFID-capable cards already in use at the company as well as the familiar PITreader keys can also be used for authentication. The PITreader cards have a transparent window so that the LED status indicator on the PITreader remains visible when the card is held up to it.

system PITmode

Operating mode selection and access permission with PITmode

PITmode fusion is the modular version of the operating mode selection system and is the solution when a third-party safety controller is used. The system comprises the reading unit PITreader and the separate evaluation unit (safe evaluation unit – SEU) which evaluates the selected operating mode and switches between up to five operating modes in a functionally safe manner. The selection of the operating mode can be performed here using existing buttons or via the operation element PIT oe 4S (page 166). The full scope of the PITreader functions with regard to access permissions can naturally also be used here.

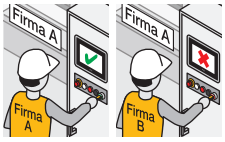
PITmode flex is the solution for all users of small controller PNOZmulti 2 or automation system PSS 4000. PITreader is also used as a reading unit here, naturally with full functionality with regard to the access permissions. Safe evaluation of the operating mode is performed via a software block already integrated into PNOZmulti 2 and PSS 4000. A separate evaluation unit is therefore not necessary. The operating mode can be selected via the operation element PIT oe 4S or any buttons.

PITmode flex visu essentially offers the same function range as PITmode flex, however it differs with regard to the way in which the operating mode is selected. Instead of with buttons, this is performed via touch operation via a PMIvisu panel with PASvisu.

PITmode is a compact all-in-one device on which both the buttons and the evaluation unit are integrated. Operating mode and permission are displayed safely via LED. The individual key coding prevents manipulation. Ideal for international use: the operating mode selection switch is also available with pictograms for machine tools.

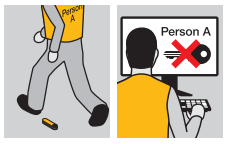
Group-based rights management

Customisation for users

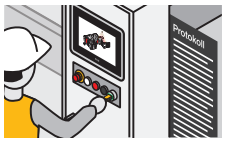


Company-specific coding

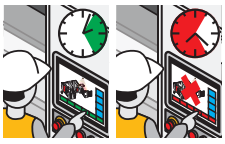
Simple recipe management



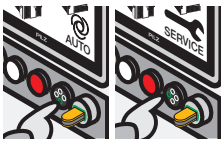
Block list for keys



Recording of key actions (audit trail)



Temporary permission



Safe operating mode selection

Keep up-to-date on operating mode selector switches PITmode:

Webcode: web150439

Online information at www.pilz.com

Safety and security applications at a glance – access permission and operating mode selection in one system.

Operating mode selection and access permission

Overview of operating mode selection and access permission system PITmode

	PITmode 3.xx	PITmode fusion
Components that make up the solution		
Application	▸ Access permission system ▸ Functional safe operating mode selection up to PL d	▸ Access permission system ▸ Functional safe operating mode selection up to PL d
Method	Compact	Modular with buttons
Main function	Operating mode selection with: ▸ 5 operating modes ▸ 1 working area	Operating mode selection with: ▸ 5 operating modes ▸ 1 working area
Use	Operation with Pilz or 3rd party FS controller for operating mode selection and access permission	Operation with Pilz or 3rd party FS controller for operating mode selection and access permission
Safe evaluation unit	Integrated	As independent “SEU” component
Input via	2 or 4 integrated buttons	▸ PIT oe 4S ▸ 3rd party pushbutton

Software for PITreader

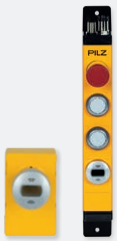
PIT Transponder Manager (PTM)

Quickly and easily manage PITreader key transponder keys, user settings, block lists and your user data in the PIT Transponder Manager thanks to its graphical interface. In just a few steps you can write individual user permissions to a PITreader key using pre-configured templates. In the process, select whether you want to create users individually or integrate them using the import function and use the opportunity to directly input information into the integrated database.

PITreader web server

The integrated web server enables simple programming of the PITreader key transponder key with user data and permissions as well as all additional important PITreader settings directly at the device. Commissioning of the PITreader, configuration of interfaces and, where applicable, connection with the OPC UA server are thus completed quickly.

system PITmode

PITmode flex	PITmode flex visu	PITreader stand alone
		
▸ Access permission system ▸ Functional safe operating mode selection up to PL d	▸ Access permission system ▸ Functional safe operating mode selection up to PL d	▸ Access permission system
Integrated & flexible with buttons	Integrated & flexible with visualisation	Compact
Operating mode selection with: ▸ 8 operating modes ▸ 10 working areas	Operating mode selection with: ▸ 8 operating modes ▸ 10 working areas	Security for access permission for HMI, process and gate safeguarding
Operation with Pilz FS controller for access permission and operating mode selection	Operation with Pilz FS controller for access permission and operating mode selection	Connection to PLC and HMI systems
Software block integrated in Pilz FS controller (PNOZ m B1 & PSSu PLC)	Software block integrated in Pilz FS controller (PNOZ m B1 & PSSu PLC)	-
▸ PIT oe 4S ▸ 3rd party pushbutton	Touch-operated input tile in PASvisu	-

User Authentication Service (UAS)

If you are using several PITreaders, the User Authentication Service (UAS) is the organisational service for your PITreaders. This enables the connection of management systems with the physical access systems. The UAS has a central user authorisation database for transponder key users and enables the import and assignment of data from the “PIT Transponder Manager” (PTM) or even the distribution of block lists to all PITreaders. It is also possible to view the current status of all PITreaders and have a diagnostic list shown.

Keep up-to-date on operating mode selector switches PITmode:

Webcode: web150439

Online information at www.pilz.com

Selection guide – PITmode

Operating mode selection and access permission system PITmode

PIT m3.2p machine tools pictogram

PIT m3 key2hq mode service

PITreader base unit

PITreader card unit

PITreader key adapter h

PIT m4SEU

Type	Technical features
PIT m3.2p	Operating mode selector switch: keys with digits
PIT m3.2p machine tools pictogram	Operating mode selector switch: keys with digits and pictograms for machine tools
PIT m3.3p	Operating mode selector switch: keys with digits
PIT m3.3p machine tools pictogram	Operating mode selector switch: keys with digits and pictograms for machine tools
PIT m3 key2 mode 1, 2, 3, 4	Transponder key
PIT m3 key2 mode service	Transponder key, service function
PIT m3 key2hq mode 1, 2, 3, 4	Transponder key, high quality
PIT m3 key2hq mode service	Transponder key, high quality, service function
PIT m3.1p terminal set spring load	Spring-loaded terminals
PIT m3.2p terminal set spring load	Spring-loaded terminals
PIT m3.2p screw terminal set angled	Screw terminals, angled
PIT m3.2p screw terminal set	Screw terminals, straight
PITmode fusion	Bundled authentication and functionally safe operating mode selection system
PITreader base unit	Authentication system via RFID reader, base unit
PITreader S base unit	Authentication system via RFID reader with extended function range, base unit – required accessories: PITreader key adapter
PITreader card unit	Authentication system via RFID reader for transponder cards, stickers & keys Contents: base unit, connector, PITreader card adapter
PITreader S card unit	Authentication system via RFID reader with extended function range for transponder cards, stickers & keys Contents: base unit, connector, PITreader card adapter
PITreader key adapter h	▸ 1 x PITreader horizontal key adapter ▸ 1 x nut
PITreader connector spring load	Connector for RFID authentication system: PITreader (402 255)
PIT m4SEU	PITmode safe evaluation unit
PIT m4SEU terminal set spring load	Connector set for safe evaluation unit for operating mode selection: PIT m4SEU (402 250)

	Dimensions (H x W x D) in mm	Certification	Order number
	55 x 98 x 42.3	FCC, TÜV, cULus Listed	402230
	55 x 98 x 42.3	FCC, TÜV, cULus Listed	402231
	55 x 98 x 42.3	FCC, TÜV, cULus Listed	402240
	55 x 98 x 42.3	FCC, TÜV, cULus Listed	402241
▸ Permission 1 ▸ Permission 2 ▸ Permission 3 ▸ Permission 4	-	FCC, TÜV, cULus Listed	▸ 402281 ▸ 402282 ▸ 402283 ▸ 402284
	-	FCC, TÜV, cULus Listed	402285
▸ Permission 1 ▸ Permission 2 ▸ Permission 3 ▸ Permission 4	-	FCC, TÜV, cULus Listed	▸ 402291 ▸ 402292 ▸ 402293 ▸ 402294
	-	FCC, TÜV, cULus Listed	402295
1 set for PIT m3.1p	-	-	402301
1 set for PIT m3.2p	-	-	402302
1 set for PIT m3.2p	-	-	402303
1 set for PIT m3.2p	-	-	402305
▸ PITreader base unit (402255) ▸ PIT m4SEU (402250) ▸ PITreader key adapter h (402308) ▸ Connector set (402306)	72.5 x 45 x 45 [1]	CE, cULus Listed	402251
Required accessories: PITreader key adapter	72.5 x 45 x 35	CE, cULus Listed	402255
	72.5 x 45 x 35	CE, cULus Listed	402256
		CE, cULus Listed	402320
		CE, cULus Listed	402321
Required accessories for PITreader base unit (402255)	-	CE, cULus Listed	402308
Comprising 1 x 5-pin female connector strip in spring force version, straight cable outlet	-	CE, cULus Listed	402307
	90.5 x 90 x 25	CE, TÜV, cULus Listed	402250
Comprising 1 x 4-pin, 1 x 5-pin, 1 x 8-pin and 1 x 12-pin female connector strip in spring force version, straight cable outlet	-	CE, cULus Listed	402306

[1] Mounting depth to the face of the front plate

Keep up-to-date on operating mode selector switches PITmode:

Webcode: web150439

Online information at www.pilz.com

Selection guide – PITmode

Operating mode selection and access permission system PITmode

PITreader key ye g ye

PITreader key ye g bl

PITreader key ye g gn

PITreader key ye g rd

PITreader card g

PITreader sticker ye g

Type	Technical features
PITreader nut set	10 x nuts for PITreader key adapter
PITreader key ye g	Generic transponder key for PITreader, yellow plastic, freely configurable
PITreader key ye g ye	Generic transponder key for PITreader, yellow plastic, freely configurable
PITreader key ye g wt	Generic transponder key for PITreader, white plastic, freely configurable
PITreader key ye g bl	Generic transponder key for PITreader, blue plastic, freely configurable
PITreader key ye g bk	Generic transponder key for PITreader, black plastic, freely configurable
PITreader key ye g gn	Generic transponder key for PITreader, green plastic, freely configurable
PITreader key ye g rd	Generic transponder key for PITreader, red plastic, freely configurable
PITreader key ye 1, 2, 3, 4, 5	Transponder key for PITreader, yellow plastic
PITreader key ye 5 service	Transponder key for PITreader, yellow plastic, authorisation 5 = service function
PITreader card g	Generic transponder key for PITreader card, freely configurable
PITreader card ye 1, 2, 3, 4, 5	Transponder card for PITreader card
PITreader card ye 5 service	Transponder card for PITreader, authorisation 5 = service function
PITreader sticker ye g	Generic transponder sticker for PITreader card, freely configurable
PITreader sticker ye 1, 2, 3, 4, 5	Transponder sticker for PITreader card
PITreader sticker ye 5 service	Transponder sticker for PITreader, authorisation 5 = service function
PITreader card cap	Silicone cap for PITreader (S) card as spare part
PIT es wrench	PITestop installation wrench for PIT es pushbutton and PITreader

	Certification	Order number
	CE, cULus Listed	402310
	CE, cULus Listed	402260
	CE, cULus Listed	402260YE
	CE, cULus Listed	402260WT
	CE, cULus Listed	402260BL
	CE, cULus Listed	402260BK
	CE, cULus Listed	402260GN
	CE, cULus Listed	402260RD
▸ Permission 1 ▸ Permission 2 ▸ Permission 3 ▸ Permission 4 ▸ Permission 5	CE, cULus Listed	▸ 402261 ▸ 402262 ▸ 402263 ▸ 402264 ▸ 402265
	CE, cULus Listed	402269
	CE, cULus Listed	402330
▸ Permission 1 ▸ Permission 2 ▸ Permission 3 ▸ Permission 4 ▸ Permission 5	CE, cULus Listed	▸ 402331 ▸ 402332 ▸ 402333 ▸ 402334 ▸ 402335
	CE, cULus Listed	402339
	CE, cULus Listed	402340
▸ Permission 1 ▸ Permission 2 ▸ Permission 3 ▸ Permission 4 ▸ Permission 5	CE, cULus Listed	▸ 402341 ▸ 402342 ▸ 402343 ▸ 402344 ▸ 402345
	CE, cULus Listed	402349
	-	402322
	-	400222

Keep up-to-date on operating mode selector switches PITmode:

Webcode: web150439

Online information at www.pilz.com

Manually operated control device PITjog

The manually operated control device PITjog can be used as an enabling switch. For example it is used when processes within the plant or machine's danger zone are being monitored while the safety gate is open.

PIT js2

Safe within the danger zone

In contrast to a conventional enabling switch, both hands are required to operate the PITjog. Access to the danger zone using one hand, whether by carelessness or accident, is prevented. Additional protection measures may be required depending on the result of the risk analysis.

The complete solution

Add the final touch to your solution! Allow staff to work safely within the danger zone of your plant or machine in conjunction with approved evaluation devices from Pilz:

- Two-hand control devices P2HZ
- Safety relay PNOZ s6
- Safety relay PNOZ e2.1p
- Two-hand module from the configurable safe small controllers PNOZmulti 2
- Control systems of the automation system PSS 4000

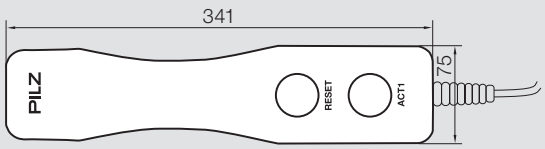
Selection guide – manually operated control device PITjog

PIT js holder

Type	Method	Operating voltage	Ambient temperature
PIT js2	Manually operated control device, 3 installed buttons (ACT1, ACT2 and Reset)	24 VAC/DC	–10 °C … +55 °C
PIT js2 bc	Manually operated control device, 2 installed buttons (ACT1 and ACT2) and 1 blind plug	24 VAC/DC	–10 °C … +55 °C
PIT js holder	Wall holder for PIT js2	-	-

The optimum solution: two-hand monitoring with the manually operated control device PITjog and the safety relay PNOZ s6.

Dimensions (mm)



Protection type	Dimensions (H x W x D) in mm	Housing material	Coiled cable (10-core) Length	Order number
IP65	341 x 75 x 60	PC-ABS blend UL 94V0	5 m	401 100
IP65	341 x 75 x 60	PC-ABS blend UL 94V0	5 m	401 101
-	310 x 83 x 71.5	Rust-proof steel	-	401 200

Keep up-to-date on the manually operated control device PITjog:

Webcode: web150437

Online information at www.pilz.com

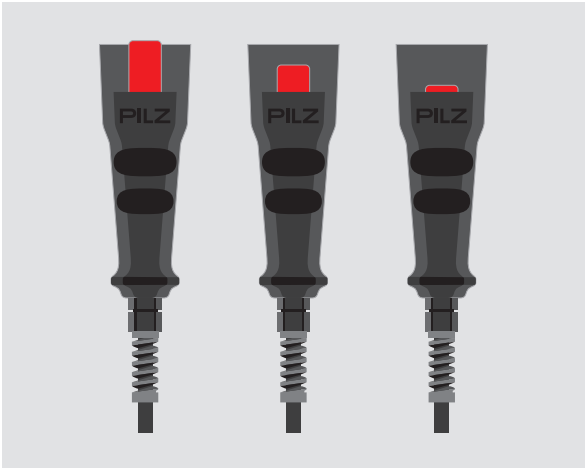
Enabling switches PITenable

Safe setup and maintenance with one hand – the enabling switch PITenable is a manually operated control device. It is used when working inside the danger zone of a plant or machine, when the effect of the safeguard has to be suspended, e.g. during setup or maintenance. The three stages allow the PITenable to be operated with one hand.

PIT en1.0p-5m-s

Three-fold safe enabling, off-on-off

It is operated in three stages: in stage 1, the switch is not operated. The machine runs with the safety functions activated. Stage 2 activates the enabling function; the switch is in its middle setting. The machine runs while the protective effect of the movable guards is suspended. Stage 3 is a protective function which brings the machine to a standstill if the switch is suddenly released or fully depressed. This function protects the operator, should he overreact in a shock situation.



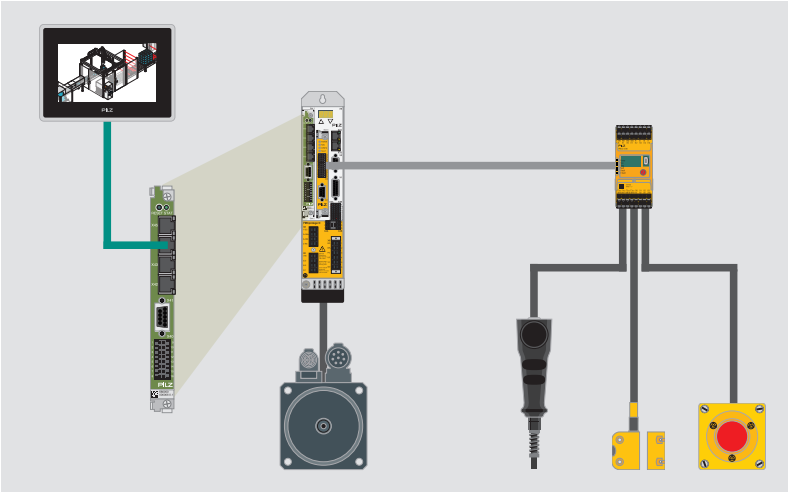
3-stage enabling switch: off-on-off.

Selection guide – enabling switch PITenable

PIT en1.0

Type	Method	Connection
PIT en1.0p-5m-s	Enabling switch, 3-stage	Connector, M12, 5-pin
PIT en1.1a-5m-s	Enabling switch, 3-stage	Open coiled cable
PIT en1.0a-5m-s	Enabling switch, 3-stage	Open cable
PIT en1.0 holder	Wall holder for PIT en	-

Safety with the approved all-in-one solution: to evaluate the PITenable, Pilz provides the configurable safe small controllers PNOZmulti 2 and the control systems of the automation system PSS 4000.

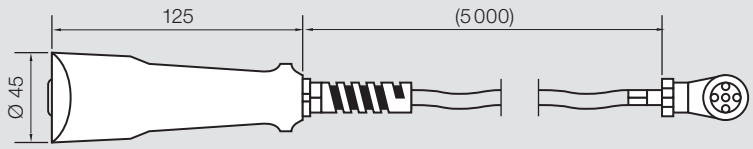


The safe, all-in-one solution with safe control and drive technologies.

Your benefits at a glance

- Ability to work safely inside a plant or machine's danger zone
- Easy to monitor processes with the safety gate open
- Flexible one-handed operation thanks to 3-stage enabling switch
- Operator is protected should they overreact due to shock or panic
- Ergonomically moulded housing for comfortable operation
- Maintenance-free

Dimensions (mm)



Technical features	Order number
Colour: black	401 110
Operating temperature: 0 °C … +50 °C	401 112
Front protection type: IP65	401 111
Electrical life: min. 100 000 cycles	401 201
Operating voltage/current: 125 VAC/0.3 A or 30 VDC/0.7 A	
Housing material: polypropylene	
Length of connection cable: 5 m	
Safety-related characteristic data: B_{10d} 100 000 operations	

Keep up-to-date on enabling switch PITenable:

Webcode: web150440

Online information at www.pilz.com

Operation elements PIToe

The compact operation elements PIToe are versatile when it comes to the operation of your plants. The control and signal devices are suitable for mounting cutouts with a diameter of 22.5 mm and have anti-twist protection in accordance with EN 60947-5-1. Thanks to their compact design, they can be perfectly integrated into the design of your plant and machinery and are ideal for installation or retrofitting in consoles, panels or command housings.

PIT oe 4S

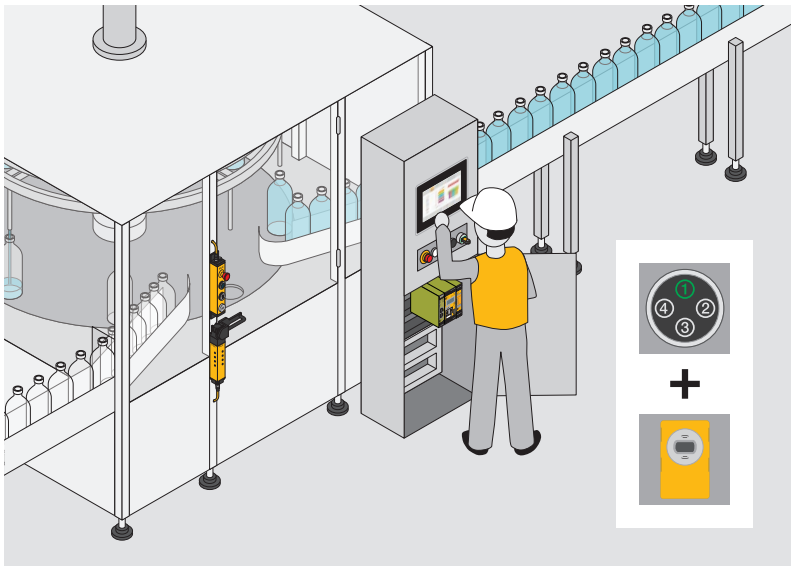

PIT oe USB

Operation element PIT oe 4S
PIT oe 4S is a compact pushbutton unit with four LED buttons for switching and displaying digital inputs and outputs. In combination with PITreader, this is ideally suited for operating mode selection. Following successful authorisation via RFID key, with corresponding permission up to five different operating modes can be selected (buttons 1–4, service is activated by pressing and holding button 1). The current selection is shown via an illuminated LED.

Operation element PIT oe USB
The activatable USB 2.0 host interface of the PIT oe USB enables the manipulation-proof import of programs, export of data and connection of a keyboard or mouse. The USB port is activated via a 24 V signal and the “ready” status is indicated via LED ring. In combination with PITreader, activation is only possible with corresponding permission. This ensures that only authorised personnel is allowed access. When not in use, a cover protects the compact and robust operation element according to IP65.

Selection guide – Operation elements PIToe

Type	Technical features
PIT oe 4S	Pushbutton unit with 4 LED buttons, including fixing nut
PIT oe USB	Activatable USB port
PIT oe USB sealing cap	1 x protective cap for PIT oe USB as spare part
PIT oe USB connector spring load	Terminal block for PIT oe USB as spare part ▸ Comprising 1 x 7-pin female connector strip in spring force version ▸ Straight cable outlet



Safe operating mode selection with PITreader and PIT oe 4S.

Your benefits at a glance

- Compact operation elements for switching and displaying digital inputs and outputs or connecting USB devices
- Suitable for 22.5 mm mounting cutouts in accordance with EN 60947-5-1
- Illuminated display in LED technology
- Is seamlessly integrated into the design of your control consoles
- Ideal supplement for access permission and operating mode selection solutions from Pilz

Certification	Order number
CE, cULus Listed	402311
CE, cULus Listed	402313
-	402317
-	402316

Keep up-to-date on the operation elements PITtoe:

Webcode: web225176

Online information at www.pilz.com

Muting lamps PITsign

Muting is the temporary, automatic suspension of a safety function during a machine's normal operation. It is mostly required when transporting material into or out of a danger zone. Visually indicate when protective devices are interrupted and thus warn persons against accidentally or deliberately entering hazardous areas. Muting lamps PITsign are specially designed for this purpose. They illuminate as soon as muting mode is started.

PIT si3.1 indicator light unit

PIT si 1.2 muting lamp self monitoring

Safe signals where they are needed

Use muting lamps PITsign wherever access to machinery or machine parts is secured through optoelectronic protective devices. Use our light barriers PSENopt and muting lamps! You will get the perfect solution for handling and loading stations in which protective devices are interrupted for a short time. All advanced light barriers offer extended functionality such as muting, blanking and cascading. When the material moves through the gate, the light barrier is interrupted for a short time and the muting lamp comes on to prevent people from entering the hazardous area. Accessories range from deviating mirrors, post protectors for shock, collision and vibration protection, protective IP6k9k housing through to test rods.

- Machine or robot cells
- Laser welding plants
- Plants in the automotive industry

Selection guide – Muting lamps PITsign

Type	Technical features
PIT si3.1 indicator light unit	Indicator light unit red, yellow, green including LED, mounting base, (tube 250 mm)
PIT si 1.1 muting lamp	Muting lamp including light bulb and wall holder
PIT si2.1 LED muting lamp	LED muting lamp including LED and wall holder
PIT si 1.2 muting lamp self monitoring	Muting lamp in accordance with EN 61496 including light bulb and wall holder, continuous beacon with option for monitoring
PITsign 7W replacement bulb	PITsign replacement lamp 7 W for PIT si1.1 and PIT si1.2

PITsign in use on the SmartFactory application.

Your benefits at a glance

- Either as components for monitoring muting functions or as a complete solution in conjunction with other Pilz products
- Increased safety for human and machine as the muting status is signalled
- Smooth production within muting areas
- Complete solution in conjunction with approved evaluation devices
- Safe, error-free control of the muting lamps
- Reliable monitoring of the lamp function

	Certification	Order number
U_B = 24 VDC, housing protection type: IP65, for signalling various operating and plant statuses	CE, cULus Listed, UKCA	581190
U_B = 24 VDC/5 W/300 mA, housing protection type: IP65, diameter: 100 mm, height: 138.5 mm, signal lamp for muting mode	CE, cULus Listed, UKCA	620010
U_B = 24 VDC/4 W/< 200 mA, housing protection type: IP65, diameter: 90 mm, height: 125 mm, signal lamp for muting mode	CE, cULus Listed, UKCA	620015
U_B = 24 VDC/7 W/500 mA, 2 semiconductor outputs to monitor the function, housing protection type: IP65, diameter: 100 mm, height: 138.5 mm, signal lamp for muting mode	CE, cULus Listed, UKCA, TÜV	620020
	-	620100

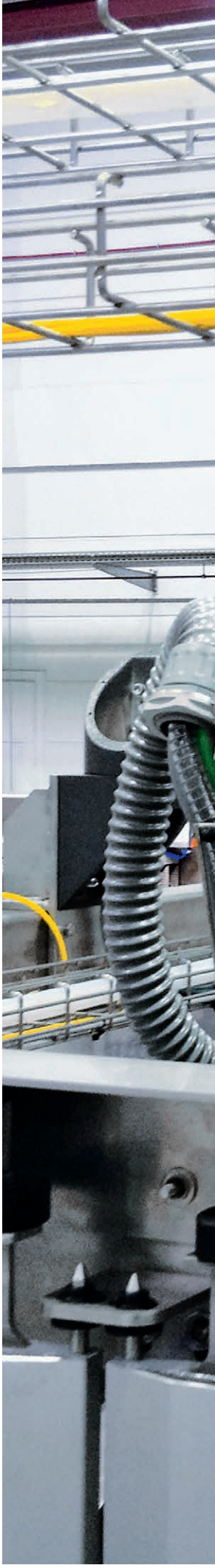
Keep up-to-date on PITsign muting lamps:

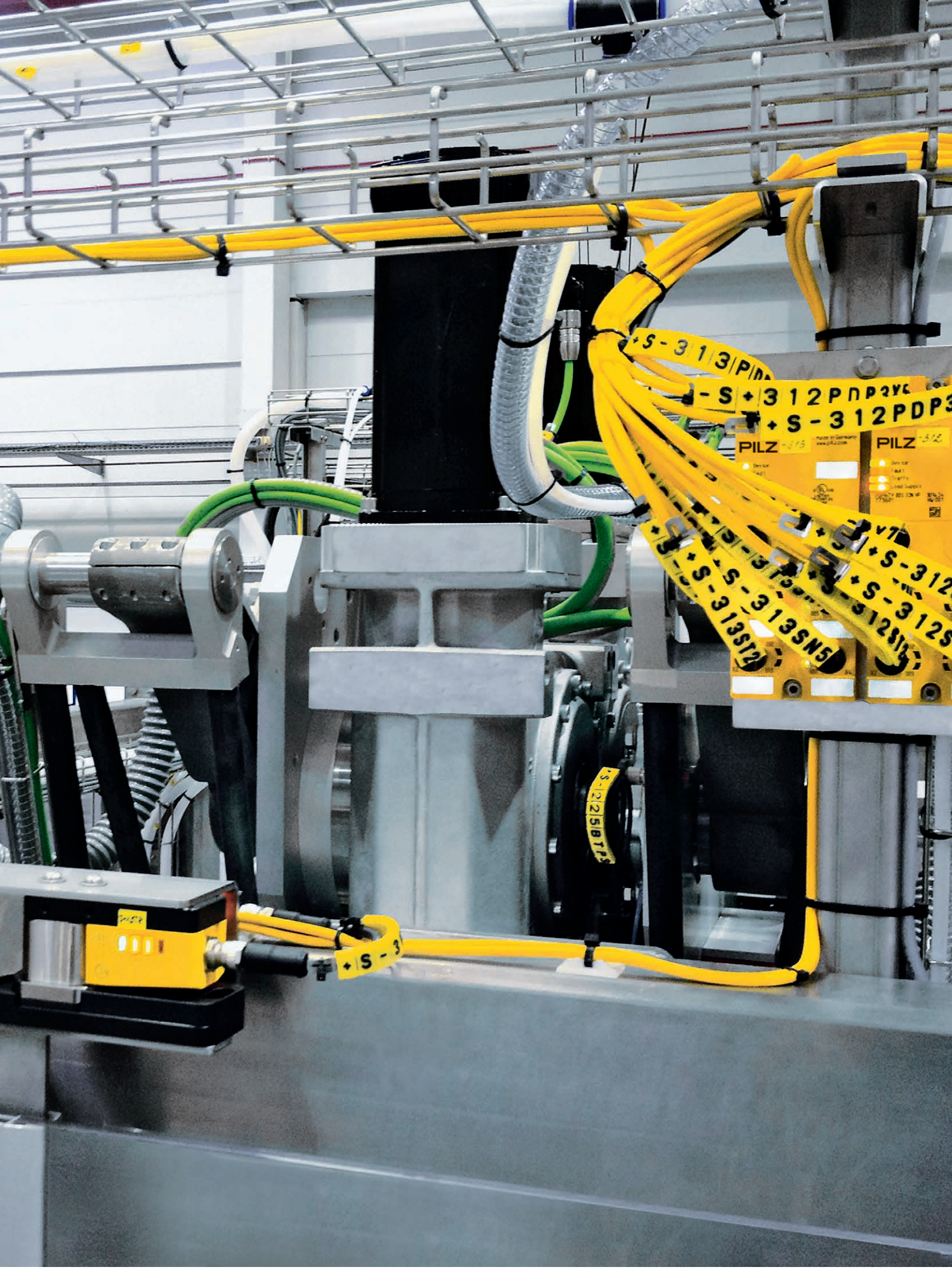
Webcode: web150441

Online information at www.pilz.com

Cable accessories for PSEN sensor technology

We offer not only a comprehensive portfolio of safety sensors, but also a variety of compatible cable accessories and decentralised modules. These make it possible for you to enjoy the expanded functionalities as well as series connection of our Pilz products. Select the appropriate cable accessories to meet your requirements and assemble your own individual system solution.




PILZ
PILZ

Decentralised modules PDP67

With PDP67 modules you can achieve a high level of decentralisation. The digital input module PDP67 F 8DI ION forwards signals from the sensors connected decentrally in the field to various evaluation units, e.g. PNOZmulti 2, PNOZmulti Mini and PNOZmulti. Using PDP67 modules up to 64 sensors can be connected to the evaluation units.

PDP67 F 8DI ION

PDP67 F 8DI ION PT

PDP67 F 4 code

PDP67 – economical and safe
Integrated in dirt and water-repellent IP67 housings, the PDP67 modules can also be used where there are high demands on hygiene. The decentralised modules optimise the installation and wiring effort – saving you time, money and space in the control cabinet. PDP67 modules with stainless steel threads satisfy the requirements of the food industry.

Digital data transfer
The digital input modules PDP67 F 8DI ION and PDP67 F 8DI ION PT forward signals from the sensors connected decentrally in the field to various evaluation units. These can be, for example, PNOZmulti 2, PNOZmulti Mini and PNOZmulti. Up to 64 sensors can be connected.

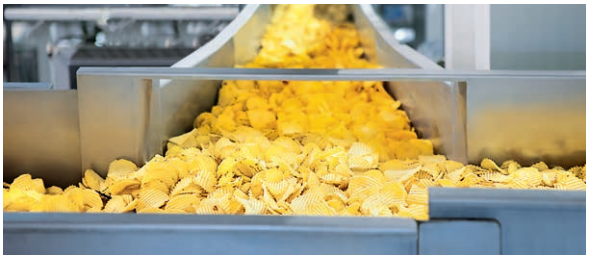
Decentralised and passive – decentralised safety
The passive junction PDP67 F 4 code enables the connection of up to four sensors PSENslock or PSENini. In addition to the possibility of connection to the configurable control systems PNOZmulti, PNOZmulti Mini and PNOZmulti 2, the PNOZsigma safety relays are also available.

Versatile automation architectures are possible due to the possibility of connection to various evaluation units.

Keep up-to-date on decentralised modules PDP67:

Webcode: web150450

Online information at www.pilz.com



PDP67 PN 6FDI 6FDIO 2FDOTP

Decentralised safety for PROFINET/PROFIsafe

The new PDP67 PN with PROFINET/PROFIsafe interface can be integrated in any PROFINET/PROFIsafe networks and thus also in the same network with the remote I/O system PSSuniversal 2 from Pilz. Thanks to universal connections that can be configured as both safe inputs and outputs, users only need to stock one unit type.

Your benefits at a glance

- Compatible with various third-party devices through the PROFINET/PROFIsafe interface
- Flexible configuration of the connections as safe inputs or outputs
- Great potential savings with wiring, as connection of a sensor to the PDP67 module replaces the entire input wiring to the control cabinet
- Protection type IP67: robust from –30 °C to +70 °C thanks to die cast zinc housing
- AIDA pinning (Automation Initiative of German Domestic Automobile Manufacturers)

Technical details – modules for alternative connection options for sensors

PDP67 F 8DI ION PT

PDP67 Connector cs

Type	Features	Safety	Certification	Order number
PDP67 F 8DI ION	Decentralised input module for PNOZmulti 2, PNOZmulti Mini and PNOZmulti	▸ PL e of EN ISO 13849-1 ▸ SIL CL 3 of EN IEC 62061	BG, CE, TÜV, cULus Listed	773600
PDP67 F 8DI ION VA			BG, CE, TÜV, cULus Listed	773614
PDP67 F 8DI ION PT			BG, CE, cULus Listed	773616
PDP67 F 8DI ION HP	Decentralised input module for ▸ PNOZmulti 2, PNOZmulti Mini and PNOZmulti ▸ High power ▸ Additional supply voltage for PSENslock and PSENopt		BG, CE, TÜV, cULus Listed	773601
PDP67 F 8DI ION HP VA			BG, CE, TÜV, cULus Listed	773615
PDP67 F 4 code	Passive junction PSENcode		CE, cULus Listed	773603
PDP67 F 4 code VA			CE, cULus Listed	773613
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with protection type IP67 and PROFINET/PROFIsafe		CE, UKCA, EAC, TÜV	4R000001
PDP67 Connector cs	Adapter for connection cable to evaluation unit	-	-	773610
PDP67 Connector cs VA			-	773612

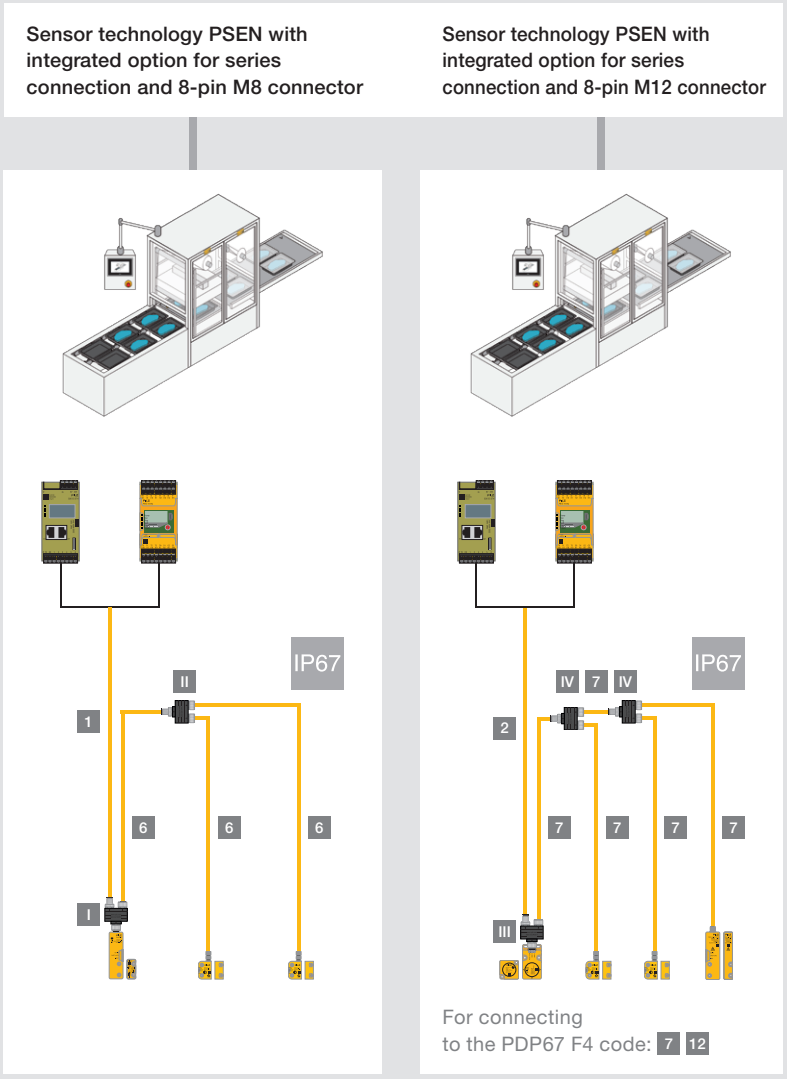
Cable accessories for sensor technology PSEN®

Safe, complete solutions

The sensor technology PSEN product area includes an extensive portfolio of accessories in addition to devices for position monitoring, safety switches, safety gate systems, light curtains and safe camera systems.

Pilz products can be connected in series and are 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.

Select the appropriate accessories to meet your requirements and assemble your own individual system solution.

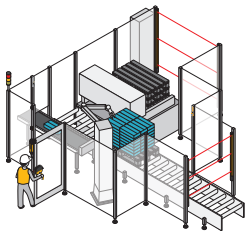


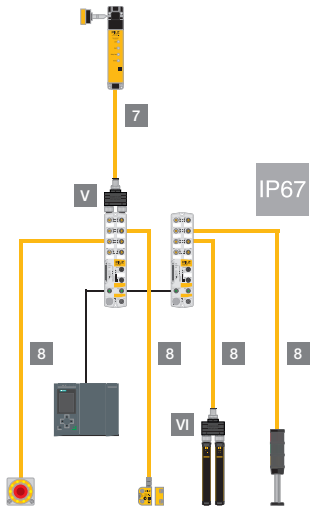
Type code for cable accessories

PSEN cable M8-8sf

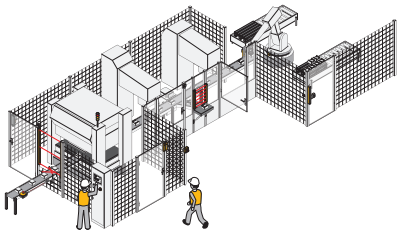
Product area Pilz SENsors	Diameter of thread	Number of pins	Connector design	Connector type
Cable	**M8 8 mm** M12 12 mm	4 4-pin 5 5-pin **8 8-pin**	**s Straight** a Angled	m Pin connector (male) **f Socket (female)**

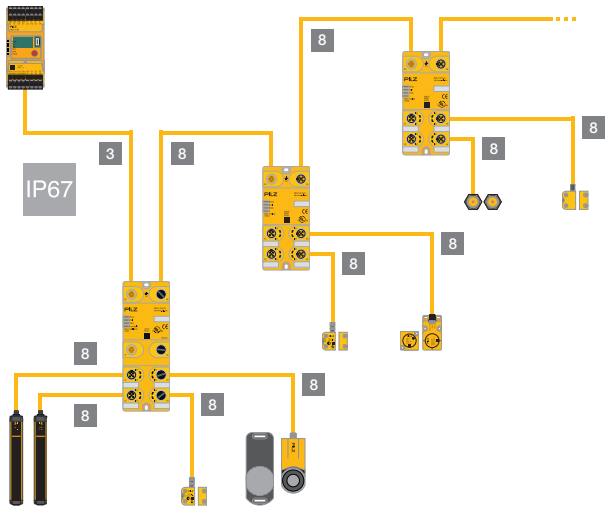
Sensor technology PSEN connected to PDP67 PN 6FDI 6FDIO 2FDOTP





Sensor technology PSEN with M12, 5-pin connector (n-type) for PDP67 F 8DI ION and PNOZmulti 2





For the connection of p-type sensors, the respective adapters are also required: 9 10 11

1 M8, 8-pin, socket, straight/angled, open-ended (pages 176, 184)

2 M12, 8-pin, socket, straight/angled, open-ended (pages 176, 184, 192)

3 M12, 5-pin, socket, straight/angled, open-ended (pages 176, 180, 184, 192)

4 M8, 4-pin, socket, straight/angled, open-ended (page 184)

5 M12, 4-pin, socket, straight, open-ended (pages 180, 192)

6 M8, 8-pin, socket, plug, straight (page 176)

7 M12, 8-pin, socket, plug, straight (pages 176, 178)

8 M12, 5-pin, socket, plug, straight/angled (pages 178, 180, 186, 194)

9 PSEN ma adapter (pages 180, 186, 206)

10 PSEN cs adapter (pages 178, 206)

11 PSEN sl adapter (page 178)

12 PSS67/PDP67 cable M12-8sm (page 178)

I PSEN Y junction M8 SENSOR (page 176)

II PSEN Y junction M8 cable channel (page 176)

III PSEN Y junction M12 SENSOR (page 176)

IV PSEN Y junction M12 cable channel (page 176)

V Adapter/ML/M12-5SMX/M12-5SMX/M12-8SFX/XX (page 190, 206)

VI PSEN opII Y junction M12-M12/M12 (page 194)

Selection guide – Cable for PSENcode and PSENslock

PSENcode

PSENslock

PSENcode and PSENslock – cable selection for connection to any evaluation device

PSEN cable M8-8sf

	Type	Description	Cable drag chain capability
1	**PSEN cable M8-8sf**	Connection cable, PUR, cable cross section 0.14 mm²	◆
2	**PSEN cable M12-8sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
2	**PSEN cable M12-8af**	Connection cable, PUR, cable cross section 0.25 mm²	◆
3	**PSEN cable M12-5sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
3	**PSEN cable M12-5af**	Connection cable, PUR, cable cross section 0.25 mm²	◆

PSENcode and PSENslock – cable selection for series connection

PSEN Y junction M8-M12/M12 PIGTAIL

PSEN cable M8-8sf M8-8sm

PSEN Y junction M12 cable channel

PSEN Y junction M8 SENSOR

	Type	Description
	PSEN Y junction M8-M12/M12 PIGTAIL	Y-connector with pigtail
	PSEN Y junction M12-M12/M12 PIGTAIL	Y-connector with pigtail
	PSEN T junction M12	Diagnostic connector
6	**PSEN cable M8-8sf M8-8sm**	Extension cable
6	**PSEN cable M8-8sf M8-8sm**	Extension cable
6	**PSEN cable M8-8sf M8-8sm**	Extension cable
7	**PSEN cable M12-8sf M12-8sm**	Cable
III	**PSEN Y junction M12 SENSOR**	Y-connector
IV	**PSEN Y junction M12 cable channel**	Y-connector
I	**PSEN Y junction M8 SENSOR**	Y-connector
II	**PSEN Y junction M8 cable channel**	Y-connector
	PSEN converter M8-8sf M12-8sm	Adapter
	PSEN ix2 F4 code	Multiple interface IP20
	PSEN ix2 F8 code	Multiple interface IP20

Connections	Certification	Order number (by length)					
		2 m	3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M8, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	533150	-	533151	533152	533153	533154
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540319	540320	540321	540333	540326
▸ Connection 1: angled, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540322	540323	540324	-	540325
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630310	630311	630312	630298	630297
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630347	630348	630349	-	630350

Features	Order number
Y-connector for PSENcode; input socket in M8, 8-pin and output plug (2 x) in M12, 8-pin	540337
Y-connector for PSENcode; input socket and output plug (2 x) in M12, 8-pin	540338
▸ When not using Safety Device Diagnostics ▸ PSENcode, PSENslock: signal output ▸ PSENslock: lock signal	540331
0.5 m, straight, M8, 8-pin, socket/plug	533155
1 m, straight, M8, 8-pin, socket/plug	533156
2 m, straight, M8, 8-pin, socket/plug	533157
5 m (see table below for additional cable lengths)	540341
Y-connector for PSENcode for direct connection to sensor; input socket, output socket and output plug in M12, 8-pin	540315
Y-connector for PSENcode for cable outlet in the cable duct; input plug and output sockets in M12, 8-pin	540316
Y-connector for PSENcode for direct connection to sensor; input socket, output socket and output plug in M8, 8-pin	540317
Y-connector for PSENcode for cable outlet in the cable duct; input plug and output sockets in M8, 8-pin	540318
Converter-adapter for PSEN with M8, 8-pin to M12, 8-pin	540329
For up to 4 sensors	535111
For up to 8 sensors	535112

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENcode and PSENslock

PSENcode

PSENslock

PSENcode and PSENslock – cable selection for connection to PDP67 F 4 code (passive junction)

PSEN cable M12-8sf

PDP67 F 4 code

	Type	Description	Cable drag chain capability
7	**PSEN cable M12-8sf M12-8sm**	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
12	**PSS67/PDP67 cable M12-8sm**	Connection cable for connecting PDP67 F4 code to any evaluation device, PUR, cable cross section 0.25 mm²	◆

Type	Description
PDP67 F 4 code	Passive junction for PSENcode
PSEN converter M8-8sf M12-8sm	Adapter

PSENcode and PSENslock – cable selection for connection to PDP67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

	Type	Description	Cable drag chain capability
8	**PSS67/PDP67 cable M12-5sf M12-5sm**	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
8	**PSS67/PDP67 cable M12-5af M12-5am**		◆

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralised periphery PNOZmulti
PDP67 F 8DI ION VA	Sensor junction box for decentralised periphery PNOZmulti with M12 thread in stainless steel
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection

	Type	Description
8	**PDP67 cable M12-5sf M12-5sm**	Extension cable
10	**PSEN cs adapter**	Adapter for connecting a PSEN cs to PSS67 and PDP67
11	**PSEN sl adapter**	Adapter for connecting an 8-pin PSENslock to a PDP67 with M12, 5-pin connections

Connections	Certification	Order number (by length)				
		2 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: straight, M12, 8-pin, plug	cULus Listed, CE, UKCA	540340	540341	540342	540343	540344
▸ Connection 1: straight, M12, 8-pin, plug ▸ Connection 2: open cable	cULus Listed, CE, UKCA	380700	380701	380702	380703	380704

Features	Certification	Order number
▸ Multiple interface PDP67, protection type IP67 ▸ Series connection up to PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	cULus Listed	773603
Converter-adapter for PSEN with M8, 8-pin to M12, 8-pin	cULus Listed	540329

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380208	380209	380210	380220	380211
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: angled, M12, 5-pin, plug	cULus Listed, CE, UKCA	380212	380213	380214	-	380215

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	DGUV, TÜV, cULus Listed	773616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	DGUV, TÜV, cULus Listed	773614
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001

Features	Certification	Order number
0.5 m, straight, 5-pin, plug/socket	cULus Listed, CE, UKCA	380710
1 m, straight, 5-pin, plug/socket	cULus Listed, CE, UKCA	380712
1.5 m, straight, 5-pin, plug/socket	cULus Listed, CE, UKCA	380711
2 m, straight, 5-pin, plug/socket	cULus Listed, CE, UKCA	380713
0.1 m: ▸ Connection 1: straight, M12, 8-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380301
0.1 m: ▸ Connection 1: straight, M12, 8-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380325

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENhinge

PSENhinge

PSENhinge – cable selection for connection to any evaluation device

PSEN cable M12-4sf

	Type	Description	Cable drag chain capability
5	**PSEN cable M12-4sf**	Connection cable, PUR, cable cross section 0.34 mm²	-
3	**PSEN cable M12-5sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
3	**PSEN cable M12-5af**	Connection cable, PUR, cable cross section 0.25 mm²	◆

PSENhinge – cable selection for connecting to PDP67

PSS67/PDP67 cable M12-5sf

	Type	Description	Cable drag chain capability
8	**PSS67/PDP67 cable M12-5sf M12-5sm** [1]	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
8	**PSS67/PDP67 cable M12-5af M12-5am** [1]		◆

[1] In addition, adapter 9 is required

PDP67 F 8DI ION PT

	Type	Description
9	**PSEN ma adapter**	Adapter for connecting a PSENmag or PSENhinge to PSS67 and PDP67

	Type	Description
	PDP67 F 8DI ION PT	Sensor junction box for decentralised periphery PNOZmulti
	PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	630300	630301	630302	-	630296
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	630310	630311	630312	630298	630297
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	630347	630348	630349	-	630350

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380208	380209	380210	380220	380211
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: angled, M12, 5-pin, plug	cULus Listed, CE, UKCA	380212	380213	380214	-	380215

Features	Certification	Order number
0.1 m: ▸ Connection 1: straight, M12, 4-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380300

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	DGUV, TÜV, cULus Listed, UKCA	773616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENmech, PSENrope

PSENmech

PSENrope

PSENmech and PSENrope – cable selection for connection to PDP67

PSS67/PDP67 cable

PDP67 F 8DI ION PT

Type	Description	Cable drag chain capability
PSS67/PDP67 cable	Sensors connection cable without M12 plug-in connector, PUR, cable cross section 0.25 mm²	◆
PSS67/PDP67cable M12-5sf M12-5sm	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
PSS67/PDP67cable M12-5af M12-5am	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralised periphery PNOZmulti
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection

PSENme5 – cable selection for connection to any evaluation device

PSEN cable M12-8sf

Type	Description	Cable drag chain capability
PSEN cable M12-8sf	Connection cable, PUR, cable cross section 0.25 mm²	◆
PSEN cable 200 m, 8x 0.25 mm²	8-core cable, cable cross section 0.25 mm², 200 m cable length	◆

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: open cable ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380705	380709	380706	380707	380708
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380208	380209	380210	380220	380211
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: angled, M12, 5-pin, plug	cULus Listed, CE, UKCA	380212	380213	380214	-	380215

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	DGUV, TÜV, cULus Listed	773616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001

Connections	Certification	Order number (by length)					
		3 m	5 m	10 m	20 m	30 m	200 m
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	540319	540320	540321	540333	540326	-
▸ Connection 1: open cable ▸ Connection 2: open cable	CE, UKCA	-	-	-	-	-	570793

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

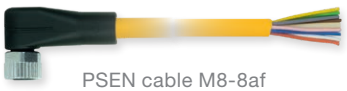
Selection guide – Cable for PSENmag

PSENmag

PSENmag

PSENmag – cable selection for connection to any evaluation device

PSEN cable M8-4sf



PSEN cable M8-8af

	Type	Description	Cable drag chain capability
4	**PSEN cable M8-4sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
4	**PSEN cable M8-4af**	Connection cable, PUR, cable cross section 0.25 mm²	◆
1	**PSEN cable M8-8sf**	Connection cable, PUR, cable cross section 0.14 mm²	◆
1	**PSEN cable M8-8af**	Connection cable, PUR, cable cross section 0.14 mm²	◆
2	**PSEN cable M12-8sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
2	**PSEN cable M12-8af**	Connection cable, PUR, cable cross section 0.25 mm²	◆
3	**PSEN cable M12-5sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆

PSENmag – accessory selection for series connection

PSEN ix1

Type	Description
PSEN ix1	Multiple interface (PSEN 1 series), protection type IP20
PSEN i1	Multiple interface (PSEN 2 series), protection type IP20

Connections	Certification	Order number (by length)					
		2 m	3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M8, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	533111	-	533121	533131	-	533141
▸ Connection 1: angled, M8, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	533110	-	533120	533130	-	533140
▸ Connection 1: straight, M8, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	533150	-	533151	533152	533153	533154
▸ Connection 1: angled, M8, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	-	-	533162	-	-
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540319	540320	540321	540333	540326
▸ Connection 1: angled, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540322	540323	540324	-	540325
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630310	630311	630312	630298	630297

Features	Certification	Order number
▸ Series connection up to PL c of EN ISO 13849-1, SIL CL 1 of EN IEC 62061 ▸ Can be used for connection to: PNOZsigma, PNOZpower, PNOZ X, PNOZmulti, PSS	cULus Listed, CE, UKCA, TÜV	535120
▸ Series connection up to PL c of EN ISO 13849-1, SIL CL 1 of EN IEC 62061 ▸ Can be used for connection to: PNOZelog, PNOZmulti, PSS	cULus Listed, CE, UKCA, TÜV	535110

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENmag

PSENmag

PSENmag

PSENmag – cable selection for connecting to PDP67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

	Type	Description	Cable drag chain capability
8	**PSS67/PDP67 cable M12-5sf M12-5sm**	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
8	**PSS67/PDP67 cable M12-5af M12-5am**		◆
	PSS67/PDP67 cable M8-4sf M12-5sm [1]		◆
	PSS67/PDP67 cable M8-4af M12-5am [1]		◆

[1] In addition, adapter 9 is required

	Type	Description
9	**PSEN ma adapter**	Adapter for connecting a PSENmag to PSS67 and PDP67

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralised periphery PNOZmulti
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection

PSENmag stainless steel – cable selection for connection to any evaluation device

PSEN cable M12-5sf/M12-5sm VA

Type	Description	Cable drag chain capability
PSEN cable M12-5sf/ M12-5sm VA	Connection cable, PVC (UL 105 °C), cable cross section 0.34 mm², ECOLAB	◆
PSEN cable M12-5sf VA	Connection cable, PVC (UL 105 °C), cable cross section 0.34 mm², ECOLAB	◆
PSEN cable M12-8sf VA	Connection cable, PVC (UL 105 °C), cable cross section 0.25 mm², ECOLAB	◆

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380208	380209	380210	380220	380211
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: angled, M12, 5-pin, plug	cULus Listed, CE, UKCA	380212	380213	380214	-	380215
▸ Connection 1: straight, M8, 4-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380200	380201	380202	-	380203
▸ Connection 1: angled, M8, 4-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380204	380205	380206	-	380207

Features	Certification	Order number
0.1 m: ▸ Connection 1: straight, M12, 4-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380300

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	773616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001

Connections	Certification	Order number (by length)	
		5 m	10 m
▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, socket ▸ Threaded ring made of stainless steel, IP69K, temperature: –5 °C … +105 °C	cULus Listed, CE, UKCA	533180	533181
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: open cable ▸ Threaded ring made of stainless steel, IP69K, temperature: –5 °C … +105 °C	cULus Listed, CE, UKCA	533170	533171
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable ▸ Threaded ring made of stainless steel, IP69K, temperature: –5 °C … +105 °C	cULus Listed, CE, UKCA	533190	533191

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

PSENmag

Selection guide – Cable for PSENmlock

PSENmlock

PSENmlock – cable selection for connection to any evaluation device

PSEN cable M12-12sf

Type	Description	Cable drag chain capability
PSEN cable M12-12sf	Connection cable, PUR, cable cross section 0.25 mm^2	-
PSEN cable M12-8sf	Connection cable, PUR, cable cross section 0.25 mm^2	◆

PSENmlock – cable selection for series connection

PSEN cable M12-12sf

Type	Description	Cable drag chain capability
PSEN cable M12-12sf M12-12sm	Connection cable, PUR, cable cross section 0.25 mm^2	-
PSEN cable M12-8sf M12-8sm	Connection cable, PUR, cable cross section 0.25 mm^2	◆

Connections	Certification	Order number (by length)						
		2 m	3 m	5 m	10 m	20 m	30 m	50 m
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: open cable ▸ Rated current: 2 A	cULus Listed, CE, UKCA	570350	570351	570352	570353	570354	570355	570356
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540319	540320	540321	540333	540326	-

Connections	Certification	Order number (by length)						
		1 m	2 m	3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: straight, M12, 12-pin, plug ▸ Rated current: 2 A	cULus Listed, CE, UKCA	570357	570358	570359	570360	570361	570362	-
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: straight, M12, 8-pin, plug	cULus Listed, CE, UKCA	-	540340	-	540341	540342	540343	540344

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENmlock

PSENmlock

PSENmlock – adapter selection for series connection

PSEN ml Y junction M12

PSEN ml end adapter

	Type	Description
	PSEN ml Y junction M12	Y-adapter for PSENmlock series connection
	PSEN ml end adapter	I-adapter, adapter for PSENmlock series connection, last adapter with the use of a 12-pin PSENmlock as the last sensor in the chain

PSENmlock – cable selection for connecting to PDP67

Adapter/ML/M12-5SMX/
M12-5SMX/M12-8SFX/XX

	Type	Description
V	**Adapter/ML/M12-5SMX/ M12-5SMX/M12-8SFX/XX**	Y-adapter for connecting PSENmlock to PDP67 PN 6FDI 6FDIO 2FDOTP
	PSEN ml/PDP67 Y junction PR	Y-adapter for connecting PSENmlock to PDP67 F 8DI ION or PDP67 PN 6FDI 6FDIO 2FDOTP, application with PSENmlock for process protection

PSEN ml/PDP67 Y junction PR

	Type	Description
	PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection
	PDP67 F 8DI ION HP	Decentralised input module for PNOZmulti

Features	Certification	Order number
▸ Connector X1: M12, 8-pin, male connector ▸ Connector X2: M12, 8-pin, female connector ▸ Connector X3: M12, 12-pin, female connector	CE, UKCA	570486
▸ Connector X1: M12, 12-pin, female connector ▸ Connector X2: M12, 8-pin, male connector	CE, UKCA	570487

Connections	Certification	Order number
0.2 m: ▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, plug ▸ Connection 3: straight, M12, 8-pin, socket	CE, UKCA	C1000059
0.2 m: ▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, plug ▸ Connection 3: straight, M12, 8-pin, socket	CE, UKCA	570491

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001
Multiple interface PDP67, protection type IP67, PL e of ISO 13849-1, SIL CL 3 of EN IEC 62061, high power: additional supply voltage	CE, cULus Listed, TÜV	773601

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENopt, PSENopt II

PSENopt

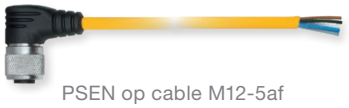
PSENopt

PSENopt II

PSENopt Advanced

PSENopt, PSENopt II and PSENopt Advanced – cable selection for connection to any evaluation device

PSEN op cable M12-4sf



PSEN op cable M12-5af

PSEN op cable axial M12 12-pole

	Type	Description	Cable drag chain capability
5	**PSEN op cable M12-4sf**	Connection cable, PUR, cable cross section 0.34 mm²	-
5	**PSEN op cable M12-4af**		-
3	**PSEN op cable M12-5sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
3	**PSEN op cable M12-5af**		◆
2	**PSEN op cable M12-8sf**	Connection cable, PUR, cable cross section 0.25 mm²	◆
2	**PSEN op cable M12-8af**		◆
	PSEN op cable M12-4sf shielded	Connection cable, PUR, cable cross section 0.34 mm², shielded	-
	PSEN op cable M12-4af shielded		-
	PSEN op cable M12-8sf shielded	Connection cable, PUR, cable cross section 0.25 mm², shielded	-
	PSEN op cable M12-8af shielded		-
	PSEN cable M12-12sf	Connection cable, PUR, cable cross section 0.25 mm²	-
	PSEN op cable axial M12 12-pole	Cable for light curtains PSENopt Advanced for connection to any evaluation device	◆

and PSENopt Advanced

Connections	Certification	Order number (by length)						
		2 m	3 m	5 m	10 m	20 m	30 m	50 m
▸ Connection 1: straight, M12, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630300	630301	630302	-	630296	630362
▸ Connection 1: angled, M12, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630341	630342	630343	-	630344	630363
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630310	630311	630312	630298	630297	630364
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630347	630348	630349	-	630350	630365
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540319	540320	540321	540333	540326	-
▸ Connection 1: angled, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	540322	540323	540324	-	540325	-
▸ Connection 1: straight, M12, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630303	630304	630305	-	630309	630366
▸ Connection 1: angled, M12, 4-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630306	630307	630308	-	630319	630367
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630313	630314	630315	-	630328	630368
▸ Connection 1: angled, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	630316	630317	630318	-	630329	630369
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	570350	570351	570352	570353	570354	570355	570356
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: open cable	cULus Listed	-	631080	631081	631082	631083	631084	631085

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENopt, PSENopt II

PSENopt

PSENopt

PSENopt II

PSENopt Advanced

PSENopt, PSENopt II and PSENopt Advanced – cable selection for connection to PDP67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

	Type	Description	Cable drag chain capability
8	**PSS67/PDP67 cable M12-5sf M12-5sm**	Sensor connection cable, PUR, cable cross section 0.25 mm²	◆
8	**PSS67/PDP67 cable M12-5af M12-5am**		◆

	Type	Description
	PSEN op 4F/H Receiver adapter	Adapter for connecting the receivers of the basic light curtains PSENop4F…/1 and PSENop4H…/1 to PDP67, cable length 0.1 m
VI	**PSEN opII Y junction M12-M12/M12**	Adapter for connecting the PSENopt II (sender and receiver) to a M12-Port (2FDI)
	PSEN op SL adapter	Adapter cable set for connecting a PSENopt slim to PDP67 F8 DI ION

Type	Description
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection
PDP67 F 8DI ION PT	Sensor junction box for decentralised periphery PNOZmulti
PDP67 F 8DI ION HP	Decentralised input module for PNOZmulti

PSENopt – accessory selection for cascadable safety curtains

PSEN op cable M12-4sf shielded

PSEN op cableset M12-4sf shielded

Type	Description	Cable drag chain capability
PSEN op cable axial M12-5sf shielded	Cable for cascading	-
PSEN op cable M12-4sf shielded	Cable for L-muting	-
PSEN op cableset M12-4sf shielded	Y-cable for T-muting	-

and PSENopt Advanced

Connections	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed, CE, UKCA	380208	380209	380210	380220	380211
▸ Connection 1: angled, M12, 5-pin, socket ▸ Connection 2: angled, M12, 5-pin, plug	cULus Listed, CE, UKCA	380212	380213	380214	-	380215

Connections	Certification	Order number
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	cULus Listed	380326
0.15 m ▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, socket ▸ Connection 3: straight, M12, 5-pin, socket	CE, UKCA	632511
0.1 m ▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, socket	CE, UKCA	631187

Features	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	DGUV, TÜV, cULus Listed	773616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061, high power: additional supply voltage	DGUV, TÜV, cULus Listed	773601

Connections	Order number (by length)		
	0.5 m	0.75 m	1 m
▸ Connection 1: shielded, straight, M12, 5-pin, socket ▸ Connection 2: shielded, straight, M12, 5-pin, socket	630280	-	630281
▸ Connection 1: shielded, straight, M12, 4-pin, socket ▸ Connection 2: shielded, angled, M12, 4-pin, socket	-	630282	-
▸ Connection 1: shielded, straight, M12, 4-pin, socket ▸ Connection 2: 2 x shielded, angled, M12, 4-pin, socket	630295	-	-

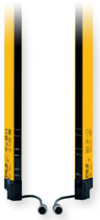
More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENopt Advanced

PSENopt Advanced



PSENopt slim

PSENopt Advanced – cable selection for muting, blanking and cascading

Type	Description
PSEN op Ethernet cable	Ethernet cable for PSEN op Advanced Programming Adapter (see page 114)

PSEN op cascading

Type	Description
PSEN op cascading	Cable for cascading

PSEN op pigtail receiver blanking

Type	Description
PSEN op pigtail emitter	Connection cable, transmitter
PSEN op pigtail receiver blanking	Connection cable, receiver, blanking
PSEN op pigtail receiver muting	Connection cable, receiver, muting

PSENopt slim – selection of adapter and cascading

PSEN op SL cascading

Type	Description
PSEN op SL cascading	Cable for cascading

PSEN op SL adapter

Type	Description
PSEN op SL adapter	2 adapters for connecting PSENopt slim to PDP67 (transmitter/receiver)

and PSENopt slim

Connections	Order number (by length)		
	1 m	3 m	10 m
▸ Connection 1: RJ45, 4-pin ▸ Connection 2: M12, 4-pin, plug, D-coded	631 071	631 072	631 073

Connections	Order number (by length)		
	0.05 m	0.5 m	1 m
▸ Connection 1: 18-pin, system connector ▸ Connection 2: 18-pin, system connector	631 058	631 059	631 060

Connections	Order number
	0.2 m
▸ Connection 1: 18-pin, system connector ▸ Connection 2: M12, 5-pin, plug	631 055
▸ Connection 1: 18-pin, system connector ▸ Connection 2: M12, 12-pin, plug	631 056
▸ Connection 1: 18-pin, system connector ▸ Connection 2: M12, 12 and 5-pin, plug	631 057

Connections	Certification	Order number (by length)		
		0.1 m	0.5 m	1 m
▸ Connection 1: system connector, 5-pin ▸ Connection 2: straight, M12, 5-pin, socket	-	631 183	631 184	631 185

Connections	Certification	Order number
		0.1 m
▸ Connection 1: straight, M12, 5-pin, socket ▸ Connection 2: straight, M12, 5-pin, plug	-	631 187

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENscan

PSENscan

PSENscan – cable selection

PSEN cable M12-8sf

Type	Description	Cable drag chain capability
PSEN cable M12-8sf	Connection cable for I/Os and supply voltage, PUR, cable cross section 0.25 mm²	◆
PSEN sc cable M12-17sf sh	Special connection cable Advanced PSENscan, 17-core, shielded	-
Cable/PN/RJ45-4SM/ M12-4SMX/D	Network connection cable, CAT5e, shielded, for industrial installation	-
PSEN cable M12-12sf	Connection cable, PUR, cable cross section 0.25 mm²	-
PSEN sc cable CAT5e M12-8sm/M12-8sm	Connection cable PSENscan Subscriber, Ethernet CAT5e, 8-core, shielded	-
PSEN op Ethernet cable	Network connection cable, CAT5e, shielded	-

Connections	Certification	Order number (by length)							
		1 m	2 m	3 m	5 m	10 m	20 m	30 m	50 m
▸ Connection 1: straight, M12, 8-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	-	540319	540320	540321	540333	540326	-
▸ Connection 1: straight, M12, 17-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	C1000063	-	C1000064	C1000065	C1000066	-	C1000067
▸ Connection 1: RJ45, 4-pin ▸ Connection 2: D-coded, M12, 4-pin, plug	cULus Listed, CE, UKCA	-	-	C1000001	C1000002	C1000003	C1000004	-	-
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	570350	570351	570352	570353	570354	570355	570356
▸ Connection 1: straight, M12, 8-pin, plug ▸ Connection 2: straight, M12, 8-pin, plug	CE, UKCA	6D000022	-	6D000023	6D000024	6D000025	6D000026	-	-
▸ Connection 1: RJ45, 4-pin ▸ Connection 2: D-coded, M12, 4-pin, plug	CE, UKCA	-	631072	-	631073	-	-	-	-

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PITgatebox and PSEN

PITgatebox

PSENradar

PITgatebox – cable selection

PSEN cable M12-12sf

Type	Description	Cable drag chain capability
PSEN cable M12-12sf	Connection cable, PUR, cable cross section 0.25 mm^2	-
Cable/PN/RJ45-4SM/ M12-4SMX/D	Network connection cable, CAT5e, shielded, for industrial installation	-

PSENradar – cable selection

Cable/CA/M12-5AFX/ M12-5AM/A/015/XXXX/SH

Type	Description	Cable drag chain capability
Cable/CA/M12-5AFX/ M12-5AM/A/015/XXXX/SH	Connection cable, PUR, twisted pair, shielded	-
Cable/CA/M12-5AFX/ A/005/XXXX/SH	Connection cable, PUR, twisted pair, shielded	-

Connector/CA/ M12-5SMX/A/TR

Type	Description
Connector/CA/ M12-5SMX/A/TR	Terminating resistor 120 Ω between pin 4 and pin 5, suitable for the CANopen interface

radar

Connections	Certification	Order number (by length)						
		2 m	3 m	5 m	10 m	20 m	30 m	50 m
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: open cable	cULus Listed, CE, UKCA	570350	570351	570352	570353	570354	570355	570356
▸ Connection 1: RJ45, 4-pin ▸ Connection 2: straight, M12, 4-pin, plug, D-coded	cULus Listed, CE, UKCA	-	C1000001	C1000002	C1000003	C1000004	-	-

Connections	Certification	Order number (by length)			
		3 m	5 m	10 m	15 m
▸ Connection 1: angled, M12, 5-pin, socket, A-coded, IP67/IP69K ▸ Connection 2: angled, M12, 5-pin, plug, A-coded, IP67/IP69K	cULus Listed, CE, UKCA	C1000047	C1000048	C1000049	C1000050
▸ Connection 1: angled, M12, 5-pin, socket, A-coded, IP67/IP69K ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	C1000044	C1000045	C1000046

Connection	Order number
Connection 1: straight, M12, 5-pin, plug, A-coded	C1000058

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for PSENvip, PSENenco

PSENvip 2

PSENenco

PSENvip 2 – cable selection for PSENvip 2 receiver

PSEN cable M12-4sm MIOsm

Type	Description
PSEN cable M12-4sm MIOsm	Connection cable for PSENvip 2 receiver
PSEN cable M12-4sm MIOsm MOVE recept	Connection cable for PSENvip 2 receiver, rear wall mounting

PSENenco – cable selection

PSEN cable M23-12sf

Type	Description
PSEN cable M23-12sf	Connection cable for PSEN enc sinos and PSEN enc HTL

Sensor technology PSEN – accessory selection for customisable plugs and sockets

PSEN/PDP67 M12-8sf screw terminals

PSEN/PDP67 M12-8sm screw terminals

Type	Description	Coding
PSS67 M12 connector M12-5sf	Connector socket	A
PSS67 M12 connector M12-5sm	Connector plug	A
PSS67 M12 connector M12-5af	Connector socket	A
PSS67 M12 connector M12-5am	Connector plug	A
PSEN/PDP67 M12-8sf screw terminals	Connector socket	A
PSEN/PDP67 M12-8sm screw terminals	Connector plug	A
PSS67 M12 connector, straight, male, 5 pole, B	Connector plug	B
PSS67 M12 connector, straight, female, 5 pole, B	Connector socket	B
PSS67 M12 connector, straight, female, 5 pin, L, S	Connector plug	L
PSS67 M12 connector, straight, male, 5 pin, L, S	Connector socket	L
PSS67 M12 connector, straight, male, 4 pin, D	Connector plug	D

and cable accessories PSEN®

Connections	Certification	Order number (by length)				
		5 m	8 m	10 m	15 m	20 m
▸ Connection 1: straight, M12, 4-pin, plug, D-coded ▸ Connection 2: Mini I/O	CE, UKCA	584568	584569	584570	584571	584572
▸ Connection 1: straight, M12, 4-pin, plug, D-coded ▸ Connection 2: Mini I/O	CE, UKCA	-	-	-	584573	-

Connections	Certification	Order number (by length)			
		5 m	10 m	20 m	30 m
▸ Connection 1: M23, 12-pin, socket ▸ Connection 2: open cable	CE,UKCA	6Z000005	6Z000006	6Z000007	6Z000008

Connections	Certification	Order number
▸ Connection 1: straight, M12, socket ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380309
▸ Connection 1: straight, M12, plug ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380308
▸ Connection 1: angled, M12, socket ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380311
▸ Connection 1: angled, M12, plug ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380310
▸ Connection 1: straight, M12, socket ▸ Connection 2: screw terminal suitable for 8-core cable, max. 0.5 mm²	cULus Listed	540332
▸ Connection 1: straight, M12, plug ▸ Connection 2: screw terminal suitable for 8-core cable, max. 0.5 mm²	cULus Listed	540334
▸ Connection 1: straight, M12, plug, 5-pin, B-coded ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380312
▸ Connection 1: straight, M12, socket, 5-pin, B-coded ▸ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm²	cULus Listed	380313
▸ Connection 1: straight, M12, plug, 5-pin, L-coded, shielded ▸ Connection 2: crimp terminal suitable for 5-core cable, max. 1.5 mm²	cULus Listed	380317
▸ Connection 1: straight, M12, socket, 5-pin, L-coded, shielded ▸ Connection 2: crimp terminal suitable for 5-core cable, max. 1.5 mm²	cULus Listed	380318
▸ Connection 1: straight, M12, plug, 4-pin, D-coded, shielded ▸ Connection 2: IDC terminal suitable for 4-core cable, max. AWG 24	cULus Listed	380316

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Selection guide – Cable for decentralised modules

PDP67 PN 6FDI 6FDIO 2FDOTP

PDP67 PN – cable selection

Cable/PW/M12-5SMX/ M12-5SFX/L/XXX/1Q50/BK

Type	Description	Cable drag chain capability
Cable/PN/RJ45-4SM/ M12-4SMX/D	Connection cable, Ethernet CAT5e, PUR	-
Cable/PN/M12-4SMX/ M12-4SMX/D	Connection cable, Ethernet CAT5e, PUR	-
Cable/PW/M12-5SFX/ XXX-5XXX/L/XXX/1Q50/BK	Connection cable, supply voltage, cable cross section: 1.5 mm^2, 12 A	-
Cable/PW/M12-5SMX/ M12-5SFX/L/XXX/1Q50/BK	Connection cable, supply voltage, cable cross section: 1.5 mm^2, 12 A	-
Cable/PW/M12-5SFX/ XXX-5XXX/L/XXX/2Q50/BK	Connection cable, supply voltage, cable cross section: 2.5 mm^2, 16 A	-
Cable/PW/M12-5SMX/ M12-5SFX/L/XXX/2Q50/BK	Connection cable, supply voltage, cable cross section: 2.5 mm^2, 16 A	-
Cable/FC/XXX-XXXX/ M12-5SFX/A/XXX/0Q34/BK	Sensors connection cable, PUR, cable cross section: 0.34 mm^2, AIDA-compliant	◆
Cable/FC/M12-5SMX/ M12-5SFX/A/XXX/0Q34/BK	Sensors connection cable, PUR, cable cross section: 0.34 mm^2, AIDA-compliant	◆
Cable/FC/M12-5AMX/ M12-5SFX/A/XXX/0Q34/BK	Sensors connection cable, PUR, cable cross section: 0.34 mm^2, AIDA-compliant	◆

Type	Description
PDP67 PN 6FDI 6FDIO 2FDOTP	Decentralised I/O module with PROFINET/PROFIsafe connection

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

PDP67

Connections	Certification	Order number (by length)					
		0.5 m	3 m	5 m	10 m	20 m	30 m
▸ Connection 1: straight, RJ45 ▸ Connection 2: straight, M12, 4-pin, plug, D-coded	cULus Listed, CE, UKCA	-	C1000001	C1000002	C1000003	C1000004	-
▸ Connection 1: straight, M12, 4-pin, plug, D-coded ▸ Connection 2: straight, M12, 4-pin, plug, D-coded	cULus Listed, CE, UKCA	C1000005	C1000006	C1000007	C1000008	C1000009	-
▸ Connection 1: straight, M12, 5-pin, socket, L-coded ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	-	C1000028	C1000029	C1000030	-
▸ Connection 1: straight, M12, 5-pin, plug, L-coded ▸ Connection 2: straight, M12, 5-pin, socket, L-coded	cULus Listed, CE, UKCA	C1000010	C1000011	C1000012	C1000013	C1000014	-
▸ Connection 1: straight, M12, 5-pin, socket, L-coded ▸ Connection 2: open cable	cULus Listed, CE, UKCA	-	-	-	C1000062	-	-
▸ Connection 1: straight, M12, 5-pin, plug, L-coded ▸ Connection 2: straight, M12, 5-pin, socket, L-coded	cULus Listed, CE, UKCA	C1000060	C1000061	-	-	-	-
▸ Connection 1: open cable ▸ Connection 2: straight, M12, 5-pin, yellow socket, A-coded	cULus Listed, CE, UKCA	C1000038	C1000039	C1000040	C1000041	C1000042	-
▸ Connection 1: straight, M12, 5-pin, yellow plug, A-coded ▸ Connection 2: straight, M12, 5-pin, yellow socket, A-coded	cULus Listed, CE, UKCA	C1000015	C1000016	C1000017	C1000018	C1000019	C1000020
▸ Connection 1: angled, M12, 5-pin, yellow plug, A-coded ▸ Connection 2: straight, M12, 5-pin, yellow socket, A-coded	cULus Listed, CE, UKCA	C1000021	C1000022	C1000023	C1000024	C1000025	C1000026

Connection	Certification	Order number
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN IEC 62061	CE, UKCA, EAC, TÜV, cULus Listed	4R000001

Selection guide – Cable for decentralised modules

PDP67 PN 6FDI
6FDIO 2FDOTP

Adapter for connecting sensors to the PDP PN

Adapter/ML/M12-5SMX/
M12-5SMX/M12-8SFX/XX

	Type	Description
	Adapter/ML/M12-5SMX/ M12-5SMX/M12-8SFX/XX	Y-adapter for connecting PSENmlock to PDP67 PN 6FDI 6FDIO 2FDOTP
	PSEN ml/PDP67 Y junction PR	Y-adapter for connecting PSENmlock to PDP67 F 8DI ION or PDP67 PN 6FDI 6FDIO 2FDOTP, application with PSENmlock for process protection
	PSEN opII Y junction M12-M12/M12	Adapter for connecting the PSENopt II (sender and receiver) to a M12-Port (2FDI)
	PSEN op SL adapter	Adapter cable set for connecting a PSENopt slim to PDP67 F8 DI ION
9	**PSEN ma adapter**	Adapter for connecting a PSENmag to PSS67 and PDP67
10	**PSEN cs adapter**	Adapter for connecting a PSEN cs to PSS67 and PDP67
V	**Adapter/ML/M12-5SMX/ M12-5SMX/M12-8SFX/XX**	Y-adapter for connecting PSENmlock to PDP67 PN 6FDI 6FDIO 2FDOTP

PDP67

Connection	Certification	Order number
0.2 m ▸ Connection 1: M12, 5-pin, plug, straight ▸ Connection 2: M12, 5-pin, plug, straight ▸ Connection 3: M12, 8-pin, socket, straight	CE, UKCA	C1000059
0.2 m ▸ Connection 1: M12, 5-pin, plug, straight ▸ Connection 2: M12, 5-pin, plug, straight ▸ Connection 3: M12, 8-pin, socket, straight	CE, UKCA	570491
0.15 m ▸ Connection 1: M12, 5-pin, plug, straight ▸ Connection 2: M12, 5-pin, socket, straight ▸ Connection 3: M12, 5-pin, socket, straight	CE, UKCA	632511
0.1 m ▸ Connection 1: M12, 5-pin, plug, straight ▸ Connection 2: M12, 5-pin, socket, straight	CE, UKCA	631187
0.1 m: ▸ Connection 1: straight, M12, 4-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380300
0.1 m: ▸ Connection 1: straight, M12, 8-pin, female connector ▸ Connection 2: straight, M12, 5-pin, male connector	CE, UKCA	380301
0.2 m: ▸ Connection 1: straight, M12, 5-pin, plug ▸ Connection 2: straight, M12, 5-pin, plug ▸ Connection 3: straight, M12, 8-pin, socket	CE, UKCA	C1000059

More information on our cables and connectors here:

Webcode: web215410

Online information at www.pilz.com

Collision measurement set PRMS for standard-compliant human-robot collaboration (HRC)

Collision measurement set for recording force and pressure.

There is no such thing as a safe robot – but there are safe robot applications!

The Pilz Robot Measuring System PRMS is used in the context of validating human-robot collaboration (HRC) and serves to **measure force and pressure.** According to **ISO/TS 15066**, limit values in a possible collision must be taken into consideration in an HRC application without safety fences. If the application remains within these limits during contact between human and robot, it conforms to the standard. The relevant measurements are therefore required in every HRC application.

Our optional comprehensive and **practical training** provides you with the necessary expertise for routine handling of the collision measurement set and the measurements. We offer two alternatives for PRMS: **purchase** or **rent** the measurement set to suit your needs.

The collision measurement set PRMS helps you achieve a safe robot application.

High-performance, standard-compliant HRC

With the HRC collision measurement set, you can measure the force and pressure in accordance with the normative requirements from ISO/TS 15066. And ensure safe, high-performance HRC.

Force measurement

The collision measurement set measures the forces exerted on the human body. The nine different springs have different spring force constants and are used in force measurement to simulate the individual body regions.

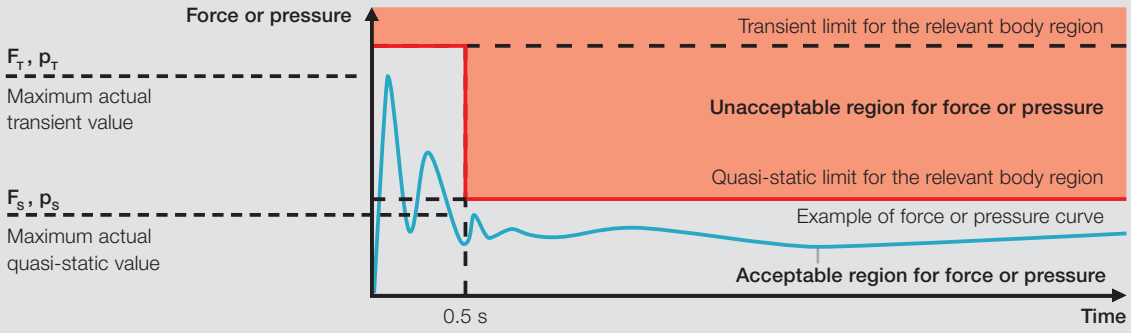
Pressure measurement

Pressure indicating films are used to measure the local pressure and compare it with the limit values specified from the standard. The three compression elements within the set simulate the respective body area and are placed under the pressure indicating films during the measurement.

Evaluation

A convenient software tool is available for validating and digitising force and pressure measurements, and for generating test reports.

Measurement of force and pressure in accordance with ISO/TS 15066 – Force and maximum pressure development over time



Keep up-to-date on the collision measurement set PRMS:

Webcode: web196478

Online information at www.pilz.com

Comprehensive after-sales package

Your benefits at a glance

- Purchase or rent – to suit your individual needs
- Standard-compliant measurement of force and pressure
- Standardised measurement method
- Realistic evaluation of workstations
- Precise validation and practical application
- Cutting-edge product through regular calibration and updates
- High product availability and full functionality due to a sophisticated after-sales and customer support package
- Easy to use thanks to convenient measuring elements
- Software with protocol tools – for straightforward evaluation, visualisation and documentation
- Long service life due to robust workmanship and high quality components
- Flexible adjustment to the most varied measurement tasks, e.g. through easily exchangeable springs

We offer a sophisticated after-sales package containing software updates in addition to the regular calibration.

To supplement the collision measurement set, we also offer a one-day, practically oriented product training course with an introduction to the the normative conditions for HRC and comprehensive training on the measuring procedure and components. Participants gain the necessary practical experience in handling the components and also benefit from our knowledge gathered from over 3 000 HRC measurements.

All information on the training, including how to register, can be found at www.pilz.com under the webcode web196809.

Selection guide – Collision measurement set PRMS

Collision measurement set

PRMS Set

Type	Features	Order number
PRMS Set	▸ PRMS Set (purchase) ▸ PRMS Set (rent) ▸ Dimensions (H x W x D) in mm: 120.3 x 120 x 120 ▸ Diameter of sensing face on cover: 50 mm ▸ Force measurement accuracy: 1 % of the maximum value (+/–5 N) ▸ Force measurement range: 0 to 500 N ▸ Operating temperature: 0 °C to 40 °C ▸ Service life: > 10^6 measurements ▸ Integrated electronics for measurement processing ▸ USB interface for connection to a PC **Contents of the collision measurement set:** ▸ Force measurement device ▸ Springs ▸ Pressure indicating films ▸ Compression elements ▸ Scanner for evaluation of pressure indicating films ▸ After-sales package (calibration and software updates) ▸ Software tool	9A000012 9A000018

The collision measurement set comes in a handy case for ease of transport.

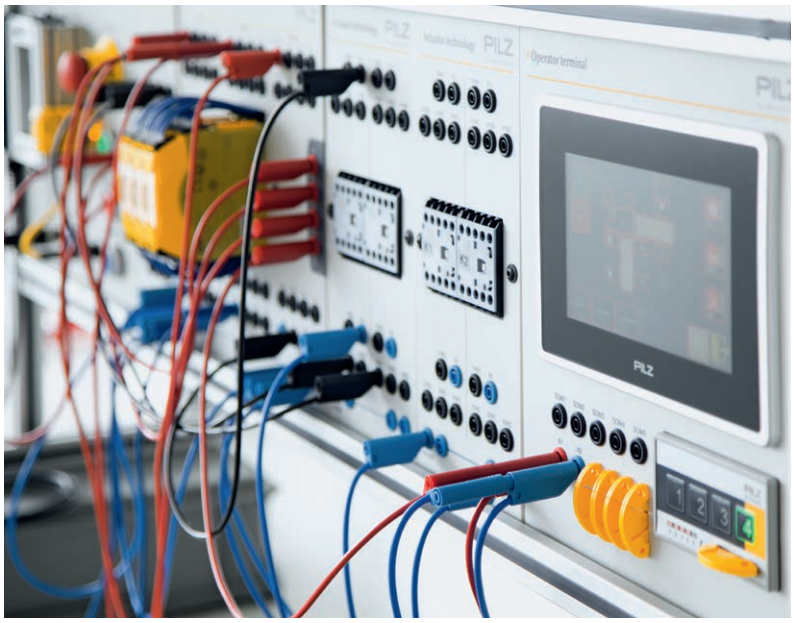
Keep up-to-date on the collision measurement set PRMS:

Webcode: web196478

Online information at www.pilz.com

Pilz Education Systems PES – Training systems for the training sector

Pilz Education Systems PES are modular training systems with industrially implemented components for practical training in electrical engineering. They consist of safety and automation functions that are clearly arranged on an operator board. The training systems allow apprentices, students or training delegates to learn to program controllers or implement safety functions for plant and machinery in a realistic setting.
The systems focus in particular on how Machinery Directive 2006/42/EC is to be correctly implemented and what requirements are placed on the safety functions for plant and machinery in accordance with EN ISO 13849-1.
You can choose from different operator boards that can be combined with one another from the sensor technology, control, operation and maintenance sectors as well as a board that simulates a real plant. Thanks to the use of genuine industrial components, the safety and automation functions of a plant or machinery can be realistically simulated.



Your benefits at a glance

- Optimal tool for knowledge transfer in the field of safe automation
- Realistic simulation modules for practical training in many fields of mechanical engineering
- Machine safety and automation functions are commissioned and configured directly on the system
- Use either in the lab or in training rooms
- Modular extension and simple exchange of individual operator boards
- For fast learning success, the corresponding accompanying documentation for each system such as exercises, technical documentation or theoretical background information is included
- Various application options: in-house training of trainees and apprentices, further in-house training of employees, at universities in the areas of electrical engineering, automation technology and mechanical engineering
- Also suitable for self-study

Pilz Education Systems PES operator boards

PES sensor board js en

PES sensor board enable en

PES operator board pmi en

PES logic board pnozs en

PES logic board pssu en

PES logic board ros-revpi en

PES actuator board op-conveyor en

Operator board	Components	Order number
Sensor board I PES sensor board js en	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Two-hand control relay PITjog ▸ Illuminated pushbuttons ▸ Fan (motor simulation) ▸ Safety gate	G9000004
Sensor board II PES sensor board enable en	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Enabling switches PITenable ▸ Illuminated pushbuttons ▸ Fan (motor simulation) ▸ Safety gate	G9000005
Sensor board III PES sensor board enable-motor en	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Enabling switches PITenable ▸ Illuminated pushbuttons ▸ Safety gate ▸ DC motor ▸ Proximity switch for speed monitoring	G9000006
Operation and monitoring PES operator board pmi en	▸ Human Machine Interface PMIvisu ▸ Visualisation software PASvisu ▸ Operating mode selector switch PITmode ▸ Transponder key	5S000002
Logic board PNOZsigma PES logic board pnozs en	PNOZsigma safety relays	2S000002
Logic board PNOZmulti PES logic board pnozm en	▸ Configurable, safe small controllers PNOZmulti 2 ▸ Safe I/O modules ▸ PNOZmulti Configurator	3S000002
Logic board PSS 4000 PES logic board pssu en	▸ Automation system PSS 4000 ▸ Electronic modules PSSuniversal ▸ Software platform PAS4000	4S000002
Logic board robotics PES logic board ros-revpi en	▸ RevPi Core 3 ▸ RevPi DIO ▸ RevPi AIO	3S000003
Actuator board contactor PES actuator board ec en	Auxiliary contactor 24 VDC	1S000009
Actuator board conveyor PES actuator board op-conveyor en	▸ Machine model with sliders, conveyor belts and drill/milling machine ▸ Optoelectronic protective devices	6S000002

On our website you can also find suitable accessories for wiring and commissioning individual components or connecting complete training systems to each other.

Keep up-to-date on Pilz Education Systems (PES):

Webcode: web193919

Online information at www.pilz.com

Services:
Consulting, engineering and training

As a solution supplier, Pilz can help you in the global application of optimum safety strategies that comply with specifications. Our services ensure the highest safety for man and machine worldwide.

Training

Pilz supports you with a comprehensive range of training courses on all topics of machinery safety and automation.

Machinery safety

Risk Assessment
We review your machinery in accordance with the applicable standards and directives and assess the existing hazards.

Safety Concept
We develop detailed technical solutions for the safety of your plant and machinery through mechanical, electronic and organisational measures.

Safety Design
The aim of the safety design is to reduce or eliminate danger points through detailed planning of the necessary protective measures.

System Implementation
The results of the risk analysis and safety design are implemented to suit the particular requirements through selected safety measures.

Safety Validation
In the validation, the risk assessment and safety concept are mirrored and inspected by competent, specialist staff.
And we perform collision measurement for human-robot applications in accordance with the limit values from ISO/TS 15066.

International Compliance and Acceptance

CE Marking
We control all activities and processes for the necessary conformity assessment procedure, including the technical documentation that is required.

USA
With us you'll receive all the necessary documents that are required to have your machine certified through local authorities to achieve US compliance.

NR-12
As a complete supplier we can provide support from risk assessment to validation, technical documentation at the manufacturer's and final acceptance at the operator's in Brazil.

Workplace safety

Plant Assessment
We will prepare an overview of your entire plant in the shortest possible time. With an on-site inspection we will expose risks and calculate the cost of optimising your safeguards.

Machinery Safety Evaluation
You get an efficient and compact overview of the safety and conformity status of your machines, including a dashboard and recommended actions for risk reduction.

Lockout Tagout System
Our customised lockout tagout (LoTo) measures guarantee that staff can safely control potentially hazardous energies during maintenance and repair.

Inspection of Safeguarding Devices
With our independent, ISO 17020-compliant inspection body, which is accredited by the German Accreditation Body (DAkkS), we can guarantee objectivity and high availability of your machines.

DAkkS Deutsche Akkreditierungsstelle D-IS-12033-01-00

Pilz GmbH & Co. KG, Ostfildern, operates an inspection body for plant and machinery, accredited by DAkkS.

Index PSEN®

Contact

AT
Pilz Ges.m.b.H.
Sichere Automation
Modecenterstraße 14
1030 Wien
Austria
Telephone: +43 1 7986263-0
Telefax: +43 1 7986264
E-Mail: pilz@pilz.at
Internet: www.pilz.at

AU
Pilz Australia
Safe Automation
Unit 1, 12-14 Miles Street
Mulgrave
Victoria 3170
Australia
Telephone: +61 3 95600621
Telefax: +61 3 95749035
E-Mail: safety@pilz.com.au
Internet: www.pilz.com.au

BE, LU
Pilz Belgium CVBA
Poortakkerstraat 37/0201
9051 Sint-Denijs-Westrem
Belgium
Telephone: +32 9 3217570
E-Mail: info@pilz.be
Internet: www.pilz.be

BR
Pilz do Brasil
R. Joaquim Pupo, 443
Distrito Industrial João Narezzi
Indaiatuba – SP
13347-437
Brazil
Telephone: +55 11 4126-7290
E-Mail: vendas@pilz.com.br
Internet: www.pilz.com/pt-BR

CA
Pilz Automation Safety Canada L.P.
6695 Millcreek Drive, Unit 8
Mississauga, ON, L5N 5R8
Canada
Telephone: +1 905 821 7459
Telefax: +1 905 821 7459
E-Mail: info@pilz.ca
Internet: www.pilz.ca

CH
Pilz Industrieelektronik GmbH
Gewerbepark Hintermättli
5506 Mägenwil
Switzerland
Telephone: +41 62 88979-30
Telefax: +41 62 88979-40
E-Mail: pilz@pilz.ch
Internet: www.pilz.ch

CN
Pilz Industrial Automation
(Shanghai) Co., Ltd.
Rm. 1702-1705
Yongda International Tower
No. 2277 Long Yang Road
Pudong Area Shanghai 201204
China
Telephone: +86 21 60880878
Telefax: +86 21 60880870
E-Mail: sales@pilz.com.cn
Internet: www.pilz.com.cn

CZ
Pilz Czech s.r.o.
Jeremenkova 1160/90a
140 00 Prague 4
Czech Republic
Telephone: +420 222 135353
E-Mail: info@pilz.cz
Internet: www.pilz.cz

DE
Pilz GmbH & Co. KG
Felix-Wankel-Straße 2
73760 Ostfildern
Germany
Telephone: +49 711 3409-0
Telefax: +49 711 3409-133
E-Mail: info@pilz.de
Internet: www.pilz.de

DK
Pilz Skandinavien K/S
Ellegaardvej 25 D
6400 Sonderborg
Denmark
Telephone: +45 74436332
Telefax: +45 74436342
E-Mail: pilz@pilz.dk
Internet: www.pilz.dk

ES
Pilz Industrieelektronik S.L.
Safe Automation
Camí Ral, 130
Polígono Industrial Palou Nord
08401 Granollers
Spain
Telephone: +34 938497433
Telefax: +34 938497544
E-Mail: pilz@pilz.es
Internet: www.pilz.es

FI
Pilz Skandinavien K/S,
sivuliike Suomessa
Elannontie 5
01510 Vantaa
Finland
Telephone: +358 10 3224030
E-Mail: pilz.fi@pilz.dk
Internet: www.pilz.fi

FR
Pilz France
Espace Européen de l'Entreprise
Bâtiment ALTIS, Wooden Park 2
21 Rue de la Haye
67300 Schiltigheim
France
Telephone Sales Department:
+33 3 88104001
Telephone Order Processing:
+33 3 88104002
Telefax: +33 3 88108000
E-Mail: siege@pilz-france.fr
Internet: www.pilz.fr

GB
Pilz House
Little Colliers Field
Corby, Northants NN18 8TJ
United Kingdom
Telephone: +44 1536 460766
E-Mail: sales@pilz.co.uk
Internet: www.pilz.co.uk

IE
Pilz Ireland
Cork Business and Technology Park
Model Farm Road
Cork
Ireland
Telephone: +353 21 4346535
Telefax: +353 21 4804994
E-Mail: sales@pilz.ie
Internet: www.pilz.ie

IN
Pilz India Pvt. Ltd
6th Floor, 'Cybernex'
Shankar Sheth Road, Swargate
Pune 411037
India
Telephone: +91 20 49221100/-1/-2
Telefax: +91 20 49221103
E-Mail: info@pilz.in
Internet: www.pilz.in

IT, MT
Pilz Italia S.r.l.
Automazione sicura
Via Trieste, snc
20821 Meda (MB)
Monza e Brianza
Italy
Telephone: +39 0362 1826711
Telefax: +39 0362 1826755
E-Mail: info@pilz.it
Internet: www.pilz.it

JP
Pilz Japan Co., Ltd.
Ichigo Shin-Yokohama Bldg. 4F
Kohoku-ku,
Shin-Yokohama 3-17-5
222-0033 Yokohama
Japan
Telephone: +81 45 471-2281
Telefax: +81 45 471-2283
E-Mail: pilz@pilz.co.jp
Internet: www.pilz.jp

KR
Pilz Korea Ltd.
Safe Automation
4FL, Elentec bldg.,
17 Pangyoro-228 Bundang-gu
Seongnam-si
Gyunggi-do
South Korea 13487
Telephone: +82 31 778 3300
Telefax: +82 31 778 3399
E-Mail: info@pilzkorea.co.kr
Internet: www.pilz.co.kr

Headquarters:
Pilz GmbH & Co. KG, Felix-Wankel-Straße 2, 73760 Ostfildern, Germany
Telephone: +49 711 3409-0, Telefax: +49 711 3409-133, E-Mail: info@pilz.de, Internet: www.pilz.com

KR
Pilz Korea Ltd.
Safe Automation
4FL, Elentec bldg.,
17 Pangyoro-228 Bundang-gu
Seongnam-si
Gyunggi-do
South Korea 13487
Telephone: +82 31 778 3300
Telefax: +82 31 778 3399
E-Mail: info@pilzkorea.co.kr
Internet: www.pilz.co.kr

LA
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

MX
Pilz de México, S. de R.L. de C.V.
Automatización Segura
Convento de Actopan 36
Jardines de Santa Mónica
Tlalnepantla, Méx. 54050
Mexico
Telephone: +52 55 5572 1300
Telefax: +52 55 5572 1300
E-Mail: info@pilz.com.mx
Internet: www.pilz.mx

MY
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

NL
Pilz Nederland
Veilige automatisering
Havenweg 22
4131 NM Vianen
Netherlands
Telephone: +31 347 320477
Telefax: +31 347 320485
E-Mail: info@pilz.nl
Internet: www.pilz.nl

NZ
Pilz New Zealand
Safe Automation
4 Prescott Street
Penrose
Auckland 1061
New Zealand
Telephone: +64 9 6345350
Telefax: +64 9 6345352
E-Mail: office@pilz.co.nz
Internet: www.pilz.co.nz

PH
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

PL, BY, UA
Pilz Polska Sp. z o.o.
Safe Automation
ul. Ruchliwa 15
02-182 Warszawa
Poland
Telephone: +48 22 8847100
Telefax: +48 22 8847109
E-Mail: info@pilz.pl
Internet: www.pilz.pl

PT
Pilz Industrieelektronik S.L.
Edifício Tower Plaza
Rotunda Eng. Egdar Cardoso
Nº 23, 5º - Sala E
4400-676 Vila Nova de Gaia
Portugal
Telephone: +351 229407594
E-Mail: info@pilz.pt
Internet: www.pilz.pt

RU
Pilz RU OOO
letter A, office 702
Leninskiy prospect, building 160
196247 Saint-Petersburg
Russian Federation
Telephone: +7 812 6777219
E-Mail: pilz@pilzrussia.ru
Internet: www.pilzrussia.ru

SE
Pilz Skandinavien K/S
Safe Automation
Smörhålevägen 3
43442 Kungsbacka
Sweden
Telephone: +46 300 13990
Telefax: +46 300 30740
E-Mail: pilz.se@pilz.dk
Internet: www.pilz.se

SG
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

SK
Pilz Slovakia s.r.o.
Štúrova 101
05921 Svit
Slovakia
Telephone: +421 52 7152601
E-Mail: info@pilzslovakia.sk
Internet: www.pilzslovakia.sk

TH
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

TR
Pilz Emniyet Otomasyon
Ürünleri ve Hizmetleri Tic. Ltd. Şti.
Kayışdağı Mahallesi Dudullu Yolu Cad.
Mecnun Sok. Duru Plaza No:7
34755 Ataşehir/İstanbul
Turkey
Telephone: +90 216 5775550
Telefax: +90 216 5775549
E-Mail: info@pilz.com.tr
Internet: www.pilz.com.tr

TW
Pilz Taiwan Ltd.
10F., No. 36, Sec. 3, Bade Rd.
Songshan Dist., Taipei City 105
Taiwan (R.O.C.)
Telephone: +886 2 2570 0068
Telefax: +886 2 2570 0078
E-Mail: info@pilz.tw
Internet: www.pilz.tw

US
Pilz Automation Safety L.P.
7150 Commerce Boulevard
Canton
Michigan 48187
USA
Telephone: +1 734 354 0272
Telefax: +1 734 354 3355
E-Mail: info@pilzusa.com
Internet: www.pilz.us

VN
Pilz South East Asia Pte. Ltd.
25 International Business Park
#04-56 German Centre
Singapore 609916
Singapore
Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

Support

Technical support is available from Pilz round the clock.

Americas
Brazil
+55 11 97569-2804
Canada
+1 888 315 7459
Mexico
+52 55 5572 1300
USA (toll-free)
+1 877-PILZUSA (745-9872)

Asia
China
+86 21 60880878-216
Japan
+81 45 471-2281
South Korea
+82 31 778 3300

Australia and Oceania
Australia
+61 3 95600621
New Zealand
+64 9 6345350

Europe
Austria
+43 1 7986263-0
Belgium, Luxembourg
+32 9 3217570
France
+33 3 88104003
Germany
+49 711 3409-444
Ireland
+353 21 4804983
Italy, Malta
+39 0362 1826711
Scandinavia
+45 74436332
Spain
+34 938497433
Switzerland
+41 62 88979-32
The Netherlands
+31 347 320477
Turkey
+90 216 5775552
United Kingdom
+44 1536 462203

You can reach our international hotline on:
+49 711 3409-222
support@pilz.com

Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Offices and production facilities are ecologically designed, environmentally-aware and energy-saving. So Pilz offers sustainability, plus the security of using energy-efficient products and environmentally-friendly solutions.

BLUeCOMPETENCE Alliance Member
Partner of the Engineering Industry Sustainability Initiative

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BRAND OF THE CENTURY 2022

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Energy Management ISO 50001 REG. NO. 2462

Presented by:

Pilz GmbH & Co. KG
Felix-Wankel-Straße 2
73760 Ostfildern, Germany
Tel.: +49 711 3409-0, Fax: +49 711 3409-133
E-Mail: info@pilz.com, Internet: www.pilz.com

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PILZ
THE SPIRIT OF SAFETY

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