Sensor technology PSEN®, control and signal devices PIT®

PILZ
THE SPIRIT OF SAFETY

▶ Devices for position monitoring ▶ Safety switches
▶ Safety gate systems ▶ Light curtains ▶ Safety laser scanners
▶ Safe camera systems ▶ Control and signal devices

The safe solution:
Sensor and 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.

Contents

COMPONENTS

Sensor
Control technology
Drive technology

SYSTEMS

Automation
systems

Automation
technology

Innovative

Safe

Ecologica

ALL IN ONE

SAFETY & AUTOMATION

Pilz is your solution supplier for all automation tasks. Including standard control functions. Pilz developments protect man, machine and the environment.

Pilz has a tradition as a family-run company stretching back over 70 years. Real proximity to customers is visible in all areas, instilling confidence through individual consultation, total flexibility and reliable service. Worldwide, round the clock, in 42 subsidiaries and branches, as well as 27 sales partners on every continent.

More than 2 400 staff, each one of them an ambassador for safety, make sure that your staff – your company's most valuable asset – can work safely and free from injury.
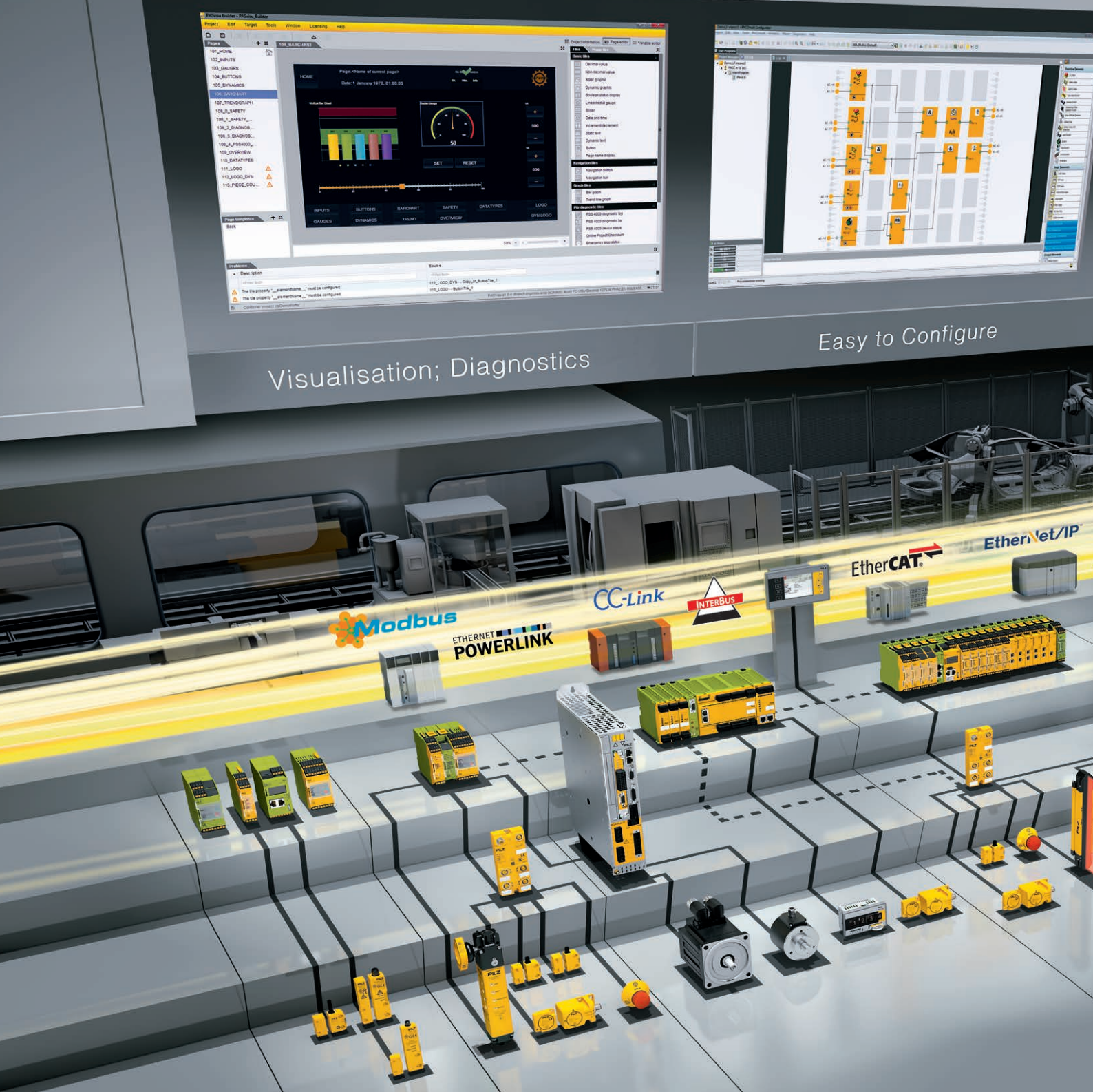
SERVICES

Consulting
Engineering
Training

Economical

PILZ
THE SPIRIT OF SAFETY

Automation
solutions from Pilz –
at home in every
industry.

Visualisation; Diagnostics

Easy to Configure

Pilz automation solutions

Pilz offers everything that you need for the automation of your plant and machinery: Innovative components and systems in which safety and automation are merged within hardware and software.

From sensor and control technology to drive technology, the ease of commissioning, operation and diagnostics plays an important role for all components and systems from Pilz.

You benefit from flexible solutions for machines with an elementary function range through to large interlinked plants. With us you can standardize your safety, implement safety and automation in one periphery or find solutions for complete automation.

Pilz solutions are embedded into the relevant system environment – whether a new structure or a retrofit – and are open for a variety of interfaces and functionalities.

The perfect combination:

Control technology from Pilz offers numerous application options, including monitoring of electrical and functional safety, through to complete machine control.

Safe sensors and decentralized modules from Pilz guarantee the efficient, compliant use of plant and machinery in combination with various control systems.
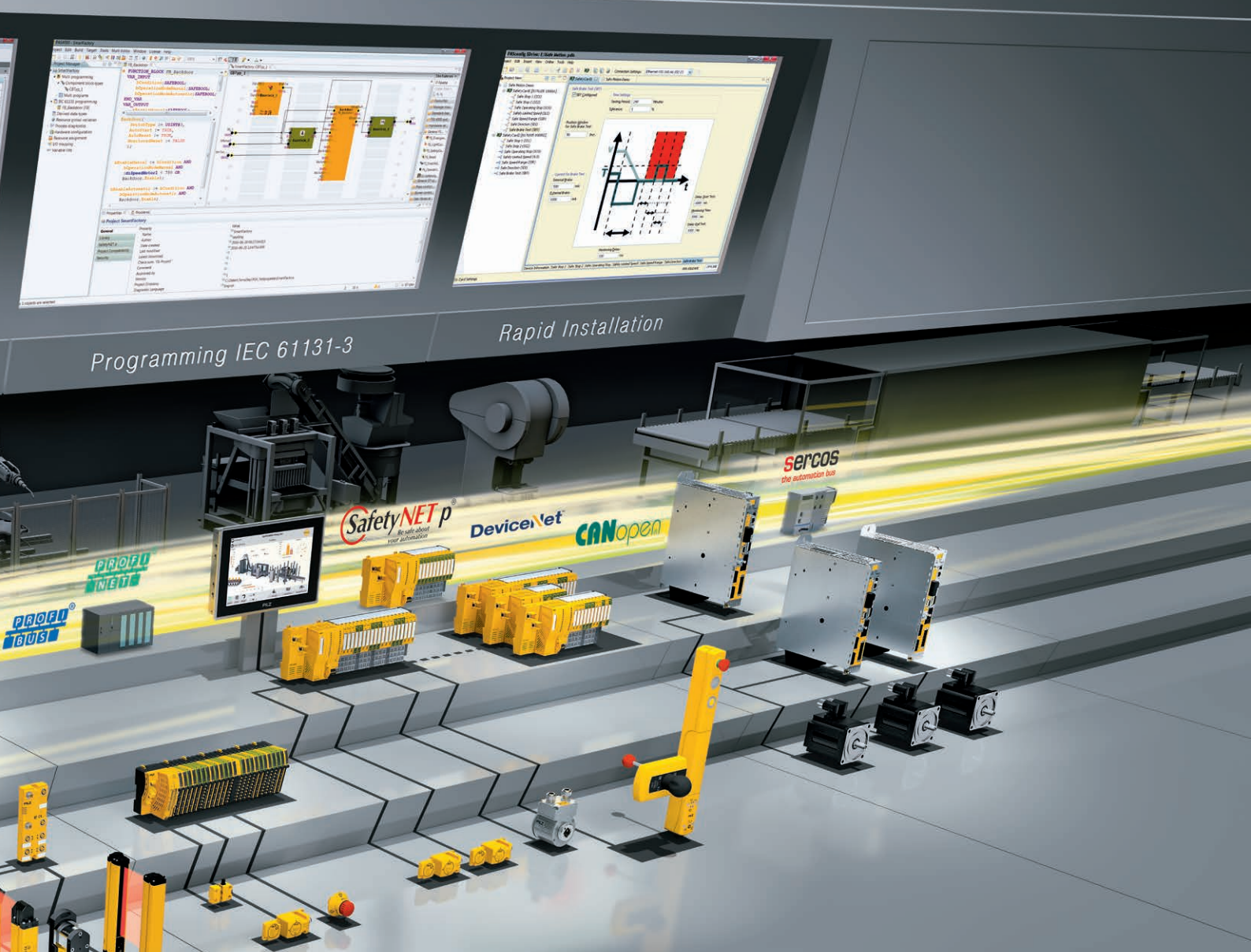
Programming IEC 61131-3

Rapid Installation

Pilz automation solutions

▶ Simple configuration, programming and visualization
through innovative software solutions
▶ High flexibility due to individually expandable solutions
▶ Openness of communication
▶ High availability thanks to extensive diagnostic options
▶ One system for safety and automation

Our turnkey systems and universally compatible solutions offer a high savings potential.

Drive technology from Pilz is characterized by drive-integrated safety functions, safe logic functions and the connection of visualization, sensor and actuator technology.

Operator and visualization systems from Pilz complete your plant and machinery.

Automation software from Pilz allows you to quickly and easily implement your planning, programming, configuration, commissioning, diagnostics and visualization.

Pilz offers you automation solutions for the safety of man, machine and the environment.

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.

SDD

Position monitoring

Safety switches

Safety gate systems

Light curtains

Safety laser scanners

Safe camera systems

Collision measurement set

▶ 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 visualization from one source – the complete solution from Pilz.
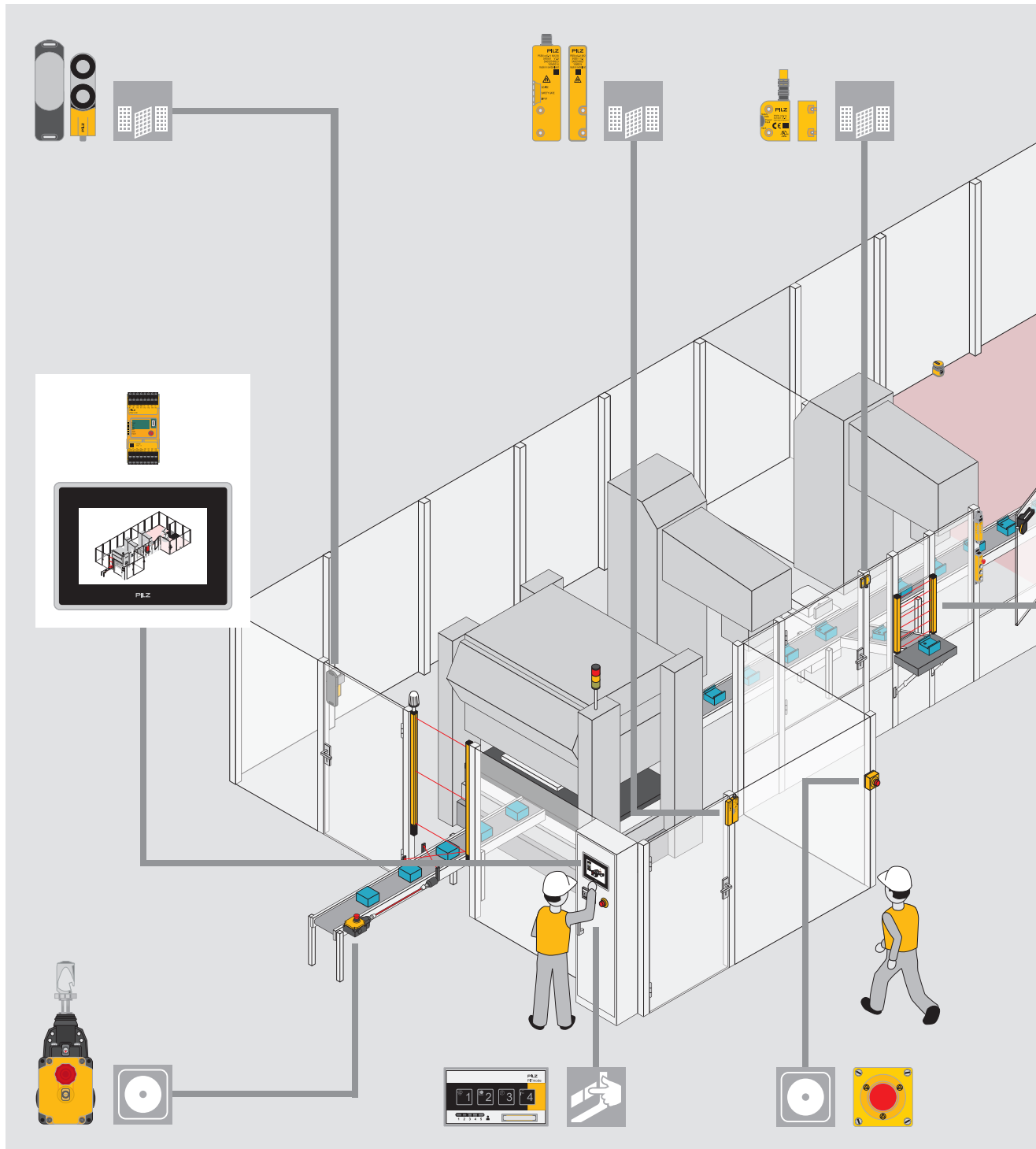
The complete, one-stop solution that's safe and economical:
sensor technology, control technology, drive technology and visualization from Pilz.
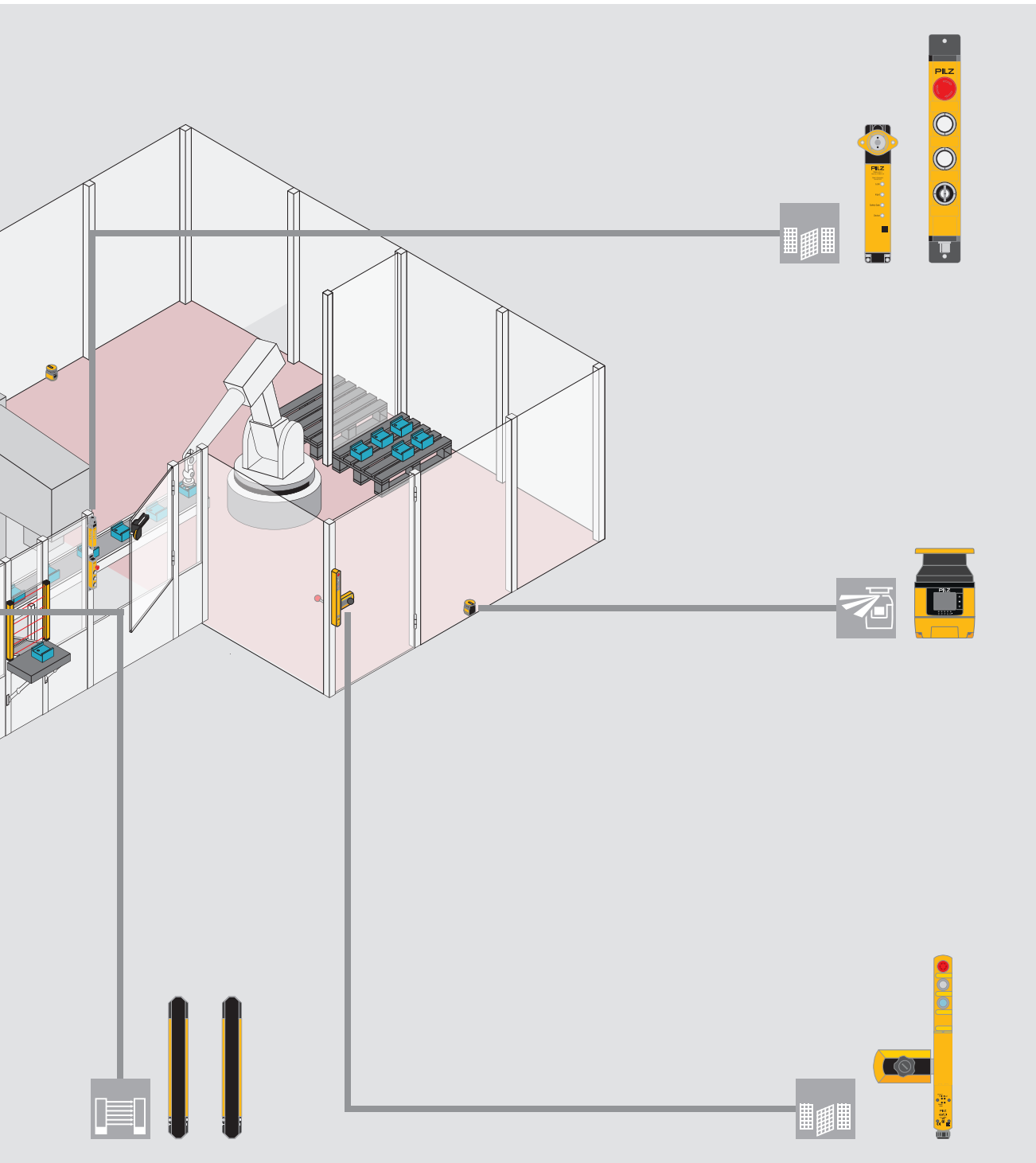
Keep up-to-date on sensor technology PSEN:

Webcode:
web150521

Control devices:

Webcode:
web150559

Online information at www.pilz.com

SDD

Position monitoring

Safety switches

Safety gate systems

Light curtains

Safety laser scanners

Safe camera systems

Collision measurement set

SDD

Position monitoring

Safety switches

Safety gate systems

Light curtains

Safety laser scanners

Safe camera systems

Collision measurement set

▶ 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.

Keep up-to-date on sensor technology PSEN:

🖐 Webcode:
web150521

Online information at www.pilz.com

Covers/flaps/rolling doors

yes

Guard locking device

no
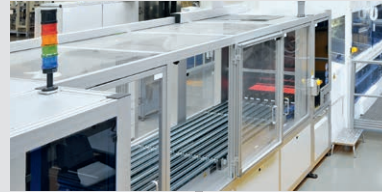
Safety gates

Position detection/cams

Areas/zones

🔑 Highest manipulation protection

▫ Position monitoring with counterpart

Dead voltage closed	▶ **Safety gate system PSENsgate** — From page 62
	▶ **Safety gate system PSENmlock** — From page 56
	▶ **Mechanical safety switch PSENmech (me1S)** — From page 22
	▶ **Safety bolt PSENbolt**
	with PSEN me1S (spring force) — From page 44

Dead voltage open	▶ **Safety gate system PSENslock** — From page 50
	▶ **Mechanical safety switch PSENmech (me1M)** — From page 22
	▶ **Safety bolt PSENbolt**
	with PSEN me1M (magnetic force) — From page 44

Mechanical	▶ **Safety bolt PSENbolt** — From page 44
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Non-contact / Normal manipulation protection	▶ **Magnetic safety switch PSENmag** — From page 26
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Non-contact / Highest manipulation protection	▶ **Coded safety switch PSENcode** — From page 34
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	with PSENcode

Non-contact / With counterpart	▶ **Magnetic safety switch PSENmag** — From page 26
	▶ **Coded safety switch PSENcode** — From page 34

Area monitoring (2D), press brakes	▶ **Light curtains PSENopt II – new generation** — From page 72
	▶ **Light curtains PSENopt Advanced** — From page 74
	▶ **Light curtains PSENopt slim** — From page 76
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	▶ **Camera-based protection systems PSENvip** — From page 98

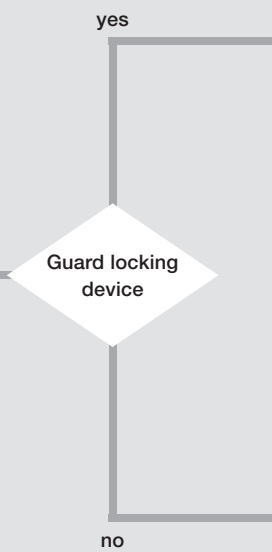Emergency stop pushbuttons

Light curtains

Safety gate

Safety laser scanners

SDD

Position monitoring

Safety switches

Safety gate systems

Light curtains

Safety laser scanners

Safe camera systems

Collision measurement set

SDD

▶ Safety Device Diagnostics

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
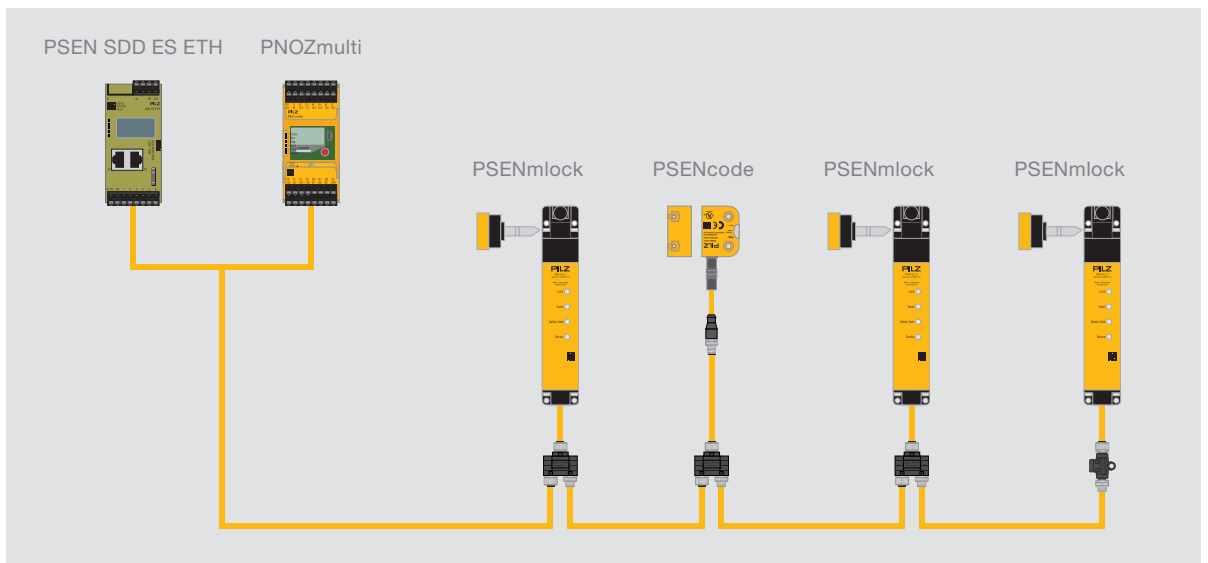
Fewer service calls, greater availability

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 EtherNet/IP Communication module with EtherNet/IP interface
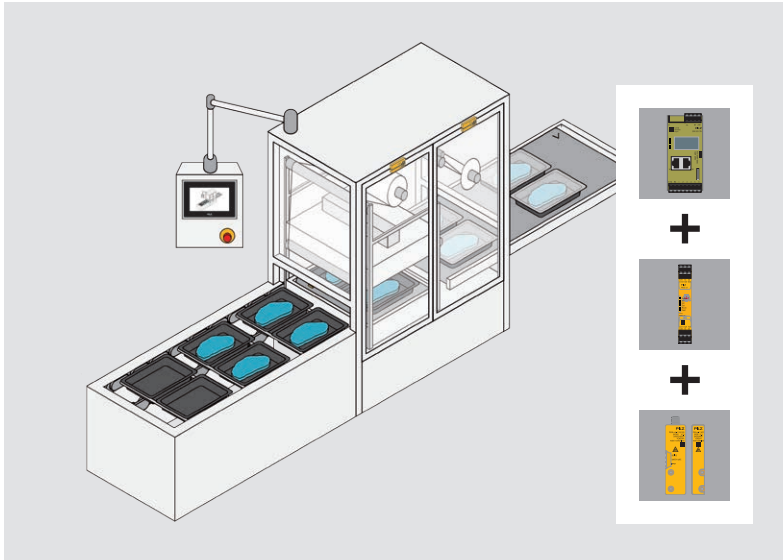
Your benefits at a glance

- 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, PSS 4000

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

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

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 EtherCAT	Communication module with EtherCAT connection	540 136
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 138

Keep up-to-date on Safety Device Diagnostics:

Webcode: web150456

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   PSEN rs2.0

Optimum safety solution is as simple as that
PSENrope is flexible to use, easy to install and simple to operate. Whether it's a first-time installation or upgrade: the safe rope-pull switch PSENrope simplifies installation for you with its well thought-out technical details.

Durable – even under extreme conditions
As the operating range of rope pull switches is limited only by the length of the rope, even large plants can be safeguarded using PSENrope. Due to its rugged finish, PSENrope is reliable even under extreme environmental conditions.

Type code for PSENrope

PSEN rs1.0-300

Product area **Pilz SENsors**	**Housing material**	**Contacts**	**Max. spring force to tension the rope**
Product group rs – PSENrope	**1 Aluminium die cast** 2 Plastic	**0 2 N/C, 2 N/O**	175 175 N **300 300 N**
Operation Mechanical			
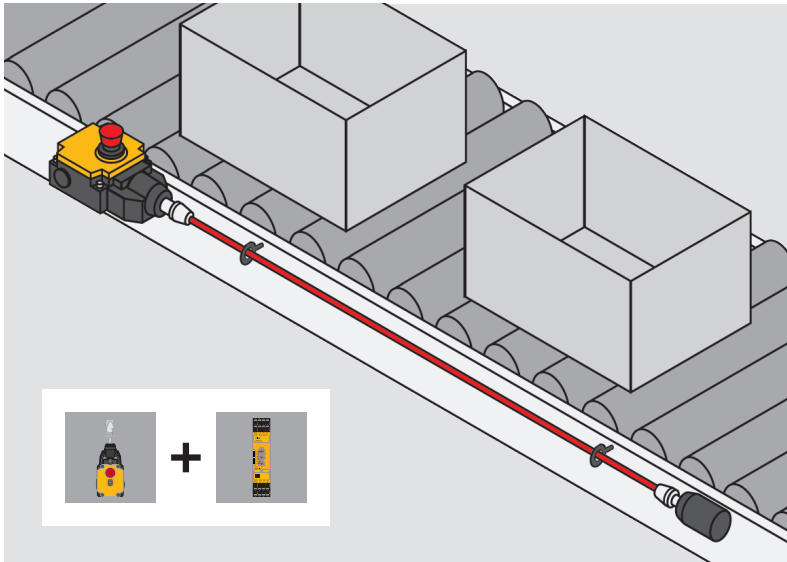
Your benefits at a glance

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

Greater safety on the production line: the rapid emergency stop with rope pull switch PSENrope in combination with the safety relay PNOZsigma.

Selection guide – safe rope pull switch PSENrope

PSEN rs1.0-175

Type	Housing material	Maximum rigging length	Certification	Order number
PSEN rs1.0-175	Aluminium die cast	37.5 m	CSA, DGUV	570 301
PSEN rs1.0-300	Aluminium die cast	75.0 m	CSA, DGUV	570 300
PSEN rs2.0-175	Plastic	37.5 m	CSA, DGUV	570 303
PSEN rs2.0-300	Plastic	75.0 m	CSA, DGUV	570 302

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

Accessories – safe rope pull switch PSENrope

PSEN rs pulley flex

PSEN rs spring

Description/type	Features	Quantity	Order number
Block rope pulley **PSEN rs pulley flex**	Rotatable	1	570 313
Rope for rope pull switch **PSEN rs rope d3/d4**	▸ Rope diameter: 3 mm ▸ Insulation diameter: 4 mm ▸ PVC-coated, red	1	50 m ⎯ 570 314 100 m ⎯ 570 315
Pulley **PSEN rs pulley 75**	Ø 75 mm	1	570 312
Cage clamp **PSEN rs spring**	Steel, max. spring force to tension the rope		
	175 N	1	570 310
	300 N	1	570 311

Cable selection:

From page 138

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

Webcode: web150404

Online information at www.pilz.com

▶ Rotary encoder PSENenco

The rotary encoders PSENenco are used to determine position and speed. The rotary encoder is an absolute encoder that is used in the automation system PSS 4000. It supplies diverse, absolute position values, which are verified in the software block. The rotary encoder has a magnetic and an optical measuring system and thus combines two units in one.

Part of
PSS 4000

PSEN enc m1 eCAM

PSEN enc m2 eCAM

Standard rotary encoder, but safe

The rotary encoder PSENenco is a standard encoder – but through the combination of the control system PSSuniversal PLC, the rotary encoder and software blocks, the system reaches SIL CL 3 and PL e.
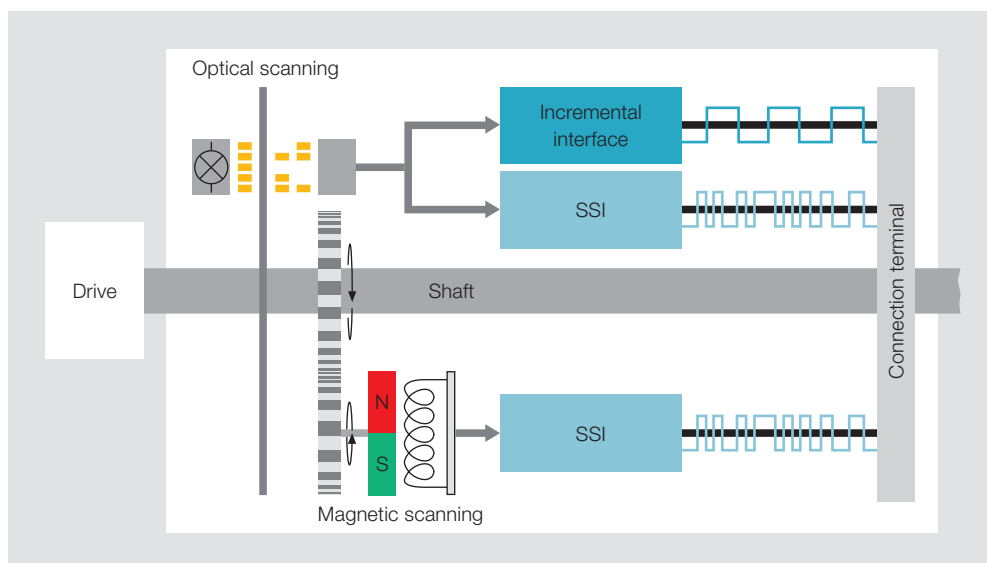
Redundant, dual-channel rotary encoder.

Type code for PSENenco

PSEN enc m1 eCAM

Product area Pilz SENsors	Rotary encoder feature	Series	Design
Product group enc – PSENenco	**m** Multi-turn s Single-turn	1 Hollow shaft 2 Solid shaft	**eCAM** Electronic rotary cam arrangement
Operation Magnetic and optical			
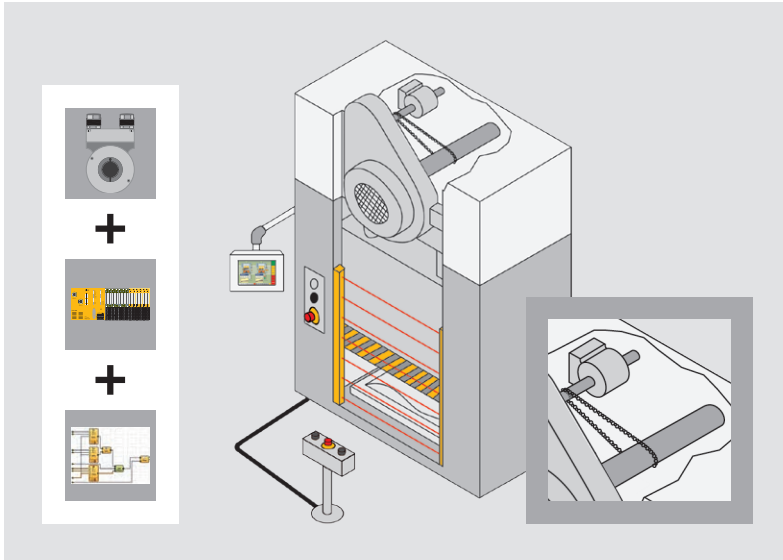
Your benefits at a glance
- Safe evaluation of speed and position
- The safe monitoring function is transferred to the user software
- High flexibility when monitoring limit values due to dynamic limit value monitoring in the user program
- Mechanical rotary cam arrangement is replaced by the safe electronic 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 arrangement.

Application of PSENenco

The rotary encoder PSENenco is used in the mechanical press sector, for instance. The Pilz "safe electronic rotary cam arrangement" solution completely replaces conventional mechanical rotary cam arrangements. Further application areas can be found anywhere that safe position detection is required.

Selection guide – rotary encoder PSENenco

PSEN enc m1 eCAM

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

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-optimized safety gate and position monitoring and meet the requirements of EN ISO 14119 (successor standard to EN 1088) 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.

| PSENmech | PSENmag | PSENcode | PSENbolt | PSENhinge |
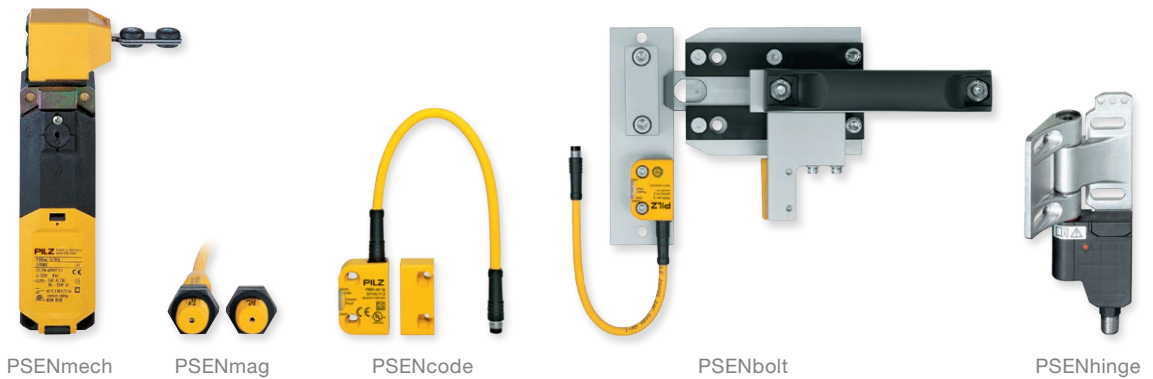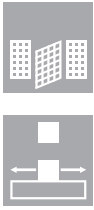
Safety switches are available with various designs and operating principles and can even be used under difficult environmental conditions. Additional costs can be saved when connected in series.

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, fully coded – PSENcode allows 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 3 positions

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

[1] Achievable performance level depends on application
[2] 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

▶ Mechanical safety switch PSENmech

The mechanical safety switch PSENmech is suitable for safe monitoring of a movable guard and can lock the safety gate securely.

PSEN me1

PSENmech uses increased extraction force on the actuator to prevent the safety gate from being opened unintentionally. It complies with the standard EN 14119 due to its coded actuators.

Safety gate monitoring with guard locking guarantees the safety of persons or processes. One version of the mechanical safety switch PSEN me1 fulfils two safety functions:

▶ Avoids an unexpected start-up when PSEN me1 is unlocked or not closed
▶ Safety gate locked by the PSEN me1 while the motor speed is > 0
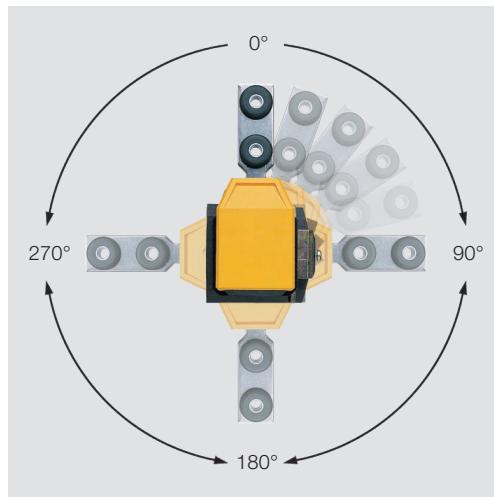
Universal actuation directions provide flexibility during installation.

Type code for PSENmech

PSEN me1.2S/1AR

Product area **P**ilz **SEN**sors	Product series	Series 1: Type of guard locking/ supply voltage		Series/actuator type
Product group me – PSENmech	**1 With guard locking, dimensions: 170 x 42.5 x 51 mm**	S	Spring force, 24 VAC/DC (2 N/C, 2 N/O)	1AS Standard, Series 1 **1AR Radius, Series 1**
Operation Mechanical		**.2S**	**Spring force, 110, 230 VAC (2 N/C, 2 N/O)**	
		M	Magnetic force, 24 VAC/DC (2 N/C, 2 N/O)	
		.21S	Spring force, 110, 230 VAC (3 N/C, 1 N/O)	
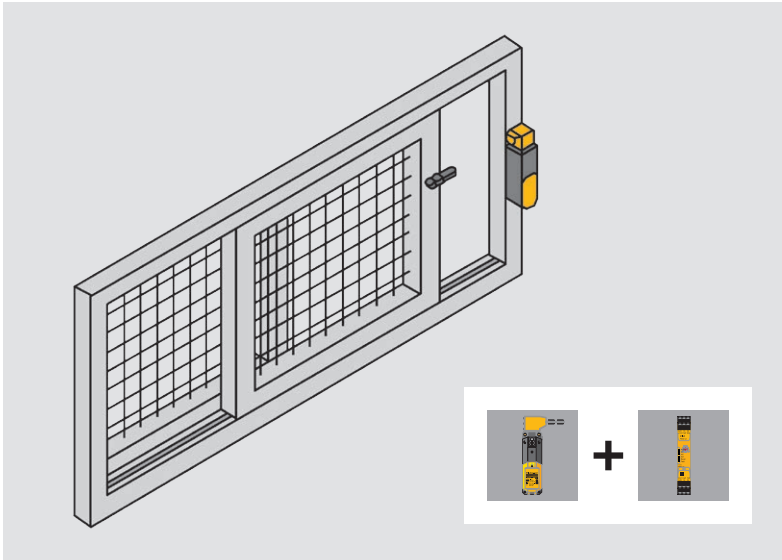
Your benefits at a glance

▸ Safe, complete solution in conjunction with Pilz evaluation devices for applications with high safety requirements

▸ Flexibility and speed during installation due to:
  - Compact design
  - Radius or standard actuator
  - Up to 4 horizontal and
    4 vertical approach directions

▸ Long product service life due to the robust design and high mechanical load capacity

▸ Suitable for a variety of applications due to the wide operating temperature range

▸ Housing is insensitive to dirt and dust and is also waterproof

Components for your safe solution	Order number
Sensor: PSEN me1M/1AS	570 004
Connection: Cable, depending on function, e.g. 8 x 0.5 mm²	-
Evaluation device: PNOZ s3	751 103

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

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	540 310
PSEN screw M5x20	▸ M5, 20 mm ▸ Suitable for PSEN me1/1AR, PSEN me2 and PSEN me3	10	540 312

Cable selection:

From page 138

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

Webcode: web150414

Online information at www.pilz.com

▶ Selection guide – PSENmech

Mechanical safety switch PSENmech with separate actuator and guard locking device

Common features
- ▶ Safety switch 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
- ▶ Can be connected to all Pilz evaluation devices
- ▶ Directions of actuation:
  - PSEN me1: 8
  - PSEN me3: 4
  - PSEN me4: 8
- ▶ Dimensions (H x W x D, excl. actuator) in mm:
  - PSEN me1: 170 x 42.5 x 51.0
  - PSEN me3:   90 x 52.0 x 33.0
  - PSEN me4: 100 x 31.0 x 30.5
- ▶ Ambient temperature:
  - PSEN me1: −25 … +70 °C/−13 … +158 °F
  - PSEN me3/me4: 0 … +80 °C/-22 … +176 °F
- ▶ Connection terminals:
  - PSEN me1: Spring-loaded terminals
  - PSEN me3/me4: Screw terminals
- ▶ Protection type:
  - PSEN me1: IP67
  - PSEN me3/me4: IP65

PSEN me1S/1AS

PSEN me3/2AR

PSEN me4/4AS

Type (switch/actuator)	Type of guard locking	Actuator type
▶ Base versions		
PSEN me1S/1AS	Spring force	Standard
PSEN me1.2S/1AS	Spring force	Standard
PSEN me1S/1AR	Spring force	Radius
PSEN me1.2S/1AR	Spring force	Radius
PSEN me1M/1AS	Magnetic force	Standard
PSEN me1M/1AR	Magnetic force	Radius
PSEN me1.21S/1AR	Spring force	Radius
PSEN me3/2AS	-	Standard
PSEN me3.2/2AS	-	Standard
PSEN me3.2/2AR	-	Radius
PSEN me4.1/4AS	-	Standard
PSEN me4.2/4AS	-	Standard
▶ Versions with additional M12, 8 or 5-pin plug-in connector		
PSEN me1.02S/AS M12	Spring force	Standard
PSEN me1.02S/AR M12	Spring force	Radius
PSEN me1.02M/AS M12	Magnetic force	Standard
PSEN me1.02M/AR M12	Magnetic force	Radius
PSEN me1.03M/AS n	Magnetic force	Standard

Contacts	Supply voltage/ contact load Utilization category AC-15	Auxiliary release	Holding force	Extraction force	Certification	Order number (Unit)[1]
N/C N/C N/O N/O	24 VAC/DC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 000
N/C N/C N/O N/O	110 … 230 VAC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 006
N/C N/C N/O N/O	24 VAC/DC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 001
N/C N/C N/O N/O	110 … 230 VAC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 007
N/C N/C N/O N/O	24 VAC/DC		1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 004
N/C N/C N/O N/O	24 VAC/DC		1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 005
N/C N/C N/O N/O	110 … 230 VAC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 008
N/C N/O	240 V/3.0 A	-	10 N		CCC, CSA, DGUV, EAC	570 210
N/C N/C N/O	240 V/1.5 A	-	10 N		CCC, CSA, DGUV, EAC	570 230
N/C N/C N/O	240 V/1.5 A	-	10 N		CCC, CSA, DGUV, EAC	570 232
N/C N/C	240 V/3.0 A	-	10 N		CCC, CSA, DGUV, EAC	570 245
N/C N/C N/O	240 V/1.5 A	-	10 N		CCC, CSA, DGUV, EAC	570 251
	24 VAC/DC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 011
	24 VAC/DC	◆	1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 012
	24 VAC/DC		1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 013
	24 VAC/DC		1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 014
	24 VAC/DC		1 500 N	min. 27 N	CCC, CSA, DGUV, EAC	570 015

[1] Unit comprising switch and actuator

N/C contact

N/O contact

Cable selection:

From page 138

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

Webcode: web150414

Online information at www.pilz.com

Safety switches

▶ 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.

Safety switches

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 operating 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 SENsors	Contacts	Design	Connection type	Operating distance	LED/ATEX/ Series connection	Material
Product group ma – PSENmag	1 N/O/N/O 2 N/C/N/O	1 Square, dimensions: 36 x 26 x 13 mm 2 Round, M30 3 Round, M12 4 **Square, dimensions: 37 x 26.4 x 18 mm**	a Cable, 5 m b **Cable, 10 m** n Connector, M12, 5-pin p Connector, M8: - 4-pin (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] $R_i = 0\ \Omega$
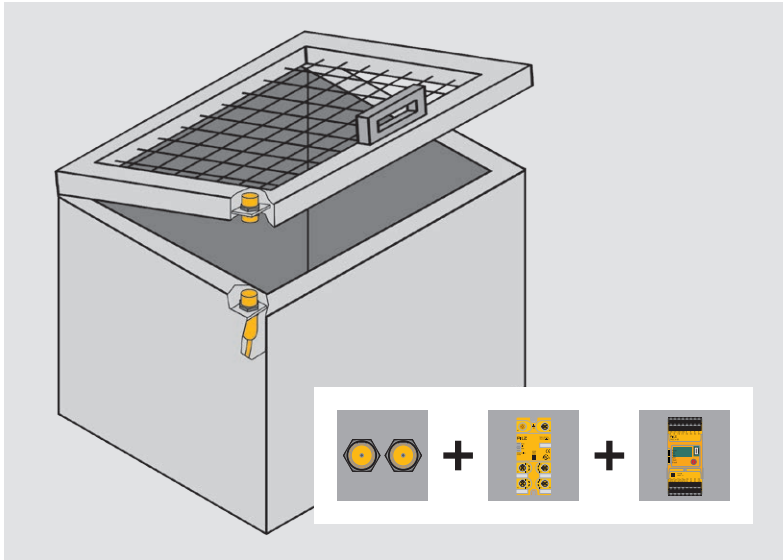
Your benefits at a glance

▸ 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

Components for your safe solution	Order number
Sensor: PSEN ma1.3n-20/PSEN ma1.3-12	506 238
Connection: PSS67 cable, M12, straight, socket/M12, straight, plug, 5 m	380 209
Decentralized periphery: PDP67 F 8DI ION	773 600
Connection: PSEN cable, straight, M12, 5-pin	630 311
Evaluation device: PNOZ m B0	772 100
- Spring loaded terminals (1 set)	751 008

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

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 characterized by their vibration and impact resistance. The high B10D value ensures a long service life.
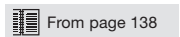
Keep up-to-date on non-contact, magnetic safety switches PSENmag:
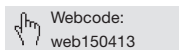
Webcode: web150413

Online information at www.pilz.com

Safety switches

▶ Selection guide – PSENmag

Magnetic safety switch PSENmag – square 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 32
- ▶ 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/1 unit	3 mm
PSEN ma2.1p-11/ PSEN2.1-10/LED/3 mm/1 unit	3 mm
PSEN ma2.1p-30/ PSEN2.1-10/6 mm/1 unit	6 mm
PSEN ma2.1p-31/ PSEN2.1-10/LED/6mm/1 unit	6 mm
PSEN ma1.1p-10/ PSEN1.1-10/3 mm/1 unit	3 mm
PSEN ma1.1p-12/ PSEN1.1-10/3 mm/ix1/1 unit	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

Safety switches

Safety switches

Contacts	Single connection	Series connection via	LED	ATEX	Connection type Cable/connector	Certification	Order number (unit) [1]
N/O, N/C	◆	-			M8, 4-pin	EAC, TÜV, UL [2]	506 405
N/O, N/C	◆	-	◆		M8, 4-pin		506 406
N/O, N/C	◆	-			M8, 4-pin		506 407
N/O, N/C	◆	-	◆		M8, 4-pin		506 408
N/O, N/O	◆	-			M8, 4-pin		506 411
N/O, N/O		PSEN ix1			M8, 4-pin		506 412
N/O, N/C	◆	-	◆	◆	M8, 4-pin	ATEX [3], EAC, TÜV, UL [2]	506 413
N/O, N/O	◆	-			5 m	EAC, TÜV, UL [2]	506 322
N/O, N/O, N/O	◆	-	◆		5 m		506 326
N/O, N/O		PSEN ix1			5 m		506 323
N/O, N/O, N/O		PSEN ix1	◆		5 m		506 327
N/O, N/O	◆	-			M8, 4-pin, pigtail, 20 cm		506 334
N/O, N/O, N/O	◆	-	◆		M8, 8-pin, pigtail, 20 cm		506 338
N/O, N/O		PSEN ix1			M8, 4-pin, pigtail, 20 cm		506 335
N/O, N/O, N/O		PSEN ix1	◆		M8, 8-pin, pigtail, 20 cm		506 339
N/O, N/O	◆	PDP67			M12, 5-pin, pigtail, 13 cm		506 342
N/O, N/O, N/O	◆	PDP67	◆		M12, 5-pin, pigtail, 13 cm		506 343
N/O, N/O, N/O	◆	-	◆		M12, 8-pin, pigtail, 13 cm		506 345
N/O, N/O, N/O		PSEN ix1	◆		5 m		506 325
N/O, N/O	◆	-			5 m		506 320
N/O, N/O, N/O	◆	-	◆		5 m		506 324
N/O, N/O		PSEN ix1			5 m		506 321
N/O, N/O	◆	-			M8, 4-pin, pigtail, 20 cm		506 332
N/O, N/O, N/O	◆	-	◆		M8, 8-pin, pigtail, 20 cm		506 336
N/O, N/O, N/O		PSEN ix1	◆		M8, 8-pin, pigtail, 20 cm		506 337
N/O, N/O		PSEN ix1			M8, 4-pin, pigtail, 20 cm		506 333
N/O, N/O	◆	PDP67			M12, 5-pin, pigtail, 13 cm		506 340
N/O, N/O, N/O	◆	PDP67	◆		M12, 5-pin, pigtail, 13 cm		506 341
N/O, N/O, N/O	◆	-	◆		M12, 8-pin, pigtail, 13 cm		506 344

⚡ N/C contact

⟍ N/O contact

[1] Unit comprising switch and actuator
[2] UL 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 138

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 switch 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 operating distance: 12 mm
- ▶ Protection type: IP67, IP69k
- ▶ 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, UL[2]	506 220
⎍⎍⎍		PSEN ix1	◆	5 m		506 221
⎍⎍⎍	◆	-	◆	10 m		506 222
⎍⎍⎍		PSEN ix1	◆	10 m		506 223
⎍⎍⎍	◆	-	◆	M8, 8-pin, pigtail, 20 cm		506 226
⎍⎍⎍	◆	PDP67	◆	M12, 5-pin, pigtail, 13 cm		506 228
⎍⎍⎍	◆	-	◆	M12, 8-pin, pigtail, 13 cm		506 229
⎍⎍⎍		PSEN ix1	◆	M8, 8-pin, pigtail, 20 cm		506 227
⎍⎍⎍	◆	-	◆	5 m		506 230
⎍⎍⎍		PSEN ix1	◆	5 m		506 231
⎍⎍⎍	◆	-	◆	10 m		506 232
⎍⎍⎍		PSEN ix1	◆	10 m		506 233
⎍⎍⎍	◆	-	◆	M8, 8-pin, pigtail, 20 cm		506 236
⎍⎍⎍	◆	PDP67	◆	M12, 5-pin, pigtail, 13 cm		506 238
⎍⎍⎍	◆	-	◆	M12, 8-pin, pigtail, 13 cm		506 239
⎍⎍⎍		PSEN ix1	◆	M8, 8-pin, pigtail, 20 cm		506 237

⎍ N/C contact
⎍ N/O contact

[1] Unit comprising switch and actuator, which can also be ordered separately
[2] UL 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, UL[2]	506 242
⎍⎍⎍		PSEN ix1	◆		Cable, 10 m		506 243
⎍⎍⎍	◆	-	◆		Cable, 5 m		506 240
⎍⎍⎍		PSEN ix1	◆		Cable, 5 m		506 241

⎍ N/C contact
⎍ N/O contact

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

EAC

ECOLAB®

TÜV SÜD

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Cable selection:

From page 138

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

Webcode: web150413

Online information at www.pilz.com

▶ Selection guide – PSENmag

Magnetic safety switch 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 operating distance: 12 mm
- ▶ Protection type: IP67, IP69k
- ▶ 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	540 308
PSEN screw M4x12	▶ M4, 12 mm ▶ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540 309
PSEN screw M4x16	▶ M4, 16 mm ▶ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540 310
PSEN screw M4x20	▶ M4, 20 mm ▶ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540 313
PSEN screw M4x26	▶ M4, 26 mm ▶ Suitable for PSEN ma1.4, PSEN x.1, PSEN ma1.1, PSEN ma2.1	10	540 314

Safety switches

Safety switches

Contacts	Single connection	Connection to	LED	ATEX	Connection type Cable/connector	Certification	Order number (unit) [1]
N/O N/O N/O	◆	-	◆	◆	Cable, 10 m	ATEX [2], EAC, TÜV, UL [3]	506254
N/O N/O N/O		PSEN ix1	◆	◆	Cable, 10 m		506255
N/O N/O	◆	PDP67			Connector, M12, 5-pin	EAC, ECOLAB, TÜV, UL [3]	506246
N/O N/O N/O	◆	-			Connector, M12, 8-pin		506249
N/O N/O 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] UL certification applies only to individual components contained within the set

PSEN 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:

ab Seite 138

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.

PSEN cs5.11p PSEN cs4.2p PSEN cs1.1p 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 unique, fully 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 unique, fully 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.

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]
	2.1 Fully coded, large design	1 With magnetic latching	b ▶ Cable, 10 m [1]
Operation	2.2 Unique, fully coded, large design	**3 With ATEX**	n ▶ Connector, M12, 5-pin
▶ Non-contact, coded	3.1 Coded, compact design	9 With max. 3 actuators	**p ▶ Connector, M12, 8-pin (large design) [1]**
▶ Transponder (RFID)	4.1 Fully coded, compact design		**▶ Connector, M8, 8-pin (compact, slimline design) [1]**
▶ With safe semiconductor outputs	4.2 Unique, fully coded, compact design		M12 ▶ Connector, M12, 8-pin (compact, slimline design) [1]
	5.1 Coded, slimline design		
	6.1 Fully coded, slimline design		
	6.2 Unique, fully coded, slimline design		

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

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 PSENgate

SDD
SAFETY DEVICE
DIAGNOSTICS

Safety switches

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
Decentralized 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 door using
the safety switch PSENcode and safety relay PNOZsigma.

**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 14).

PSEN cs5   PSEN cs3   PSEN cs1

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

Safety switches

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
- ▶ Drill hole spacing:
  - PSEN cs3/PSEN cs4: 22 mm
  - PSEN cs5/PSEN cs6: 22 mm
- ▶ Typical operating 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

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	Unique, fully 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	Unique, fully coded [4]
PSEN cs4.2a	Unique, fully coded [4]
PSEN cs4.2p	Unique, fully 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	Unique, fully coded [4]
PSEN cs6.2p	Unique, fully coded [4]
PSEN cs6.21 M12/8	Unique, fully coded [4]

Safety switches

Additional functions	Suitable actuator	Connection type	Certification	Order number	
				Switch	Unit [1]
-	540 080	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	540 050	540 000
With ATEX	540 080	Connector, M12, 8-pin	ATEX [6], EAC, electrosuisse, FCC [5], IC [5], TÜV, UL [5],	-	540 005
-	540 180	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	540 150	540 100
With ATEX	540 180	Connector, M12, 8-pin	ATEX [6], EAC, electrosuisse, FCC [5], IC [5], TÜV, UL [5],	-	540 105
-	540 180	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	-	540 200
-	541 080, 540 080	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 059	541 009
-	541 080, 540 080	Connector, M12, 8-pin, pigtail, 1.5 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 064	541 014
-	541 080, 540 080	Cable, 5 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 061	541 011
-	541 080, 540 080	Cable, 10 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 062	541 012
-	541 080, 540 080	Connector, M8, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	541 060	541 010
-	541 180, 540 180	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 159	541 109
-	541 180, 540 180	Cable, 5 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 161	541 111
-	541 180, 540 180	Cable, 10 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 162	541 112
-	541 180, 540 180	Connector, M8, 8-pin, pigtail, 14 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 160	541 110
-	541 180, 540 180	Connector, M12, 8-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 259	541 209
-	541 180, 540 180	Cable, 5 m	EAC, FCC [5], IC [5], TÜV, UL [5]	541 261	541 211
-	541 180, 540 180	Connector, M8, 8-pin, pigtail, 14 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 260	541 210
-	542 083	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 059	542 009
-	542 080	Connector, M8, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 050	542 000
Magnetic latching	542 081	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 051	542 011
With ATEX	542 085	Connector, M12, 8-pin	ATEX [6], EAC, electrosuisse, FCC [5], IC [5], TÜV, UL [5],	542 055	542 005
-	542 183	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 159	542 109
-	542 180	Connector, M8, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 150	542 100
Magnetic latching	542 181	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 151	542 111
-	542 183	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 259	542 209
-	542 180	Connector, M8, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 250	542 200
Magnetic latching	542 181	Connector, M12, 8-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 251	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] Unique, fully coded = switch accepts only one PSENcode actuator, no teach-in facility
[5] FCC, IC and UL certification applies only to individual components contained within the set
[6] ATEX certification applies only to individual components contained within the set

Cable selection:

From page 138

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 5-pin connection for PDP67 F 8DI ION

energy saving by Pilz

Safety switches

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
- ▶ Drill hole spacing:
  - PSEN cs3/PSEN cs4: 22 mm
  - PSEN cs5/PSEN cs6: 22 mm
- ▶ Typical operating 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	Unique, fully coded [4]
▶ **Compact design**	
PSEN cs3.1n	Coded [2]
PSEN cs4.1n	Fully coded [3]
PSEN cs4.2n	Unique, fully coded [4]
▶ **Slimline design**	
PSEN cs5.1n	Coded [2]
PSEN cs6.1n	Fully coded [3]
PSEN cs6.2n	Unique, fully coded [4]
PSEN cs5.11n	Coded [2]
PSEN cs6.11n	Fully coded [3]
PSEN cs6.21n	Unique, fully coded [4]

Safety switches

Additional functions	Suitable actuator	Connection type	Certification	Order number	
				Switch	Unit [1]
-	540 080	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	540 053	540 003
-	540 180	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	540 153	540 103
-	540 180	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	540 253	540 203
-	541 080, 540 080	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 053	541 003
-	541 180, 540 180	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 153	541 103
-	541 180, 540 181	Connector, M12, 5-pin, pigtail, 16 cm	EAC, FCC [5], IC [5], TÜV, UL [5]	541 253	541 203
-	542 083	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 053	542 003
-	542 183	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 153	542 103
-	542 183	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 253	542 203
Magnetic latching	542 081	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 063	542 013
Magnetic latching	542 181	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 163	542 113
Magnetic latching	542 181	Connector, M12, 5-pin	EAC, FCC [5], IC [5], TÜV, UL [5]	542 263	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] Unique, fully coded = switch accepts only one PSENcode actuator, no teach-in facility
[5] FCC, IC and UL certification applies only to individual components contained within the set

Cable selection:

From page 138

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

Webcode: web 150412

Online information at www.pilz.com

▶ Selection guide – PSENcode

Safety switches

energy saving by Pilz

Actuator for coded safety switch PSENcode

PSEN cs1.1

PSEN cs3.1

PSEN cs5.11

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, UL	540 080
PSEN cs2.1	-	TÜV, EAC, UL	540 180
▶ **Compact design**			
PSEN cs3.1	-	TÜV, EAC, UL	541 080
PSEN cs4.1	-	TÜV, EAC, UL	541 180
▶ **Slimline design**			
PSEN cs5.1	-	TÜV, EAC, UL	542 080
PSEN cs5.1 M12	-	TÜV, EAC, UL	542 083
PSEN cs5.11 M12	Magnetic latching	TÜV, EAC, UL	542 081
PSEN cs5.13	For ATEX applications	TÜV, EAC, UL	542 085
PSEN cs6.1	-	TÜV, EAC, UL	542 180
PSEN cs6.1 M12	-	TÜV, EAC, UL	542 183
PSEN cs6.11 M12	Magnetic latching	TÜV, EAC, UL	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	540 308
PSEN screw M4x12	▶ M4, 12 mm ▶ Suitable for PSEN cs3/4/5/6	10	540 309
PSEN screw M4x16	▶ M4, 16 mm ▶ Suitable for PSEN cs3/4/5/6	10	540 310
PSEN screw M4x20	▶ M4, 20 mm ▶ Suitable for PSEN cs3/4/5/6	10	540 313
PSEN screw M4x26	▶ M4, 26 mm ▶ Suitable for PSEN cs3/4/5/6	10	540 314
PSEN screw M5x10	▶ M5, 10 mm ▶ Suitable for PSEN cs1/2	10	540 311
PSEN screw M5x20	▶ M5, 20 mm ▶ Suitable for PSEN cs1/2	10	540 312
End caps PSEN cs3/cs4, PSEN ma1.4 actuator caps	Suitable for PSEN cs3/4 actuator	50	540 335
Mounting bracket PSEN bracket	Suitable for PSEN cs3/4 [1]	1	532 110
PSEN mag/cs bracket straight	Suitable for PSEN cs3/4/5/6	2	532 111
PSEN cs bracket stop swinging door	Suitable for PSEN cs5/6 (set for switch and actuator)	1	532 108
PSEN cs bracket stop sliding door	Suitable for PSEN cs5/6 (set for switch and actuator)	1	532 109

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

Cable selection:

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

Webcode:
web150412

Online information
at www.pilz.com

Safety switches

▶ Coded safety switch PSENcode for position moni

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.

Fieldbus/Ethernet

Pos. A
Pos. B
Pos. C

OSSD1   OSSD2

PSEN cs1.19

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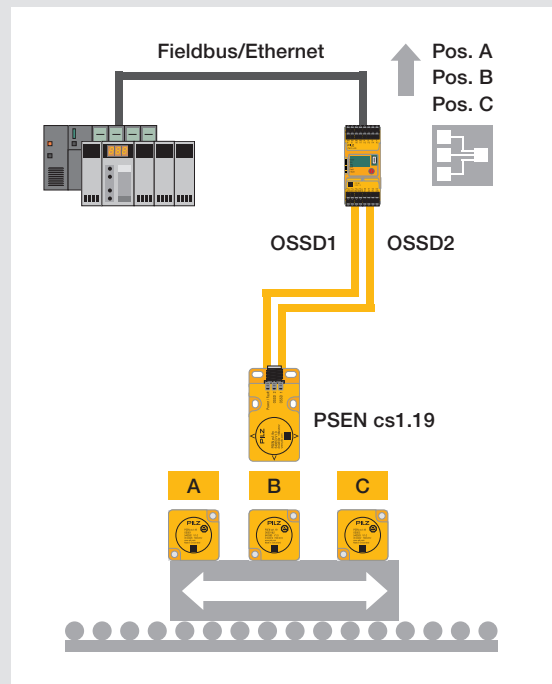
PSENcode offers great potential savings as a solution for safety and automation.

toring

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 operating distance:
  - PSEN cs1.19n/PSEN cs1.
    19: 15 mm
  - PSEN cs3.19n/PSEN cs3.
    19: 11 mm

Type (switch/ actuator)	Certi-fication	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, UL [1]	540 303	540 305	540 304
▶ **Compact design**				
PSEN cs3.19n/ PSEN cs3.19	EAC, FCC [1], IC [1], TÜV, UL [1]	541 303	541 305	541 304

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

Selection guide – coded safety switch PSENcode

PSEN cs3.19n – 1 switch

Type	Certification	Order number
PSEN cs1.19n – 1 switch	EAC, FCC [1], IC [1], TÜV, UL [1]	540 353
PSEN cs1.19 – OSSD 1&2 – 1 actuator	EAC, TÜV, UL [1]	540 380
PSEN cs1.19 – OSSD 1 – 1 actuator	EAC, TÜV, UL [1]	540 382
PSEN cs1.19 – OSSD 2 – 1 actuator	EAC, TÜV, UL [1]	540 383
PSEN cs3.19n – 1 switch	EAC, FCC [1], IC [1], TÜV, UL [1]	541 353
PSEN cs3.19 – OSSD 1&2 – 1 actuator	EAC, TÜV, UL [1]	541 380
PSEN cs3.19 – OSSD 1 – 1 actuator	EAC, TÜV, UL [1]	541 382
PSEN cs3.19 – OSSD 2 – 1 actuator	EAC, TÜV, UL [1]	541 383

[1] FCC, IC and UL 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
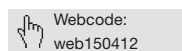
Online information at www.pilz.com

▶ Safety bolt PSENbolt

In conjunction with Pilz safe control technology, the safety bolt PSENbolt offers you the safe, complete solution comprising safety switch, handle and bolt. This removes the need for expensive in-house engineering.
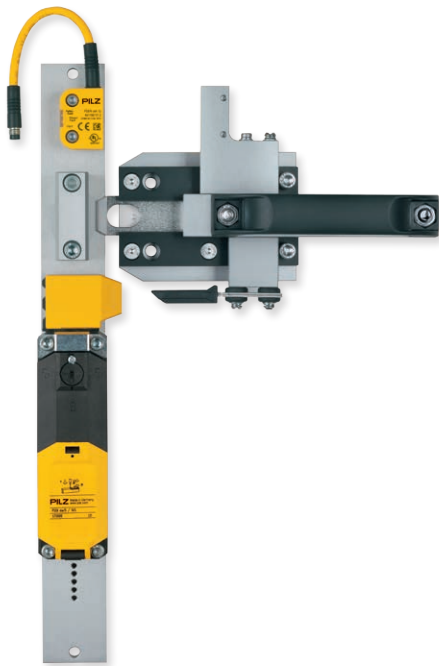
PSEN b5 (with PSEN cs4/PSEN me1)

The combinable solution for safety gate monitoring
PSENbolt is particularly suitable for safety gates that are difficult to adjust or in areas where safety gates are opened and closed frequently, because as well as protection against defeat and manipulation protection, long life of the material is also guaranteed.

Longer service life for the integrated safety switch
The actuator is guided into the actuator head of the safety switch PSEN me1 mechanically. This guarantees that the actuator is inserted correctly into the safety switch when the guard is closed. At the same time it provides mechanical protection for the switch.

As a combination of two safety switches, the safety bolt PSENbolt enables secure safety gate monitoring with the coded safety switch PSENcode up to the highest category PL e of EN ISO 13849-1 / SIL CL 3 of EN/IEC 62061 and safe guard locking with the mechanical safety switch PSENmech in one.

Type code for PSENbolt

PSEN b4.1

Product area Pilz SENsors	Escape release/locking pin		Can be combined with
Product group b – PSENbolt	1 2 2.1	Without escape release, without locking pin With escape release, with locking pin, can be deactivated With escape release, with locking pin, cannot be deactivated	▶ 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	3 4 **4.1**	Without escape release, without locking pin With escape release, with locking pin, can be deactivated **With escape release, with locking pin, cannot be deactivated**	▶ Non-contact, coded safety switches PSENcode (series PSEN cs3, PSEN cs4)
	5	Without escape release, without locking pin	▶ Mechanical safety switch PSEN me1 and non-contact, coded safety switches PSENcode (PSEN cs3, PSEN cs4)
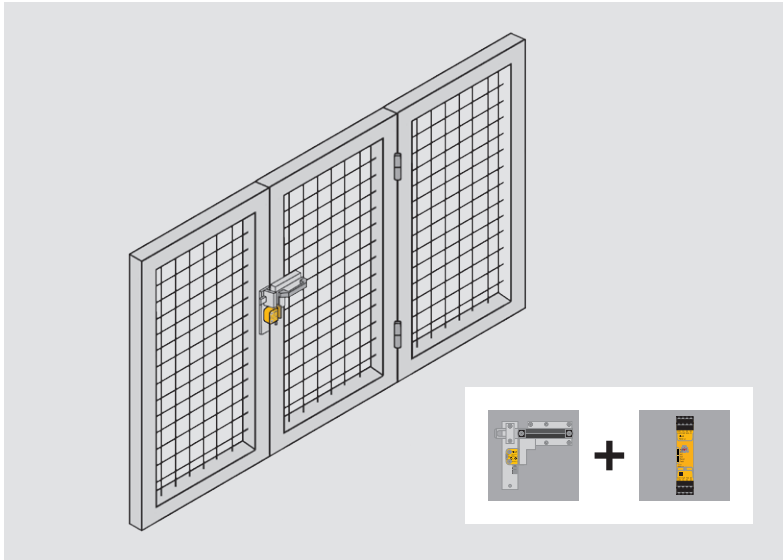
Your benefits at a glance

▸ Reduced development and
  installation expense
▸ Cost-optimized solution
  comprising safety switch,
  handle and bolt:
  - Simple combination
    of up to 2 switches
  - Long-lasting thanks to
    mechanical protection
    for safety switch
  - Reduced installation work
    thanks to the terminal that
    secures the cable (PSEN b5)
  - Highest manipulation
    protection and protection
    against defeat with safety
    switches PSENcode (RFID)
▸ Escape release available
  as an option
▸ High availability: locking pin
  protects the bolt from closing
  unintentionally

Components for your safe solution	Order number
Sensor: PSEN b4.1 combined with PSEN cs4.1n/PSEN cs4.1	540 041 541 103
Connection: PSEN cable, M12, 5-pin, 5 m	630 311
Evaluation device: PNOZ s4	751 104

The optimum solution: monitoring swing gates using the safety bolt PSENbolt with PSENcode and safety relay PNOZsigma.

Selection guide – safety bolt PSENbolt

PSEN b1

PSEN b3

Type	Can be combined with	Escape release	Locking pin	Order number[1]
PSEN b1	▸ PSEN me1 ▸ PSEN cs1 ▸ PSEN cs2			540 010
PSEN b2		◆	◆ [2]	540 020
PSEN b2.1		◆	◆ [3]	540 021
PSEN b3	▸ PSEN cs3 ▸ PSEN cs4			540 030
PSEN b4		◆	◆ [2]	540 040
PSEN b4.1		◆	◆ [3]	540 041
PSEN b5	▸ PSEN me1 ▸ PSEN cs3 ▸ PSEN cs4			540 015

[1] Order number for handle and bolt
[2] Can be deactivated
[3] Cannot be deactivated

Approvals depend on the selected safety switch.

Cable selection:

From page 138

Keep up-to-date
on safety bolts
PSENbolt:

Webcode:
web150411

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 control technology.

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, PSENhinge offer a high level of flexibility in installation, connection and adjustment. They allow systems to be attached to the right or left, for optimum cable feed at a switching point between 0° and 270°. 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 **P**ilz **SEN**sors	Contacts	Door stop	Connection
Product group hs – PSENhinge	**1** N/C / N/C	**1** Right **2** Left	**p** Connector, M12, 4-pin (compatible with M12, 5-pin)
Operation Mechanical			
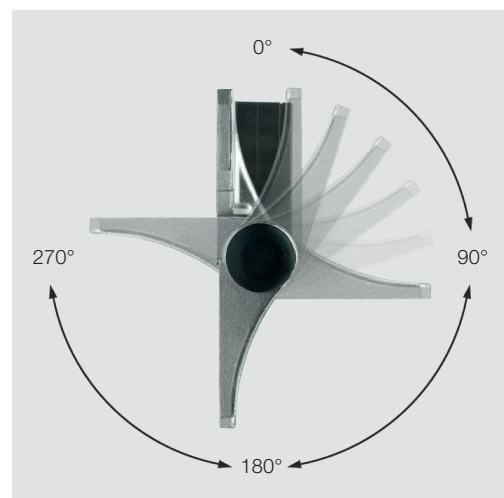
High level of flexibility for the design: the switching point on PSENhinge can be set between 0° and 270°.

Your benefits at a glance

▶ Safe, complete solution
  for rotatable/hinged guards,
  comprising hinge and
  safety switch
▶ In conjunction with Pilz
  controllers, 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

Components for your safe solution	Order number
Sensor: PSEN hs1.1p	570 270
Connection: PSEN cable, M12, 4-pin, 5 m	630 301
Evaluation device: PNOZ s3	751 103

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	570 270
PSEN hs1.2p	Left	CSA, DGUV	570 271

[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

Cable selection:

From page 138

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

Webcode:
web150410

Online information
at www.pilz.com

Accessories – PSENhinge

Description Type	Features	Quantity	Order number
Empty hinge PSEN hs1 hinge	Stainless steel	1	570 280
Change kit PSEN hs kit1	To re-adjust the switching point	1	570 281

▶ 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 combine individual components flexibly to suit your own particular requirements. Simply customize your safety gate monitoring system with our optional economical series connection, rapid diagnostics, additional operating and pushbutton elements, escape releases and door handles.

| PSENslock | PSENmlock | Safety Device Diagnostics (SDD) | PITgatebox |

The heart of the modular safety gate system: the safety gate sensors PSENslock and PSENmlock
Achieve safe position monitoring with process guarding with the safety gate sensor PSENslock. It can be used up to the highest category and in series connection.

The safety gate sensor PSENmlock offers safe interlocking and safe guard locking up to PL e. Connect PSENmlock in series and benefit from a low-cost installation. In combination with Safety Device Diagnostics (SDD), individual switches or gates can be controlled in a targeted manner – and all this without

expensive individual wiring in the control cabinet. In addition you also achieve simple and comprehensive diagnostics of the safety switches, reducing downtimes. As an optional accessory, two versions of escape release can be combined with PSENmlock: a bar is used to connect the PSEN ml escape release directly to the base unit, while the remote PSEN ml escape release cordset is mounted on the PSENmlock via a pull-push wire. Whether it's for a swing gate or sliding gate: we also offer you the right handle (further information from page 56).

Modular safety gate system

	PSENslock (process guarding)		PSENmlock (safe guard locking)		
Sensor	Series connection, 500 N	Series connection, 1 000 N	Base version	Series connection	Optional: SDD
Escape release			Escape release	Remote escape release	
Handles			For swing gates	For sliding gates	
Pushbutton unit	PITgatebox				

The perfect partner: simple operation with the pushbutton unit PITgatebox

Each preconfigured version with various combinations of pushbuttons, key switches and E-STOP pushbuttons gives you maximum flexibility for your individual application. Thanks to the slimline design, the robust control unit can be installed quickly and easily on standard profile systems. Combine the pushbutton unit PITgatebox with the safety gate systems PSENmlock and PSENslock.

When combined with our safe control technology, you receive a one-stop modular safety gate solution tailored to your particular needs.
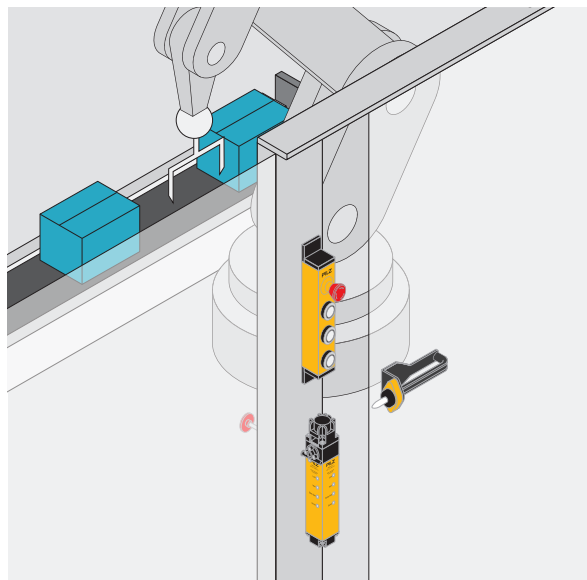
Keep up-to-date on safety gate systems:

Webcode: web150524

Online information at www.pilz.com

Safety gate systems

▶ 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, you receive 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, PSENslockcan be installed and commissioned quickly and easily. It is optimized 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 SENsors	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, unique, fully 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, unique, fully 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					
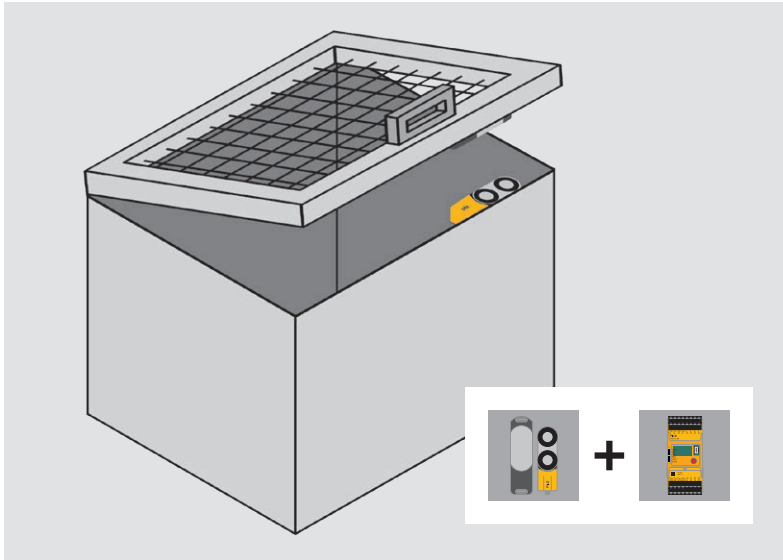
Your benefits at a glance

▸ 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:
  - 4 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 optimized
  for energy efficiency

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	772 100
- Spring loaded terminals (1 set)	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.

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

Safety gate systems

▶ Selection guide – PSENslock

Safety gate system PSENslock with 8-pin connector

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 decentralized 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 or +/– 5 mm
  - Protection type: IP67

PSEN sl-0.5

PSEN sl-0.5 … fm

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

Type (switch/actuator)	Holding force
PSEN sl-0.5p 1.1/PSEN sl-0.5	500 N
PSEN sl-0.5p 1.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 2.1/PSEN sl-0.5	500 N
PSEN sl-0.5p 2.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 2.2/PSEN sl-0.5	500 N
PSEN sl-0.5p 2.2/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 3.1/PSEN sl-0.5	500 N
PSEN sl-0.5p 3.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 4.1/PSEN sl-0.5	500 N
PSEN sl-0.5p 4.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 4.2/PSEN sl-0.5	500 N
PSEN sl-0.5p 4.2/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5p 6.1/PSEN sl-0.5	500 N
PSEN sl-0.5p 6.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-1.0p 1.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 1.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 1.1 VA/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 2.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 2.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 2.2/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 2.2/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 3.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 3.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 4.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 4.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 4.2/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 4.2/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0p 6.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0p 6.1/PSEN sl-1.0fm [3]	1 000 N

Safety gate systems

Type of coding	Power consumption[1]	Dimensions (H x W x D) in mm		Connection type (connector)	Certification	Order number (unit) [2]
		Safety guard locking device	Actuator			
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 500
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 560
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 501
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 561
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 502
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 562
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 570
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 573
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 571
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 574
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 572
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 575
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 581
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 584
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 600
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 660
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 630
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 601
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 661
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 602
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 662
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 670
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 673
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 671
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 674
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 672
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 675
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 681
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 8-pin	EAC, FCC[7], IC[7], TÜV, UL[7]	570 684

[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 UL certification applies only to individual components contained within the set

Safety gate systems

Cable selection:

From page 138

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

Webcode: web150408

Online information at www.pilz.com

▶ Selection guide – PSENslock

Safety gate system PSENslock with 5-pin connector

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 decentralized 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 or +/– 5 mm
  - Protection type: IP67

PSEN sl-0.5

PSEN sl-0.5 … fm

Type (switch/actuator)	Holding force
PSEN sl-0.5n 1.1/PSEN sl-0.5	500 N
PSEN sl-0.5n 1.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5n 2.1/PSEN sl-0.5	500 N
PSEN sl-0.5n 2.1/PSEN sl-0.5fm [3]	500 N
PSEN sl-0.5n 2.2/PSEN sl-0.5	500 N
PSEN sl-0.5n 2.2/PSEN sl-0.5fm [3]	500 N
PSEN sl-1.0n 1.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0n 1.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0n 2.1/PSEN sl-1.0	1 000 N
PSEN sl-1.0n 2.1/PSEN sl-1.0fm [3]	1 000 N
PSEN sl-1.0n 2.2/PSEN sl-1.0	1 000 N
PSEN sl-1.0n 2.2/PSEN sl-1.0fm [3]	1 000 N

Accessories – safety gate system PSENslock

PSEN sl bracket sliding door
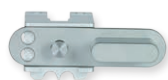
PSEN sl restart interlock

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)**

Type of coding	Power consumption[1]	Dimensions (H x W x D) in mm		Connection type (connector)	Certification	Order number (unit) [2]
		Safety guard locking device	Actuator			
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 503
Coded [4]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 563
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 504
Fully coded [5]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 564
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 505
Unique, fully coded [6]	4.8 W	122 x 45 x 44	138 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 565
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 603
Coded [4]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 663
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 604
Fully coded [5]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 664
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 605
Unique, fully coded [6]	7.2 W	172 x 45 x 44	188 x 52 x 23	M12, 5-pin	EAC, FCC [7], IC [7], TÜV, UL [7]	570 665

[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 UL certification applies only to individual components contained within the set

Safety gate systems

Features	Quantity	Order number
▸ Stainless steel ▸ Drive: one-way slot (safety screw) ▸ M5, 20 mm ▸ Suitable for PSEN sl	10	540 312
For sliding gate	2	570 551
For swing gate	1	570 550
▸ 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 door closing and to prevent the machine from restarting ▸ Certification: TÜV	1	570 552

Cable selection:

From page 138

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 provides safe interlocking and safe guard locking for personnel and process protection up to the highest category PL e.

PSEN ml b 1.1 unit

PSEN ml escape release cordset

PSEN ml door handle swinging door

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 three installation positions. The flexibly mounted actuator ensures a high tolerance compensation – even with sagging gates.

Safety even in the event of danger

Two versions with escape release are available to you as optional accessories. A bar is used to connect the PSEN ml escape release directly to the base unit, while the PSEN ml escape release cordset is mounted on the PSENmlock via a pull-push wire. The latter enables the installation of the safety gate system and escape release to be physically separate. With the right handles, you get an economical, space-saving complete solution for swing and sliding gates.

Type code for PSENmlock

PSEN ml b 1.1

Product area **P**ilz **SEN**sors	Version	Coding
Product group **ml – PSENmlock**	**b Base version** s Series connection	**1.1 Coded** 2.1 Fully coded 2.2 Unique, fully coded
Operation ▶ Mechanical, coded ▶ Transponder (RFID) ▶ With safe semiconductor outputs		
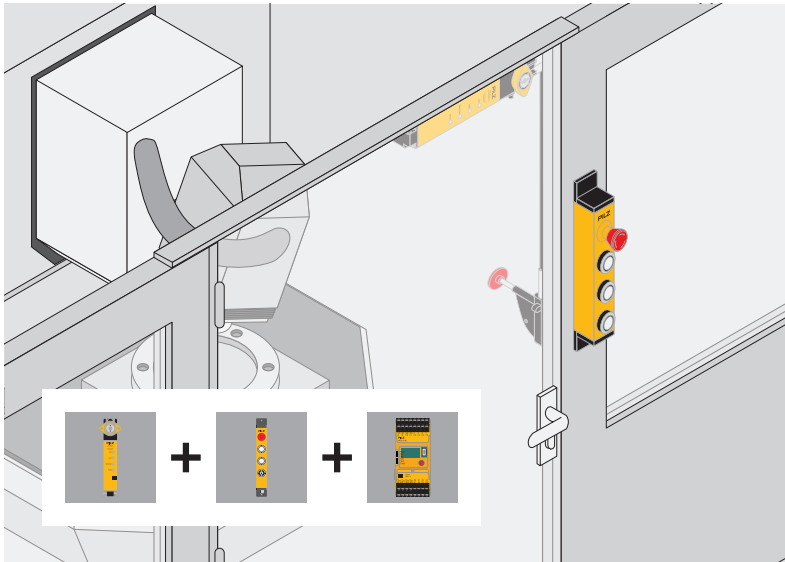
Components for your safe solution	Order number
Sensor: PSEN ml s 1.1 unit	570 406
PSEN ml escape release cordset 1.5 m	570 470
Pushbutton unit: PIT gb LLLE	G1000001
PSENmlock connection: PSEN cable axial, M12, 8-pin, 10 m	540 321
PITgatebox connection: PSEN cable axial, M12, 12-pin, 10 m	631 082
Evaluation device: PNOZ m B0	772 100
- Spring loaded terminals (1 set)	751 008

The optimum solution: the safety gate system PSENmlock in combination with the remote escape release, the pushbutton unit PITgatebox and the configurable safe small controllers 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 on 3 sides of the housing
▶ Compact design: suitable for all 40 mm profiles, among others
▶ Flexible actuator: for 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

Safety gate systems

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.
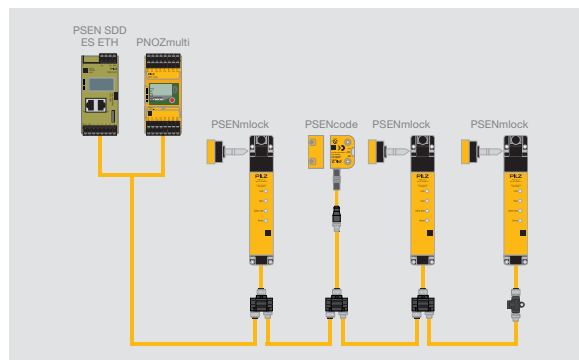
Targeted activation of individual sensors with series connection with the SDD (adapter, page 61 in Accessories).

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)
  - Unique, fully coded (Version 2.2)

Safety gate system PSENmlock – Base version

PSEN ml b 1.1 unit

PSEN ml b 1.1 switch

PSEN ml b 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 b 1.1 actuator	7 500 N
PSEN ml b 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 – Series connection

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

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, UL [2]	M12, 8-pin, pigtail	570 400 [1]
Fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 8-pin, pigtail	570 402 [1]
Unique, fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 8-pin, pigtail	570 404 [1]
Coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 8-pin, pigtail	570 401
Fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 8-pin, pigtail	570 403
Coded	63.5 x 40 x 67.2	FCC [2], IC [2], TÜV, UL [2]	-	570 480
Fully coded	63.5 x 40 x 67.2	FCC [2], IC [2], TÜV, UL [2]	-	570 481
Coded	63.5 x 40 x 61.5	FCC [2], IC [2], TÜV, UL [2]	-	570 482
Fully coded	63.5 x 40 x 61.5	FCC [2], IC [2], TÜV, UL [2]	-	570 483

[1] Set comprising switch and actuator
[2] FCC, IC and UL certification applies only to individual components contained within the set

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, UL [2]	M12, 12-pin, pigtail	570 406
Fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 12-pin, pigtail	570 408
Unique, fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 12-pin, pigtail	570 410
Coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 12-pin, pigtail	570 407
Fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 12-pin, pigtail	570 409
Unique, fully coded	217.2 x 40 x 40	FCC [2], IC [2], TÜV, UL [2]	M12, 12-pin, pigtail	570 411
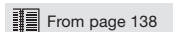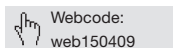
[2] FCC, IC and UL certification applies only to individual components contained within the set

Safety gate systems

Cable selection:

From page 138

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 (570 490)		Order number	
Swinging door	No	No		PSEN ml bracket swinging door 70 ———	570 493 [1]
		Yes		PSEN ml bracket swinging door 80 ———	570 494 [1]
	Yes	No		PSEN ml door handle swinging door 70 ———	570 496 [1]
		Yes		PSEN ml door handle swinging door 80 ———	570 497 [1]
Sliding gates	No	No		PSEN ml bracket sliding door ————	570 492 [1]
	Yes	No		PSEN ml door handle sliding door ————	570 495 [1]

[1] Actuators are not supplied with the device

Accessories – safety gate system PSENmlock

PSEN ml bracket sliding door

PSEN ml door handle swinging door

Description Type	Features	Quantity	Order number
Mounting plate **PSEN ml mounting plate**	For assembly on the standard profile	1	570 490
Mounting bracket **PSEN ml bracket sliding door**	For sliding gate	1	570 492
PSEN ml bracket swinging door 70	For swing gate	1	570 493
PSEN ml bracket swinging door 80	For swing gate when using mounting plate 570 490	1	570 494
Handle **PSEN ml door handle sliding door**	For sliding gate	1	570 495
PSEN ml door handle swinging door 70	For swing gate	1	570 496
PSEN ml door handle swinging door 80	For swing gate when using mounting plate 570 490	1	570 497
Screw set **PSEN screw set bracket swinging door**	For swing door mounting bracket	1	570 498
PSEN screw set bracket sliding door	For sliding door mounting bracket	1	570 499
PSEN screw M5x10	For PSENmlock actuator	10	540 311
PSEN screw M5x20	For PSENmlock actuator	10	540 312

Accessories – safety gate system PSENmlock

PSEN ml escape
release

PSEN ml escape
release cordset
2,0m

Description Type	Features	Quantity	Order number
Series connection **PSEN ml escape release**	Suitable for PSEN ml b, PSEN ml s	1	570 460
PSEN ml escape release extension	Suitable for PSEN ml b, PSEN ml s	1	570 462
PSEN ml escape release cordset 0.5 m	Suitable for PSEN ml b, PSEN ml s, length: 0.5 m	1	570 466
PSEN ml escape release cordset 0.75m	Suitable for PSEN ml b, PSEN ml s, length: 0.75 m	1	570 467
PSEN ml escape release cordset 1.0m	Suitable for PSEN ml b, PSEN ml s, length: 1.0 m	1	570 468
PSEN ml escape release cordset 1.25m	Suitable for PSEN ml b, PSEN ml s, length: 1.25 m	1	570 469
PSEN ml escape release cordset 1.5m	Suitable for PSEN ml b, PSEN ml s, length: 1.5 m	1	570 470
PSEN ml escape release cordset 2.0m	Suitable for PSEN ml b, PSEN ml s, length: 2.0 m	1	570 471
PSEN ml escape release cordset 2.5m	Suitable for PSEN ml b, PSEN ml s, length: 2.5 m	1	570 472
PSEN ml escape release cordset 3.0m	Suitable for PSEN ml b, PSEN ml s, length: 3.0 m	1	570 473
PSEN ml escape release cordset 3.5m	Suitable for PSEN ml b, PSEN ml s, length: 3.5 m	1	570 474
PSEN ml escape release cordset 4.0m	Suitable for PSEN ml b, PSEN ml s, length: 4.0 m	1	570 475
Actuator **PSEN ml actuator 10° adapter**	Adapter for aligning the PSENmlock actuator for small gates, radius: 300 – 500 mm.	1	570 484
PSEN ml actuator center ring	5 centering rings for PSENmlock actuator, especially suited for small gates.	1	570 485

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

Webcode:
web150409

Online information
at www.pilz.com

Safety gate systems

▶ 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. It 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-5LPKLE-M12/5

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

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

Safety gate systems
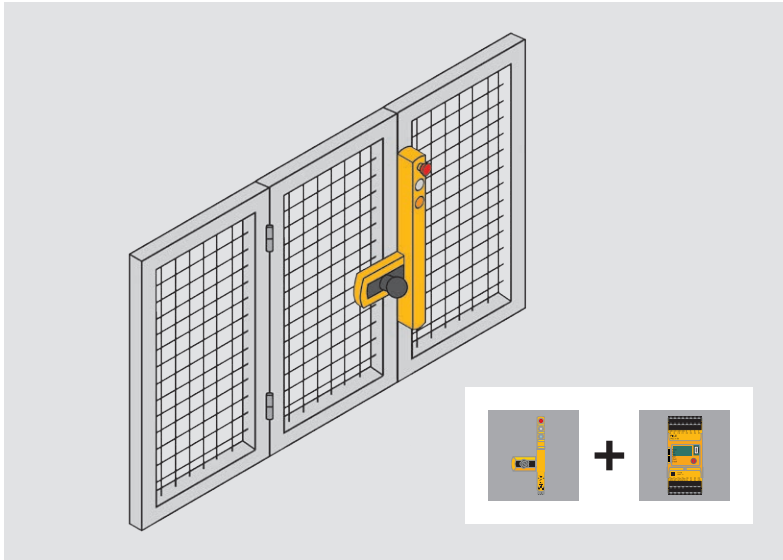
Your benefits at a glance

▸ Greater flexibility: large selection of different control and operating 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 minimized: 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)

Components for your safe solution	Order number
Sensor: PSEN sg2c-3LPE	570 800
Connection: Cable, depending on function, e.g. 16 x 0.25 mm²	-
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.
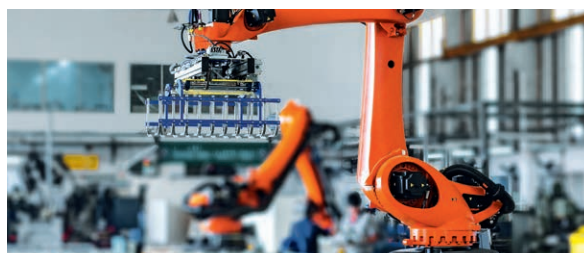
Safety gate systems

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 or +/– 5 mm
- Holding force, swing gate: 2 000 N
- Connection type:
plug-in spring-loaded terminals
- Protection type: IP65/54
▶ Type of coding:
- Coded
- Unique, fully 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 colored caps and escape
release bar as well as actuator (bolt)
for left or right-hinged doors

PSEN sg2c-3LPE

PSEN sg2c-5LPLLE

Type	No. of pushbuttons Emergency stop
▶ **Short unit type**	
PSEN sg2c-3LPE	1
PSEN sg2c-3LBE	1
PSEN sg2c-3LPS	-
PSEN sg2c-3LBS	-
PSEN sg2c-3LPC	-
PSEN sg2c-3LBC	-
PSEN sg2c-3LPE 2.2	1
▶ **Long unit type**	
PSEN sg2c-5LPLLE	1
PSEN sg2c-5LBLLE	1
PSEN sg2c-5LPLLS	-
PSEN sg2c-5LBLLS	-
PSEN sg2c-5LPLLC	-
PSEN sg2c-5LBLLC	-
PSEN sg2c-5LPLLE 2.2	1
▶ **Long unit type: connection type M12, 5-pin**	
PSEN sg2c-5LPKLE-M12/5	1
PSEN sg2c-5LBKLE-M12/5	1
PSEN sg2c-5LPKLS-M12/5	-
PSEN sg2c-5LBKLS-M12/5	-
PSEN sg2c-5LPKLC-M12/5	-
PSEN sg2c-5LBKLC-M12/5	-
PSEN sg2c-5LPKLE-M12/5 2.2	1
▶ **Freely configurable unit type (2 freely assignable buttons)**	
PSEN sg2c-5CCLLE	1

Section stop	Push-button	Key-operated pushbutton	Key switch	Dimensions (H x W x D) in mm	Type of coding	Certification	Order number
-	2	-	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 800
-	1	1	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 802
1	2	-	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 804
1	1	1	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 806
-	2	-	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 808
-	1	1	-	445 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 810
-	2	-	-	445 x 200 x 105	Unique, fully coded	FCC [1], TÜV, UL [1]	570 880
-	4	-	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 812
-	3	1	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 814
1	4	-	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 816
1	3	1	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 818
-	4	-	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 820
-	3	1	-	546 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 822
-	4	-	-	546 x 200 x 105	Unique, fully coded	FCC [1], TÜV, UL [1]	570 882
-	3	-	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 824
-	2	1	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 826
1	3	-	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 828
1	2	1	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 830
-	3	-	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 832
-	2	1	1	558.5 x 200 x 105	Coded	FCC [1], TÜV, UL [1]	570 834
-	3	-	1	558.5 x 200 x 105	Unique, fully coded	FCC [1], TÜV, UL [1]	570 884
-	-	-	-	555 x 200 x 108	Coded	FCC [1], TÜV, UL	570 836

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

Cable selection:

From page 138

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

Webcode: web150407

Online information at www.pilz.com

Safety gate systems

▶ Selection guide – PSENsgate

Safety gate systems

Accessories – safety gate system PSENsgate

PSEN sg escape
release pin

PSEN sg auxiliary
release pin

PSEN sg color covers
(pushbutton)

Description Type
Escape release **PSEN sg escape release pin**
Auxiliary release **PSEN sg auxiliary release pin**
Cover **PSEN sg2 cover**
Color control elements **PSEN sg color covers (pushbutton)**
Connection cable 200 m **PSEN cable 200 m-8x0.25 mm²**

Features	Quantity	Order number
Certification: TÜV	1	570 870
Certification: TÜV	1	570 871
Certification: TÜV	1	570 773
Certification: TÜV	6	570 875
-	1	570 793
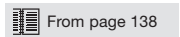
Safety gate systems

Cable selection:

From page 138

Keep up-to-date on safety gate systems PSENsgate:
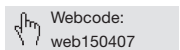
Webcode:
web150407

Online information at www.pilz.com

▶ Light curtains

When the production process requires active intervention, 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 light curtains with advanced functionalities such as muting, blanking or cascading support flexible application on any machine.

Access guarding

Body protection

Hand protection

Finger protection

PSEN opII3F...   PSEN op2H-A...   PSEN op2H-SL...

PSENopt II – new generation

With a high level of robustness of 50 g, 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 (see page 72).

PSENopt Advanced

The 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 light curtain. Their full functionality can be used in conjunction with the configurable safe small controllers PNOZmulti 2 (see page 74).

PSENopt slim

Light curtains PSENopt slim can be used above all in applications where space is at a premium thanks to their slimline design (see page 76).

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 in 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 light curtain resolution for your application, in accordance with EN ISO 13855.

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

Simple commissioning

As single beams can be shown in the software PSENopt Configurator, it is much easier to align and monitor the light curtains; reaction times can be reduced to a minimum through rapid diagnostics.

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.

PSEN

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

Light curtains

Keep up-to-date on light curtains PSENopt:

Webcode:
web150525

Online information at www.pilz.com

▶ Selection guide – Light curtains

Selection guide – for every application, the right light curtain PSENopt

	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

PSENopt II   PSENopt Advanced   PSENopt slim

PSENopt II – new 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	

Light curtains

Keep up-to-date
on light curtains
PSENopt:

Webcode:
web150525

Online information
at www.pilz.com

▶ Light curtains PSENopt II – new generation

The new second generation of light curtains PSENopt II is characterized by the high level of robustnessand is suitable for all Type 3 and Type 4 applications in accordance with EN/IEC 61496.

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

Type code for PSENopt II

PSEN opII3H-s-30-045

Product area **P**ilz **SEN**sors	Approval	Resolution	Functions	Resolution	Height of protected field
Product group opII – PSENopt II **Operation** ▶ Non-contact, optical, 2D (area monitoring) ▶ With safe semiconductor outputs	**3** Type 3 [1] 4 Type 4 [2]	B Body protection **H Hand protection** F Finger protection	**s Standard**	14 14 mm **30 30 mm** 170 170 mm [3] 300 300 mm [4]	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

[1] Approved in accordance with EN/IEC 61496-1
[2] Approved in accordance with EN/IEC 61496-1/-2
[3] With operating range 0.2 – 15 m
[4] With operating range 10 – 55 m
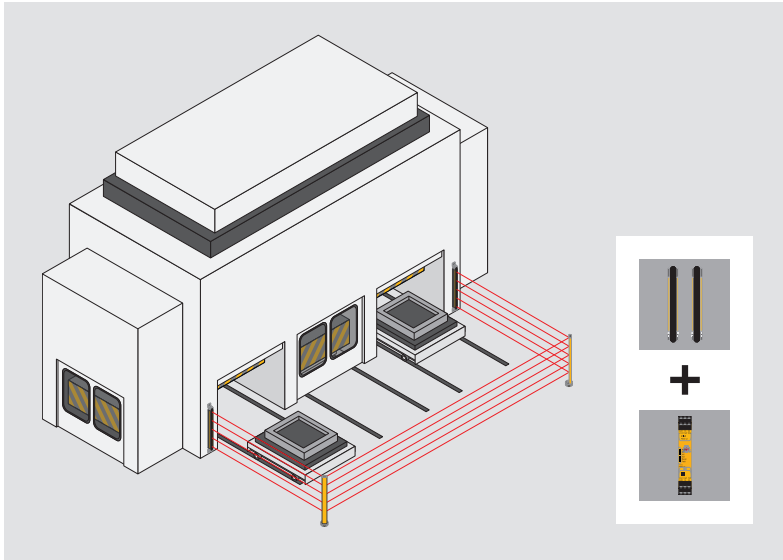
Your benefits at a glance

- 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 PDP67 and comprehensive accessories

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 (2x)	630 312
Evaluation device: ▶ PNOZ s3	751 103

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

Light curtains

Flexible arrangement

There are no limits to the physical arrangement of your light curtains. Thanks to the coding, the light curtains do not interfere with each other, even in close proximity. This is particularly true 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, the pairs of light curtains can be configured with different beam codes.

Securing several sides of a danger zone

In order to secure several sides of a danger zone, the light curtains can be combined with our new 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 wiring work, space and money. The mirror columns are comprised of a post protector and an integrated mirror and can be used with all light curtains PSENopt and PSENopt II. The PSENopt II adjustable base unit is an optional accessory offering additional protection against strong mechanical impact.

Accessories:
From page 92

Cable selection:
From page 138

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

Webcode: web150418

Online information at www.pilz.com

▶ Light curtains PSENopt Advanced

The multifunctional 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.

PSEN op2H-A…
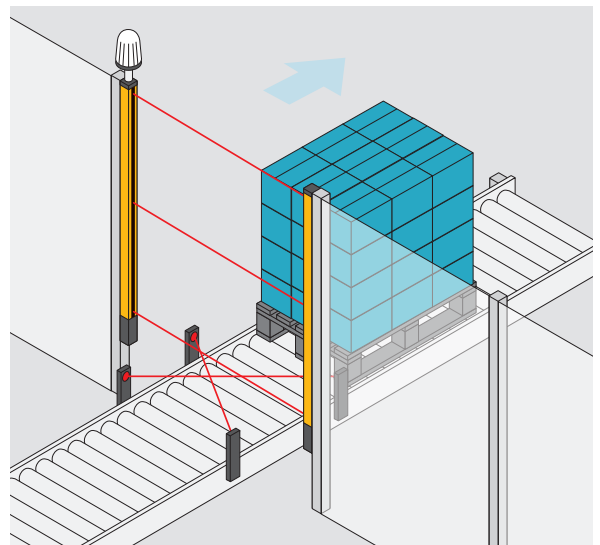
Muting with crossed muting sensors.

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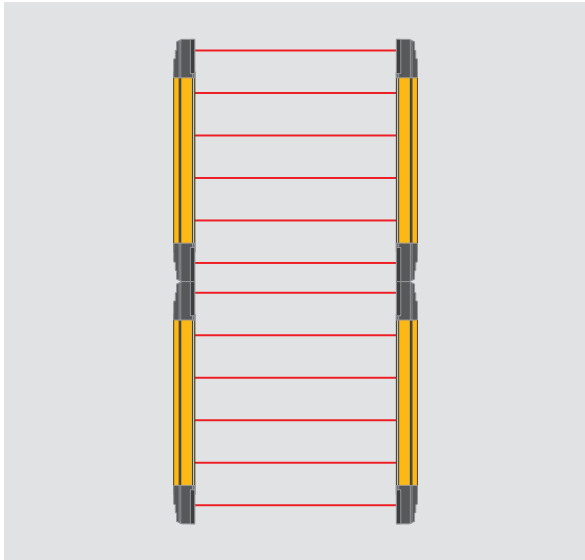
Continuous single beams during cascading, without dead zones, increase safety.

Your benefits at a glance
▶ Simple operation and commissioning with the new software PSENopt Configurator
▶ Short reaction times thanks to rapid diagnostics of fault states
▶ High flexibility:
  - 3 functionalities in one 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 master and slave quickly and simply using a convenient plug-in connector; also combines finger and hand protection.

Blanking for a flexible, uninterrupted production process

You can use the blanking function to blank out a defined area of the light 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.
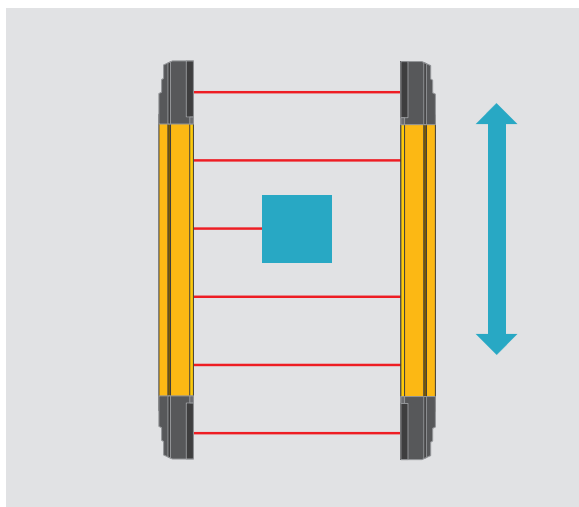
Floating blanking: One beam is blanked out. Any object that interrupts more than one beam will be detected.

Accessories:
From page 92

Cable selection:
From page 138

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

Webcode: web150423

Online information at www.pilz.com

Light curtains

▶ Light curtains PSENopt slim

Thanks to their slimline design, light curtains PSENopt slim are perfect for applications where space is at a premium.
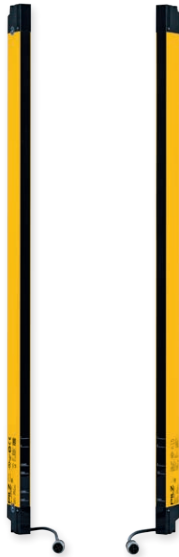
PSEN op2H-SL…
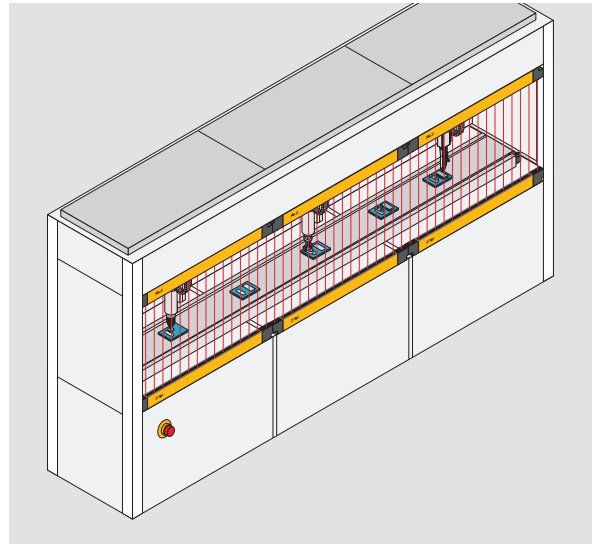
Linear cascading

Small light curtain, high level of 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 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.
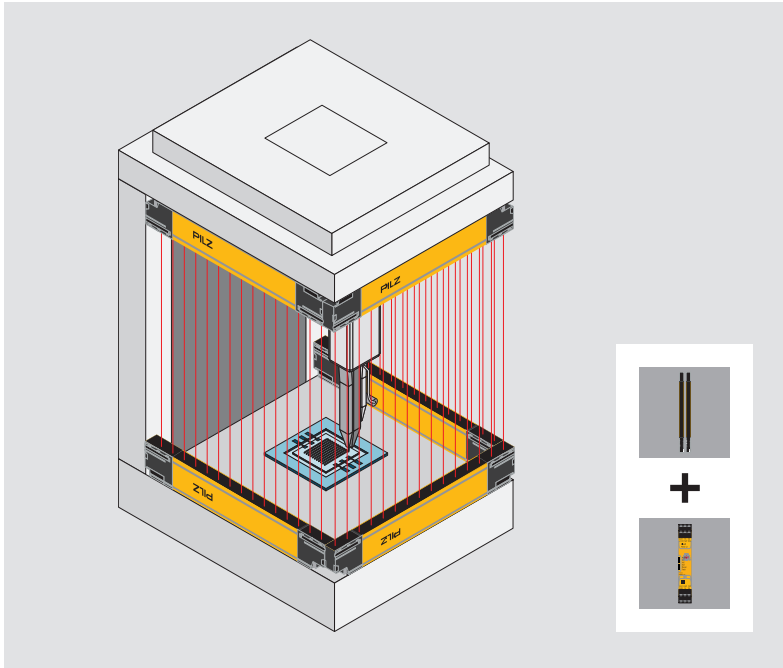
Your benefits at a glance

▸ Finger and hand protection
for applications up to PL c
and PL e
▸ Narrow 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	631 157
Connection: ▸ PSEN cable M12-5sf 5m ▸ 2 x PSEN op SL cascading 0.1 m	 630 311 631 183
Evaluation device: ▸ PNOZ s3	 750 103
Test rod for ESPE: PSEN op Testpiece F 14m	630 345

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

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode:
web150423

Online information
at www.pilz.com

▶ Selection guide – PSENopt II

Body protection: Type 3 – light curtain PSEN opII3B

Common features
- ▶ Compliant and approved
  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 – light curtain PSEN opII4B

Common features
- ▶ Compliant and approved
  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

Light curtains

Height of protected field	Range	Certification	Order number [1]
450 mm	0.2 …15 m	EAC, TÜV	632 100
600 mm	0.2 …15 m	EAC, TÜV	632 101
750 mm	0.2 …15 m	EAC, TÜV	632 102
900 mm	0.2 …15 m	EAC, TÜV	632 103
1 200 mm	0.2 …15 m	EAC, TÜV	632 104
1 500 mm	0.2 …15 m	EAC, TÜV	632 105
450 mm	10 … 55 m	EAC, TÜV	632 110
600 mm	10 … 55 m	EAC, TÜV	632 111
750 mm	10 … 55 m	EAC, TÜV	632 112
900 mm	10 … 55 m	EAC, TÜV	632 113
1 200 mm	10 … 55 m	EAC, TÜV	632 114
1 500 mm	10 … 55 m	EAC, TÜV	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	EAC, TÜV, UL [2]	632 120
600 mm	0.2 …15 m	EAC, TÜV, UL [2]	632 121
750 mm	0.2 …15 m	EAC, TÜV, UL [2]	632 122
900 mm	0.2 …15 m	EAC, TÜV, UL [2]	632 123
1 200 mm	0.2 …15 m	EAC, TÜV, UL [2]	632 124
1 500 mm	0.2 …15 m	EAC, TÜV, UL [2]	632 125
450 mm	10 … 55 m	EAC, TÜV, UL [2]	632 130
600 mm	10 … 55 m	EAC, TÜV, UL [2]	632 131
750 mm	10 … 55 m	EAC, TÜV, UL [2]	632 132
900 mm	10 … 55 m	EAC, TÜV, UL [2]	632 133
1 200 mm	10 … 55 m	EAC, TÜV, UL [2]	632 134
1 500 mm	10 … 55 m	EAC, TÜV, UL [2]	632 135

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

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Cable selection:

From page 138

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

Webcode: web150418

Online information at www.pilz.com

▶ Selection guide – PSENopt II

Hand protection: Type 3 – light curtain PSEN opII3H

Common features
▶ Compliant and approved
  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 – light curtain PSEN opII4H

Common features
▶ Compliant and approved
  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

Light curtains

Height of protected field	Range	Certification	Order number[1]
150 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 020
300 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 021
450 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 022
600 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 023
750 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 024
900 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 025
1 050 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 026
1 200 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 027
1 350 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 028
1 500 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 029
1 650 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 030
1 800 mm	0.2 … 18 m	EAC, KOSHA, TÜV	632 031

[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	EAC, KOSHA, TÜV, UL[2]	632 060
300 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 061
450 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 062
600 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 063
750 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 064
900 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 065
1 050 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 066
1 200 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 067
1 350 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 068
1 500 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 069
1 650 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 070
1 800 mm	0.2 … 18 m	EAC, KOSHA, TÜV, UL[2]	632 071

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:
From page 92

Cable selection:
From page 138

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

Webcode: web150418

Online information at www.pilz.com

▶ Selection guide – PSENopt II

Finger protection: Type 3 – light curtain PSEN opII3F

Common features
- ▶ Compliant and approved
  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 – light curtain PSEN opII4F

Common features
- ▶ Compliant and approved
  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

Light curtains

Height of protected field	Range	Certification	Order number[1]
150 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 040
300 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 041
450 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 042
600 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 043
750 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 044
900 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 045
1 050 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 046
1 200 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 047
1 350 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 048
1 500 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 049
1 650 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 050
1 800 mm	0.2 … 8 m	EAC, KOSHA, TÜV	632 051

[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	EAC, KOSHA, TÜV, UL[2]	632 080
300 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 081
450 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 082
600 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 083
750 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 084
900 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 085
1 050 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 086
1 200 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 087
1 350 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 088
1 500 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 089
1 650 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 090
1 800 mm	0.2 … 8 m	EAC, KOSHA, TÜV, UL[2]	632 091

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode: web150418

Online information at www.pilz.com

▶ Selection guide – PSENopt Advanced

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

Common features
▶ Compliant and approved
  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: 2 pieces
▶ 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 – light curtain PSEN op4H-A

Common features
▶ Compliant and approved
  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: 2 pieces
▶ 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

Light curtains

Height of protected field	Range	Certification	Order number [1]
300 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631040
450 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631041
600 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631042
750 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631043
900 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631044
1050 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631045
1200 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631046
1350 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631047
1500 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631048
1650 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631049
1800 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631050

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Height of protected field	Range	Certification	Order number [1]
300 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631020
450 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631021
600 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631022
750 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631023
900 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631024
1050 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631025
1200 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631026
1350 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631027
1500 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631028
1650 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631029
1800 mm	0.2 … 20 m	EAC, TÜV, UL [2]	631030

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit); pigtail cables are not supplied with the device.
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode: web150423

Online information at www.pilz.com

▶ Selection guide – PSENopt Advanced

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

Common features
- ▶ Compliant and approved
  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: 2 pieces
- ▶ 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

Light curtains

Height of protected field	Range	Certification	Order number [1]
300 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 000
450 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 001
600 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 002
750 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 003
900 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 004
1 050 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 005
1 200 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 006
1 350 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 007
1 500 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 008
1 650 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 009
1 800 mm	0.2 … 7 m	EAC, TÜV, UL [2]	631 010

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit); pigtail cables are not supplied with the device.
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode: web150423

Online information at www.pilz.com

▶ Selection guide – PSENopt slim

Hand protection: Type 2 – light curtain PSEN op2H-SL

Common features
▸ Compliant and approved
  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 – light curtain PSEN op4H-SL

Common features
▸ Compliant and approved
  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

Light curtains

Height of protected field	Range	Certification	Order number[1]
150 mm	0.2 … 6 m	TÜV, UL [2]	631 100
300 mm	0.2 … 6 m	TÜV, UL [2]	631 101
450 mm	0.2 … 6 m	TÜV, UL [2]	631 102
600 mm	0.2 … 6 m	TÜV, UL [2]	631 103
750 mm	0.2 … 6 m	TÜV, UL [2]	631 104
900 mm	0.2 … 6 m	TÜV, UL [2]	631 105
1 050 mm	0.2 … 6 m	TÜV, UL [2]	631 106
1 200 mm	0.2 … 6 m	TÜV, UL [2]	631 107

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Height of protected field	Range	Certification	Order number[1]
150 mm	0.2 … 6 m	TÜV, UL [2]	631 120
300 mm	0.2 … 6 m	TÜV, UL [2]	631 121
450 mm	0.2 … 6 m	TÜV, UL [2]	631 122
600 mm	0.2 … 6 m	TÜV, UL [2]	631 123
750 mm	0.2 … 6 m	TÜV, UL [2]	631 124
900 mm	0.2 … 6 m	TÜV, UL [2]	631 125
1 050 mm	0.2 … 6 m	TÜV, UL [2]	631 126
1 200 mm	0.2 … 6 m	TÜV, UL [2]	631 127

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode:
web150423

Online information
at www.pilz.com

▶ Selection guide – PSENopt slim, PSENopt single-

Finger protection: Type 4 – light curtain PSEN op4F-SL

Common features
- ▶ Compliant and approved
  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:
    PNOZ m0p, PNOZ m1p, PNOZ m2p
  - Programmable control system PSS:
    PSS DI2O T
- ▶ 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)

Light curtains

beam safety light barriers

Height of protected field	Range	Certification	Order number[1]
150 mm	0.2 … 6 m	TÜV, UL [2]	631 140
210 mm	0.2 … 6 m	TÜV, UL [2]	631 141
300 mm	0.2 … 6 m	TÜV, UL [2]	631 142
360 mm	0.2 … 6 m	TÜV, UL [2]	631 143
420 mm	0.2 … 6 m	TÜV, UL [2]	631 144
450 mm	0.2 … 6 m	TÜV, UL [2]	631 145
480 mm	0.2 … 6 m	TÜV, UL [2]	631 146
540 mm	0.2 … 6 m	TÜV, UL [2]	631 147
600 mm	0.2 … 6 m	TÜV, UL [2]	631 148
660 mm	0.2 … 6 m	TÜV, UL [2]	631 149
720 mm	0.2 … 6 m	TÜV, UL [2]	631 150
750 mm	0.2 … 6 m	TÜV, UL [2]	631 151
780 mm	0.2 … 6 m	TÜV, UL [2]	631 152
840 mm	0.2 … 6 m	TÜV, UL [2]	631 153
900 mm	0.2 … 6 m	TÜV, UL [2]	631 154
960 mm	0.2 … 6 m	TÜV, UL [2]	631 155
1 020 mm	0.2 … 6 m	TÜV, UL [2]	631 156
1 050 mm	0.2 … 6 m	TÜV, UL [2]	631 157
1 080 mm	0.2 … 6 m	TÜV, UL [2]	631 158
1 140 mm	0.2 … 6 m	TÜV, UL [2]	631 159
1 200 mm	0.2 … 6 m	TÜV, UL [2]	631 160

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

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

[1] Order number for transmitter, receiver and mounting bracket respectively (one unit)
[2] UL certification applies only to individual components contained within the set

Light curtains

Accessories:

From page 92

Cable selection:

From page 138

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

Webcode:
web150423

Online information at www.pilz.com

▶ Selection guide – Accessories PSENopt

Accessories 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	632 014
PSEN opII Bracket Kit	Flexible bracket	2	632 015
PSEN opII Adv Bracket Kit-2	Dead-zone-free attachment with degrees of freedom in 3 axes, 4 mounting plates	4	632 016
PSEN opII Adv Bracket Kit-3	Dead-zone-free attachment with degrees of freedom in 3 axes, 6 mounting plates	6	632 017
PSEN opII Testpiece F 14 mm	Test rod for finger resolution	1	632 018
PSEN opII Testpiece H 30 mm	Test rod for hand resolution	1	632 019

Accessories PSENopt, PSENopt II – Mirror columns

PSEN opII mirror
column-060

PSEN opII adjustable
base unit

Type	Features	Protection field height to max.	Order number
PSEN opII mirror column-060	▶ Mirror column for protection against shock, collision and vibration ▶ Mirror column consisting of a post protector and an integrated mirror ▶ Can be used with light curtains PSENopt and PSENopt II ▶ Optional accessories: PSENopt II adjustable base unit	60 mm	632 032
PSEN opII mirror column-090		90 mm	632 033
PSEN opII mirror column-120		120 mm	632 034
PSEN opII mirror column-165		165 mm	632 035
PSEN opII mirror column-195		195 mm	632 036
PSEN opII adjustable base unit		-	632 037

Light curtains

Accessories 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 160)	1	631 070

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

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

Description Type	Features	Quantity	Order number
Deviating mirror **PSEN 2S/4S mirror**	Suitable for light barriers PSEN op2S/4S	1	630 711
Mounting bracket **PSEN 2S/4S bracket**	Suitable for light barriers PSEN op2S/4S	2	630 712

Light curtains

Safety laser scanners PSENscan

Stationary or mobile area guarding as well as access monitoring – the safety laser scanner PSENscan offers
the optimum solution for two-dimensional area monitoring.

PSEN sc B 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 meters. 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
has entered is stopped. This allows the safety distances of your plant to be
optimized. The result is increased plant productivity and improved plant
ergonomics while ensuring optimum safety.
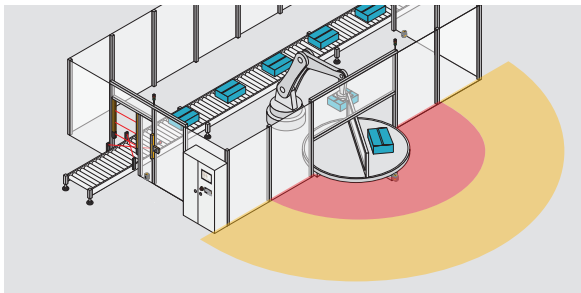
Stationary safeguarding of danger zones
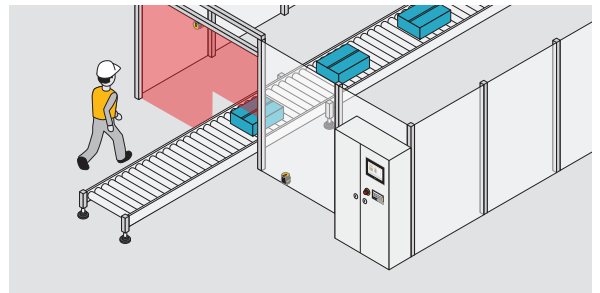
Access guarding
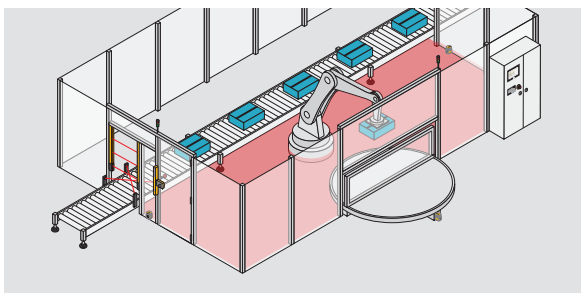
Encroachment from behind
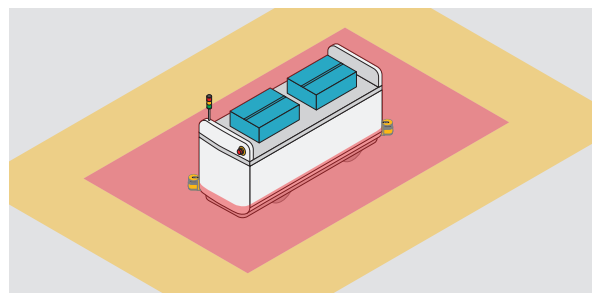
Safeguarding of automated guided vehicles
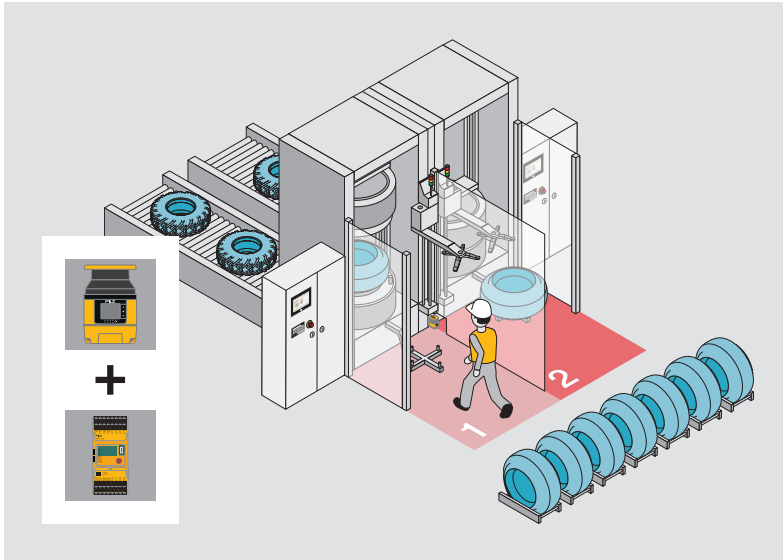
Your benefits at a glance

▸ Protected field ranges of
  up to 5.5 meters
▸ 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 3 separate zones
  with only one scanner
▸ Up to 70 switchable
  configurations can be set up
▸ Series connection of
  up to 4 scanners
▸ Exchangeable storage
  medium for transferring
  the configuration

PSEN

Fast and simple
configuration
with the PSENscan
Configurator.

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 in accordance
with the master-slave principle. In this case the configuration is made centrally
on the master scanner and is then passed to the slaves.

Safety laser scanners

Type code for PSENscan

PSEN sc B 3.0 08-12

Product area **P**ilz **SEN**sors	Type	Safety zone	Expansions

Product group
sc – PSENscan
	B Base version
	L Light
	M Master
	S Slave
		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

▶ Selection guide – PSENscan

Safety laser scanners 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 slave versions:
  - Muting
  - EDM
  - Override
- ▶ Additional functions for the master and slave versions:
  - Restart in accordance with EN/IEC 61496-3
  - Vertical applications

PSEN sc B 5.5

Type	Resolution	Operating range safety zone
▶ **Base version**		
PSEN sc B 5.5	70 mm	5.5 m
▶ **Light versions**		
PSEN sc L 3.0 08-12	40, 70 mm	3.0 m
PSEN sc L 5.5 08-12	40, 70 mm	5.5 m
▶ **Master versions**		
PSEN sc M 3.0 08-12	40, 70 mm	3.0 m
PSEN sc M 5.5 08-12	40, 70 mm	5.5 m
PSEN sc M 5.5 08-17 [2]	40, 70 mm	5.5 m
▶ **Slave versions**		
PSEN sc S 3.0 08-12	40, 70 mm	3.0 m
PSEN sc S 5.5 08-12	40, 70 mm	5.5 m

[1] With simultaneous monitoring
[2] Available soon

Accessories – safety laser scanner PSENscan

PSEN sc bracket PR

PSEN sc bracket F

PSEN sc bracket H

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 cleaner
PSEN sc cloth
PSEN sc bracket F
PSEN sc bracket C

Safety laser scanners

Safety zones [1]	Warning zones [1]	Switchable configurations	Certification	Expansions/ memory module	Order number
1	1	-	TÜV, UL	8-pin memory module (not exchangeable)	6D000001
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000012
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000013
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000016
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000017
2	2	8	TÜV, UL	8 and 17-pin exchangeable memory module	6D000019
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000020
1	1	3	TÜV, UL	8 or 12-pin exchangeable memory module	6D000021

PSEN

Fast and simple configuration with the PSENscan Configurator.

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	1	6D000005
Memory module 8 or 12-pin, M12	1	6D000006
Cleaning agent	1	6D000008
Cleaning cloth	1	6D000009
Mounting bracket for floor fastening	1	6D000010
Mounting head for corner fastening	1	6D000011

Safety laser scanners

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

Webcode: web181395
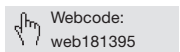
Online information at www.pilz.com

▶ Camera-based protection systems PSENvip

The camera-based protection systems PSENvip are mobile protection systems. They are used for safe monitoring of press brakes. When installed on the upper die, the system detects even the smallest foreign body in the protected field between transmitter and receiver. The two product types PSENvip and PSENvip 2 belong to the PSENvip camera-based protection systems.

Bending angle
is recorded
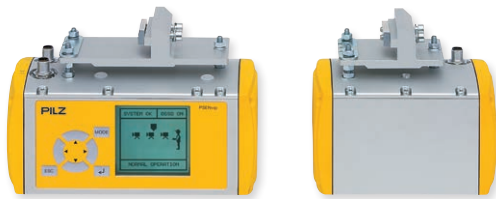
PSENvip RL D Set

PSENvip R E

PSENvip – the safe, complete solution for press retrofits

Together with the configurable safe small controllers PNOZmulti 2 or the automation system PSS 4000, you receive a safe, complete solution for press retrofits. Renewal of the CE marking is not necessary following a retrofit (see page 100).

PSENvip 2 – the integrated solution for modern press brakes

PSENvip 2 is the second, extended generation of the camera-based protection system. In combination with the automation system PSS 4000, you receive an integrated solution for modern press brakes – with maximum productivity (see page 102).

Safe camera systems
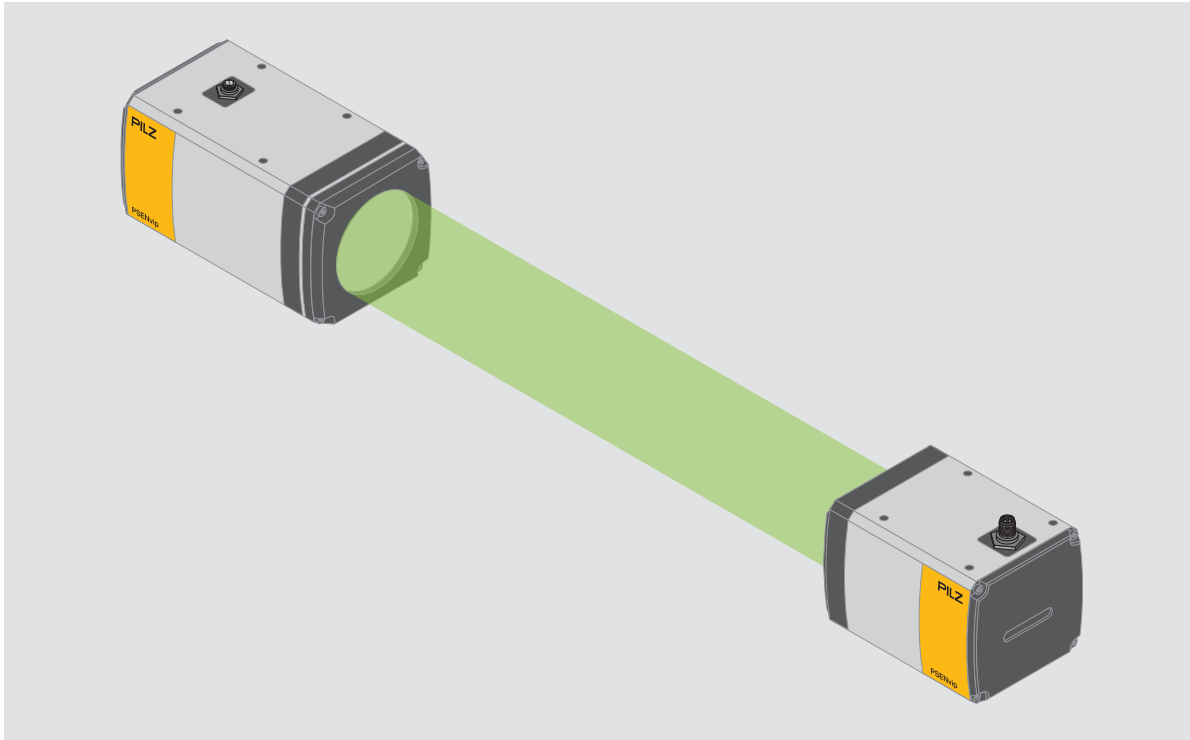
Safe view of bending processes with the camera-based protection systems PSENvip.

Innovative optical system for high productivity

The visible light beams are transmitted to the receiver via a telecentric lens (vision parallel). As a result, PSENvip provides high availability and therefore better productivity compared to laser-based systems. The long service life of the light source means reduced maintenance work.

Highly robust thanks to non-sensitive technology

PSENvip are insensitive to reflections and external/diffused light, as well as vibration and temperature stratification (e.g. due to heated tools). The longer service life of the light source reduces maintenance costs. As the light does not pose a hazard for the eyes, PSENvip provides a higher level of safety than conventional systems.

Fast, simple initial setup and tool change

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

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

Webcode: web150415

Online information at www.pilz.com

Safe camera systems

▶ Camera-based protection system PSENvip – the

The camera-based protection system PSENvip provides a safe, complete solution for press retrofits.
A renewal of CE certification is not necessary after a PSENvip retrofit.

PSENvip RL D Set

Part of
PSS 4000
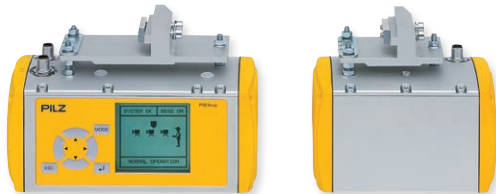
PSENvip productive version in combination
with the automation system PSS 4000

The mobile protection system PSENvip can be combined with the configurable safe small controllers PNOZmulti 2 or the automation system PSS 4000. When combined with the FAST Control Unit in the automation system PSS 4000, the productive version of PSENvip can achieve a productivity increase of up to 50 per cent during dynamic muting mode. In conjunction with descriptive diagnostic messages via the integrated LC display, it guarantees productive work practices in complete safety.

With proper installation and correct parameter setting of the PSENvip (both in the base version and the productive version with PSS 4000), no significant change has been made in terms of the Equipment and Product Safety Act. A renewal of CE certification is therefore not necessary after a PSENvip retrofit.

Type code for PSENvip

PSENvip RL D M Set

Product area **P**ilz **SEN**sors	Transmitter/ receiver	Display (receiver)	Version (receiver)	Scope
Product group **vip – PSENvip**	T Transmitter **RL** Receiver, left	**D** With display	**M** With bending angle measurement P Productive version _ Base version	Set Unit comprising transmitter and receiver
Operation Non-contact, optical, 2D (area monitoring)				

safe, complete solution for press retrofits
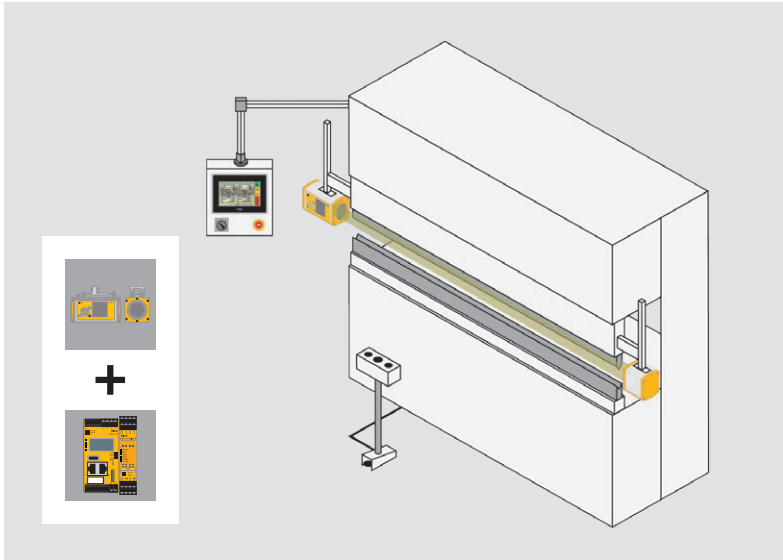
Your benefits at a glance
▶ Highest level of safety for
  press brakes in accordance
  with the most current safety
  standards and EN 12622
▶ Higher productivity and
  availability thanks to:
  - Innovative optical system
  - Tolerance to vibration,
    temperature stratification,
    reflection, external/
    diffused light
▶ User-friendly:
  - Software-supported
    fine adjustment following
    tool change
  - User-friendly operation
    via integrated display

Components for your safe solution	Order number
Sensor: PSENvip RL D Set	583 000
Connection:	
▶ PSEN op cable, shielded, straight, M12, 4-pin, 5 m	630 304
▶ PSEN op cable, shielded, straight, M12, 8-pin, 5 m (2x)	630 314
▶ Evaluation device: base unit PNOZ m B1	772 101
▶ 2-pole semiconductor output module: PNOZ m EF 8DI2DOT	772 144

Safe and effective press braking with the base version: camera-based protection system PSENvip and configurable safe small controllers PNOZmulti 2.
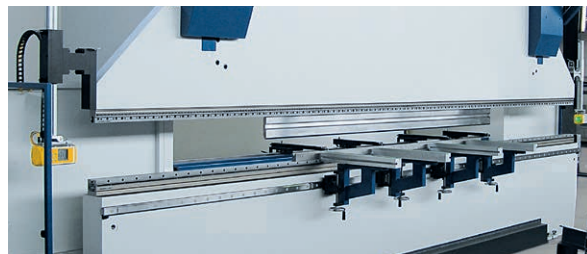
Cable selection:

From page 138

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

Webcode:
web150415

Online information at www.pilz.com

Safe camera systems

▶ Camera-based protection system PSENvip 2 – The

The camera-based protection system PSENvip 2 provides an integrated solution for modern press brakes and is used with the PSS 4000.

PSENvip R E

PSSu H PLC1 FS SN SD

Part of
PSS 4000

High productivity

Characteristics of the PSENvip 2, the second, extended generation of the camera-based protection system, include simple handling and maximum productivity, combined with high machine availability. The volume of the receiver has also been reduced by around 50 per cent. 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.

Safe monitoring of special purpose presses

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

Type code for PSENvip 2

PSENvip R LR

| Product area
Pilz SENsors	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) | | |

Safe camera systems

integrated solution for modern press brakes
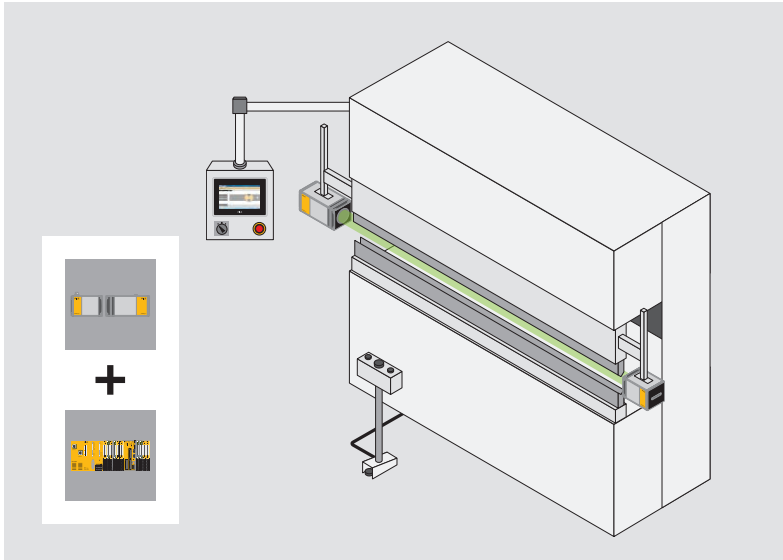
Your benefits at a glance
▸ Highest level of safety for press brakes in accordance with the most current safety standards and EN 12622
▸ Maximum productivity and high machine availability:
  - Innovative optics
  - Cabling work reduced to a minimum
  - Ensuring the shortest shutdown time and the shortest 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 detection zone of up to 18 m
  - Hot-plug capability

Components for your safe solution	Order number
Sensor:	
▸ PSENvip R	584 100
▸ PSENvip E	584 200
Connection:	
▸ PSEN op cable, shielded, straight, M12, 4-pin, 10 m	630 305
▸ PSEN cable, M12-4sm MIOsm MOVE, 10 m	584 570
Evaluation device:	
▸ PSSu H PLC1 FS SN SD	312 070
▸ PSSu K F FAU P	312 421
▸ Connector for FAU, 4-pin	313 118
▸ Connector for FAU, 10-pin (2 pieces)	313 115

Safe and productive press braking: camera-based protection system PSENvip 2 and automation system PSS 4000 with productive evaluation module.

Cable selection:

From page 138

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

Safe camera systems
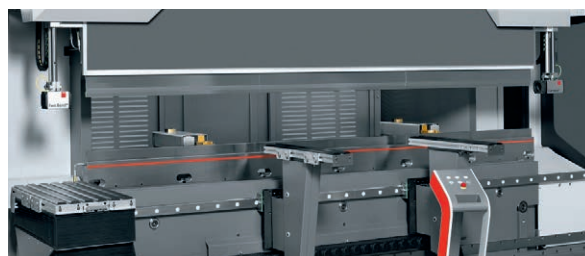
▶ Selection guide – PSENvip and PSENvip 2

Camera-based protection system PSENvip

Common features
▶ Detection zone:
  - Length: 0.1 … 10 m
  - Height: max. 20 mm
  - Width: 42 mm
▶ Reaction time: 4 ms
▶ 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
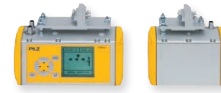
Features of bending angle measurement
▶ Distance between workpiece (plate) and receiver: max. 1.5 m
▶ Sheet thickness: 2 … 4 mm
▶ Bending angle: 50 … 160°
▶ Temperature range (environment): +10 … +40 °C

PSENvip RL D Set

Type
PSENvip RL D Set
PSENvip RL D
PSENvip RL D M Set
PSENvip RL D M
PSENvip RL D P Set
PSENvip RL D P
PSENvip T

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

Safe camera systems

Design	Transmitter	Receiver	Display	Certification	Order number
Base version set	◆	◆	◆	EAC, TÜV, UL [1]	583 000 [2]
Base version		◆	◆	EAC, TÜV, UL	583 600
Version with bending angle measurement set	◆	◆	◆	EAC, TÜV, UL [1]	583 002 [2]
Version with bending angle measurement		◆	◆	EAC, TÜV, UL	583 610
Productive version set	◆	◆	◆	EAC, TÜV, UL [1]	583 007 [2], [3]
Productive version		◆	◆	EAC, TÜV, UL	583 601 [3]
Transmitter	◆			EAC, TÜV, UL	583 900

[1] UL certification applies only to individual components contained within the set
[2] PSENvip (sets) include: transmitter, receiver, adjustment plates, adjustment templates with magnet and a test piece.
[3] Can be used in combination with the control system PSSuniversal PLC, PSSu K F FCU Fast Control Unit
and 2 counter modules PSSu E F ABS SSI

Features	Range	Certification	Order number
PSENvip 2 receiver	13 m	EAC, TÜV, UL	584 100 [4]
PSENvip 2 receiver	18 m	EAC, TÜV, UL	584 101
PSENvip 2 transmitter	-	EAC, TÜV, UL	584 200 [4]

[4] 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, UL	312 420
Fast Analysis Unit, productive version	TÜV, UL	312 421

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

Webcode: web150415

Online information at www.pilz.com

Safe camera systems

▶ Selection guide – Accessories PSENvip and PSEN

Accessories – camera-based protection systems PSENvip and PSENvip 2
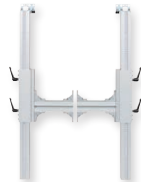
	Description Type
PSENvip MS	Adapter plates **PSENvip MB**
	Retaining arms **PSENvip MS**
PSENvip AT mag	Adjustment plates **PSENvip AP** **PSENvip AS2 R** **PSENvip AS2 E**
	Adjustment templates **PSENvip AT mag** **PSENvip AT mech**
PSENvip TP	Test piece **PSENvip TP**
	Mounting plates **PSENvip AS 2**
PSENvip AP 2	Adjustment plates **PSENvip AP 2**
	Adjustment templates **PSENvip AT spring mount**

PSENvip AT spring mount

vip 2

Features	Quantity	Order number
To mount the PSENvip AP/PSENvip AP 2 on to any bracket, with slot	2	583 205
Retaining arms (set) for mounting PSENvip and PSENvip 2	2	583 206
For PSENvip, transmitter and receiver	2	583 202 [1]
For PSENvip 2 receiver	1	583 215
For PSENvip 2 transmitter	1	583 216
With magnet to align PSENvip and PSENvip 2 on a first-time installation	2	583 203 [1]
For mechanical mounting in the tool holder for the first installation of PSENvip and PSENvip 2	2	583 204
For regular function test, finger protection with PSENvip and PSENvip 2	1	583 200 [1]
For PSENvip 2 transmitter and receiver	2	583 210
For PSENvip 2 transmitter and receiver	2	583 211
To align PSENvip and PSENvip 2 on a first-time installation	2	583 207

[1] Included with the PSENvip (Set)

Safe camera systems

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

Webcode:
web150415

Online information at www.pilz.com

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

Robotics
by Pilz

PRMS

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.

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 digitizing 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
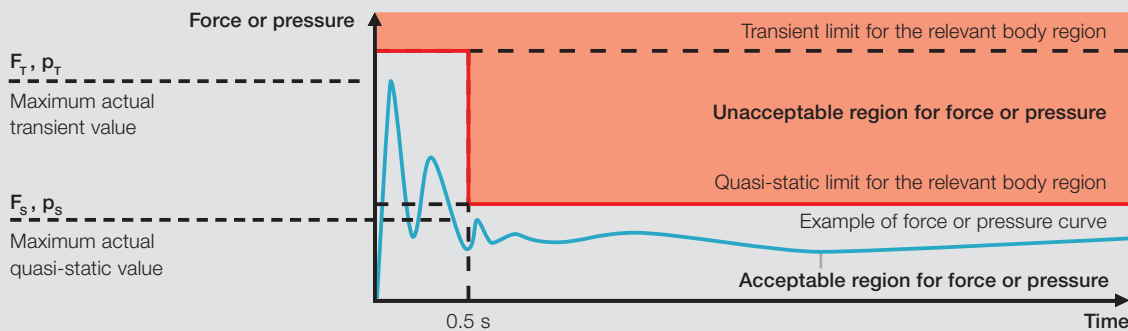
Force or pressure

F_T, p_T
Maximum actual transient value

F_S, p_S
Maximum actual quasi-static value

Transient limit for the relevant body region

Unacceptable region for force or pressure

Quasi-static limit for the relevant body region

Example of force or pressure curve

Acceptable region for force or pressure

0.5 s

Time

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

Webcode: web196478

Online information at www.pilz.com

Collision measurement set

▶ Practical product training and after-sales package

The collision measurement set includes one day of practical product training, with an introduction to 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.

A sophisticated after-sales package is also available, containing software updates in addition to the regular calibration. So the most current version of PRMS is always available to you.

Your benefits at a glance

▶ One day of practical product training
▶ Purchase or rent – to suit your individual needs
▶ Standard-compliant measurement of force and pressure
▶ Standardized 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, visualization 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

Collision measurement set

▶ Selection guide –
Collision measurement set PRMS

| Collision measurement set | | | |

Type	Features		Order number

PRMS Set

PRMS set

▶ PRMS set (purchase) — 9A000012
▶ PRMS set (rent) — 9A000018

▶ 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 and 1-day product training

**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

Collision measurement set

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

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. Compliance with several IEC and ISO standards is also relevant here in addition to the performance level and safety level of the devices. 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.

PITestop active

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 **Pilz Taster (pushbutton)**		Button		Inscription		Contacts		Connection type		Mounting	
Product group		**1 Standard**		s **Symbol**		_ Bare		_ Screw connection		_ Panel mounting	
es	E-STOP pushbutton	2	Large		**and logo**	1	N/C with monitoring	c	**Spring-loaded**	s	**Surface**
esc	Emergency stop contact block	3	Illuminated	u	Uninscribed	2	N/C		**terminal**		**mounting**
		4	Illuminated with protective collar			3	N/O	n	Connector, M12, 5-pin	r	Rail mounting
es Set	**Emergency stop set**	5	Protective collar			4	N/C / N/C / N/C / N/C [1]				
ef	Electronic failsafe	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
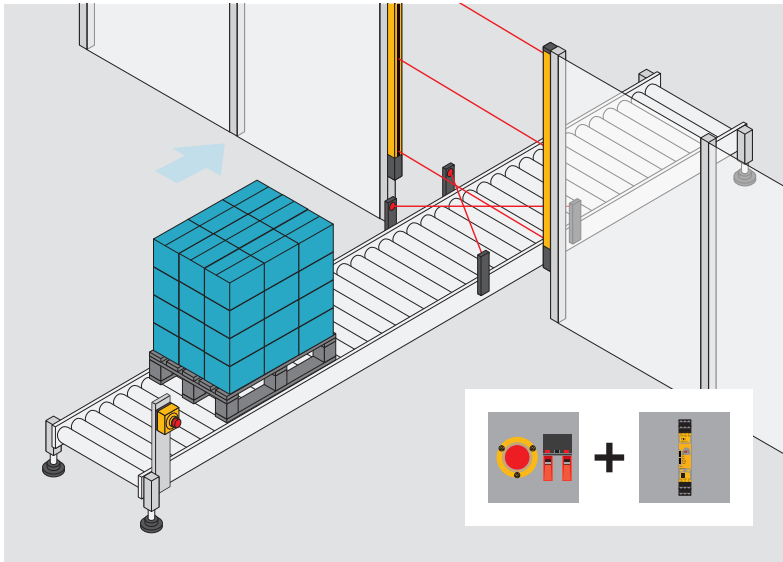
The optimum solution: emergency stop pushbutton PIT es Set1s-5c and safety relay PNOZ s3.

Your benefits at a glance

▸ Standard-compliant mushroom-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 pushbuttons 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)

Push-in technology

Spring-loaded terminals (push-in technology) make PITestop easy to install and robust against vibration.
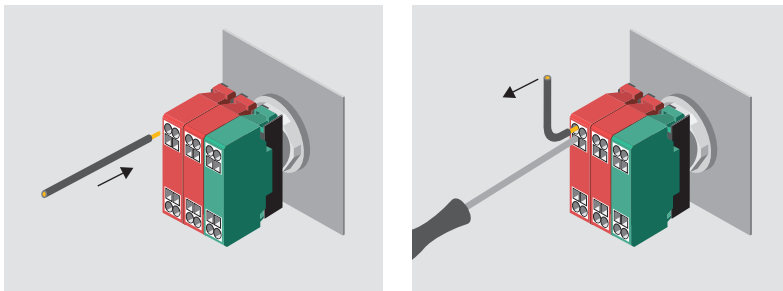
Reduce installation expense with quick-connect technology (push-in technology).

You can assemble modular emergency stop pushbuttons PITestop – 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	400 131	400 330	400 315	400 200

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 enables 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 the 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 cover the inactive E-STOP pushbuttons. 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 customized emergency stop pushbuttons for the smart factory!

PNOZ/PSS

PSS67/PDP67 cable

PITestop active

Output/24 V

Output/24 V

LED safety modules

GND

Input

Input
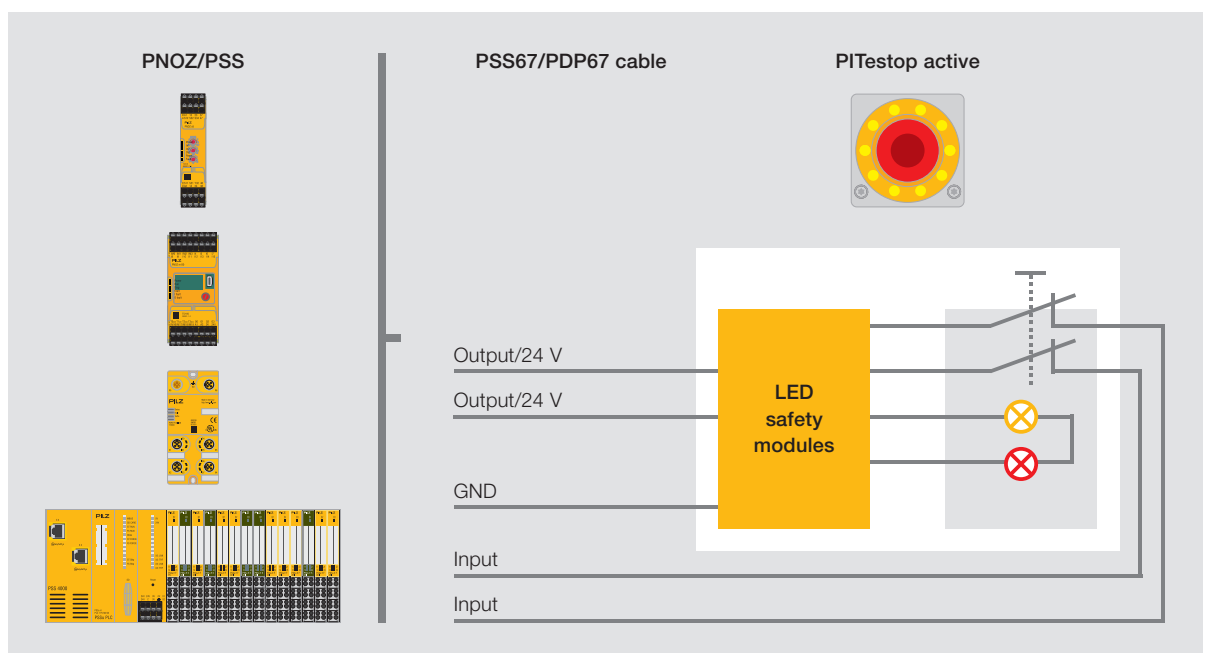
Application scenario – PITestop active.

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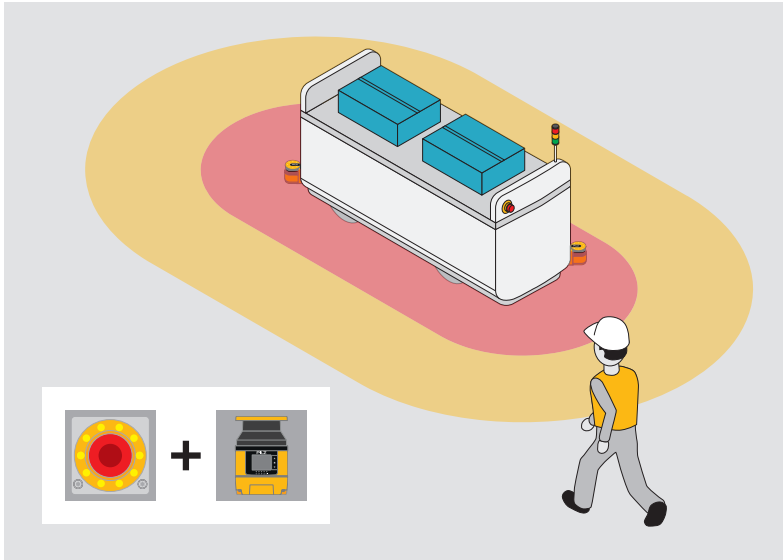
The optimum solution: E-STOP pushbutton PITestop active and safety laser scanner PSENscan.

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

▸ Saving cost and time 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 on 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 for panel mounting – E-STOP pushbuttons PITestop and PITestop active

PIT es Set1s-5

PIT es Set3s-5c

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	PIT es10u, PIT es holder 3c, PIT esc1, PIT esc2, PIT ef LED

You can assemble modular emergency stop pushbuttons PITestop – 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	400 131	400 330	400 315	400 200

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
N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 430	-
N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 431
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 432	-
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 433
N/C N/C N/O	◆		◆	EAC [1], TÜV [1], UL [1]	400 445	-
N/C N/C N/O	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 446
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 434	-
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 435
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 436	-
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 437
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 438	-
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 439
N/C N/C		◆		EAC [1], TÜV [1], UL [1]	400 620	-
N/C N/C		◆	◆	EAC [1], TÜV [1], UL [1]	400 441	-
N/C N/C		◆	◆	EAC [1], TÜV [1], UL [1]	-	400 442
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	400 443	-
N/C N/C	◆		◆	EAC [1], TÜV [1], UL [1]	-	400 444
N/C N/C		◆	◆	EAC [1], TÜV [1], UL [1]	400 458	-
N/C N/C		◆	◆	EAC [1], TÜV [1], UL [1]	-	400 459
N/C N/C N/C		◆	◆	EAC [1], TÜV [1], UL [1]	400 457	-
N/C N/C		◆	◆	DGUV	-	400 460

N/C, positive-opening

N/O, signal contact

[1] EAC, TÜV and UL 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

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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

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 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
⅄ ⅄	◆		UL [1]	400 447	-	-
⅄ ⅄	◆		UL [1]	-	400 448	-
⅄ ⅄	◆		UL [1]	-	-	400 453
⅄ ⅄ ⅄	◆		UL [1]	400 452	-	-
⅄ ⅄	◆		UL [1]	400 449	-	-
⅄ ⅄	◆		UL [1]	-	-	400 454
⅄ ⅄	◆		UL [1]	400 450	-	-
⅄ ⅄		◆	UL [1]	-	400 451	-
⅄ ⅄		◆	UL [1]	-	-	400 455
⅄ ⅄		◆	-	-	-	400 461
⅄ ⅄		◆	-	-	-	400 462

⅄ N/C, positive-opening

⅄ N/O, signal contact

[1] UL 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 color: red
- ▶ Twist to release: clockwise
  or counter clockwise; 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
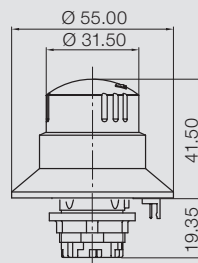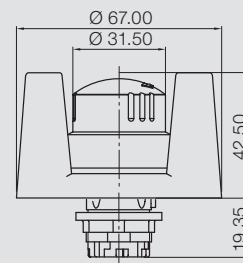
Dimensions (mm)

Ø 55.00
Ø 31.50
41.50
19.35

PIT es1s/PIT es1u

Ø 68.00
Ø 39.50
40.30
19.7
1 … 7

PIT es2s/PIT es2u

Ø 55.00
Ø 31.50
41.50
19.35

PIT es3s/PIT es3u

Ø 67.00
Ø 31.50
42.50
19.35

PIT es5s/PIT es5u

Ø 28.00
25.4
24.3
1.5 … 5
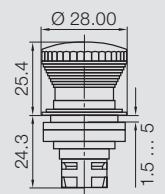
PIT es6.10

Pushbutton	Certification	Order number Inscribed with emergency stop symbol and logo	
		With	Without
Standard	EAC, TÜV, UL	400 131	-
Standard	EAC, TÜV, UL	-	400 531
Large	EAC, TÜV, UL	400 132	-
Large	EAC, TÜV, UL	-	400 532
Illuminated, incl. contact block (screw terminal)	EAC, TÜV, UL	400 133	-
Illuminated, incl. contact block (spring-loaded terminal)	EAC, TÜV, UL	400 143	-
Illuminated, incl. contact block (screw terminal)	EAC, TÜV, UL	-	400 533
Illuminated, incl. contact block (spring-loaded terminal)	EAC, TÜV, UL	-	400 543
Illuminated with protective collar, incl. contact block (screw terminal)	EAC, TÜV, UL	400 134	-
Illuminated with protective collar, incl. contact block (screw terminal)	EAC, TÜV, UL	-	400 534
With protective collar	EAC, TÜV, UL	400 135	-
With protective collar	EAC, TÜV, UL	-	400 535
Small	EAC, TÜV, UL	-	400 610
Protection type IP6K9K	EAC, TÜV, UL	-	400 537
Key	EAC, TÜV, UL	400 138	-
Key	EAC, TÜV, UL	-	400 538
Standard without blocking protection collar	EAC, TÜV, UL	-	400 539
Illuminated, active/inactive	DGUV	-	400 540
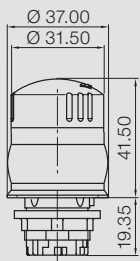
PIT es7u
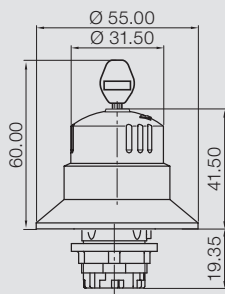
PIT es8s/PIT es8u
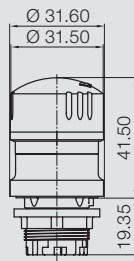
PIT es9u
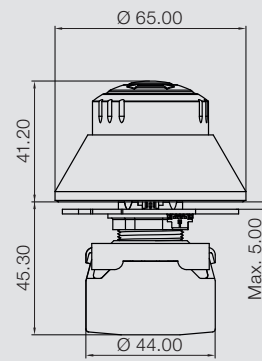
PIT es10u

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

Accessories – E-STOP pushbuttons PITestop and PITestop active

PIT es box   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 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

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

Webcode: web150436

Online information at www.pilz.com

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 Set 3s-5 (400 436)

Method	Contacts	Certification	Order number Screw terminal	Spring-loaded terminal
Contact block with monitoring	N/C	EAC, TÜV, UL	400 315	-
Contact block	N/C	EAC, TÜV, UL	400 320	-
Contact block	N/O	EAC, TÜV, UL	400 310	-
4 contact blocks for operation of 2 parallel machines	N/C N/C N/C N/C	EAC, TÜV, UL	400 324	-
Contact block with monitoring	N/C	EAC, TÜV, UL	-	400 316
Contact block	N/C	EAC, TÜV, UL	-	400 321
Contact block	N/O	EAC, TÜV, UL	-	400 311
Contact block	N/C N/C	EAC, TÜV, UL	-	400 360
LED safety module	N/C N/C	DGUV	-	400 342

N/C, positive-opening

N/O, signal contact

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 120)	UL	400 200
3 slots	EAC, TÜV, UL	400 330
5 slots, max. 3 contact blocks [1] may be fitted to ensure protection against defeat	EAC, TÜV, UL	400 340
3 slots	EAC, TÜV, UL	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	UL	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, UL	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 CLLE y | PIT gb BLLE y | PIT gb KLLE y |

**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. Each preconfigured version with various combinations of pushbuttons, key switches and E-STOP pushbuttons gives you maximum flexibility for your individual application.

Selection guide – Pushbutton unit PITgatebox

Type	PIT gb LLLE	PIT gb CLLE y	PIT gb BLLE y	PIT gb KLLE y
E-STOP pushbutton	2 N/C contacts	2 N/C contacts/ 1 N/O contact	2 N/C contacts/ 1 N/O contact	2 N/C contacts
Position 1	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)
Position 2	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)	Illuminated pushbutton (1 N/O)
Position 3	Illuminated pushbutton (1 N/O)	Cover	Key-operated pushbutton (1 N/C; 2 positions)	Key switch (2 N/C; 3 positions)
Order number	G1000001	G1000002	G1000003	G1000004

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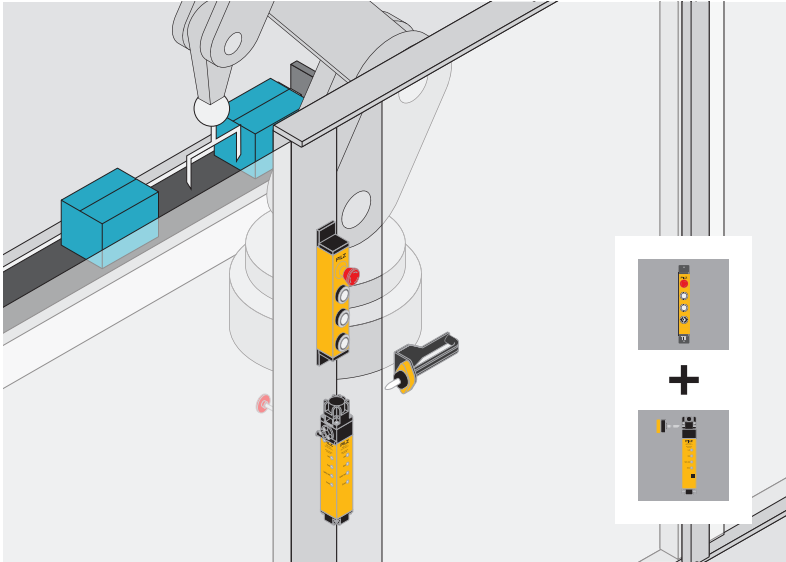
PITgatebox with PSENmlock, escape release and handle in modular safety gate system.

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
▸ Cost savings due to reduced wiring work
▸ Flexible installation thanks to integrated rotatable mounting bracket
▸ Easy to exchange the control elements thanks to compatible spare parts

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, together with the pushbutton unit PITgatebox you receive a one-stop modular safety gate solution tailored to your individual needs. The modular safety gate system products are ideal for use with safe control technology from Pilz.

▶ 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 CLLE y   PIT gb BLLE y

Type
PIT gb LLLE
PIT gb CLLE y
PIT gb BLLE y
PIT gb KLLE y

Accessories – Pushbutton unit PITgatebox

PIT gb es1

PIT gb
push button

PIT gb
key button

PIT gb
color covers

Type
PIT gb es1
PIT gb push button
PIT gb key button
PIT gb key switch
PIT gb color covers
PIT gb blind cover
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

Technical features	Certification	Order number
Box with emergency stop (2 N/C) and 3 illuminated pushbuttons	CE, UL	G1000001
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons	CE, UL	G1000002
Box with emergency stop (2 N/C / 1 N/O) and 2 illuminated pushbuttons as well as 1 key-operated pushbutton (1 N/C)	CE, UL	G1000003
Box with emergency stop (2 N/C) and 2 illuminated pushbuttons as well as 1 key-operated pushbutton (2 N/C)	CE, UL	G1000004

Technical features	Certification	Order number
E-STOP pushbutton, turn to unlock	CCC, TÜV	G1000005
Pushbutton, illuminated, latching	CCC, TÜV	G1000006
Key-operated pushbutton 1 x 40°, latching	TÜV	G1000007
Key-operated pushbutton 2 x 90°, latching	TÜV	G1000008
Color discs for the illuminated pushbuttons	-	G1000009
Blind plug, IP65	-	G1000010
E-STOP pushbutton with signal contact, turn to unlock	CCC, TÜV	G1000011
Fixing spanner for threaded ring	-	G1000012
Color 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

▶ Operating mode selection and access authoriza

The operating mode selection and access permission system PITmode combines safety and security functions in one system. The devices enable functionally safe operating mode selection control of access permissions on plant and machinery.

PITmode	PITmode fusion	PITreader

PITmode devices can be used on plant and machinery in which it is necessary to switch between a range of control sequences and operating modes. Each employee can be issued machine enables and permissions that correspond to his or her skills using coded transponder keys with RFID technology. The safe evaluation unit detects the specified operating mode, e.g. automatic mode, manual access under restricted conditions or service mode, evaluates it and provides functionally safe switching. Incorrect operation and manipulation are thereby prevented and the human and machine are protected.

PITmode fusion –
The modular operating mode selection system
PITmode fusion is the modular version of the operating mode selection system. It comprises the reading unit PITreader with RFID technology and a separate safe evaluation unit (SEU). The transponder keys are read in and taught in the PITreader. The safe evaluation unit assesses the selected operating mode to provide functionally safe switching between up to five operating modes. PITmode fusion also allows implementation of the full scope of safe permission management. By separating the components, PITmode fusion can be integrated flexibly into the design of existing control consoles and can be combined with existing pushbuttons.

PITreader – Regulates access permission
With PITreader you can implement tasks regarding access permissions for plant and machinery. The options range from a simple enable and authentication of specific machine component functions to a complex hierarchical permission matrix. PITreader with RFID technology is flexible as a standalone device or it can be used in conjunction with a Pilz controller. The transponder keys are available in a freely writable version and also with fixed, stored permissions. For manipulation protection, the RFID keys can be coded with PITreaders with company-specific programming.

PITmode – The compact all-in-one device
With the compact all-in-one device PITmode the pushbuttons for operating mode selection and the safe evaluation unit are integrated in one device. Operating mode and permission are displayed safely via LED. The individual key coding prevents manipulation. As an option, the operating mode selector switch is also available with pictograms for machine tools and thus ideally suited for international applications.

tion system PITmode

The benefits of the operating mode selection and access permission system PITmode

▸ Functionally safe switching of operating mode through self-monitoring

▸ Control of access permission

▸ High level of manipulation protection through company-specific coding

▸ PITmode offers a combination of operating mode selector switch and access permission in one compact unit

▸ PITmode fusion is the modular version of the operating mode selection and access permission system

▸ PITreader flexibly controls access permissions as a standalone device or in combination with a controller from Pilz

The benefits of the industrial RFID system PITreader at a glance

▸ 13.56 MHz RFID technology

▸ Ethernet interface: Modbus/TCP protocol

▸ 24 V output for signalling

▸ 22.5 mm standard mounting hole

▸ Integrated web server for configuration of PITreader and transponder keys

▸ Read/write and data storage on transponder keys

▸ Teaching in of transponder keys on the PITreader via coding

▸ Blocking/locking of data areas on the transponder keys

▸ Preinstalled group-based permission management

▸ Integrated user management

▸ Multicolor LED ring for user information

Selection guide – PITmode and PITreader

Type	PITmode	PITmode fusion	PITreader
Application	Functionally safe operating mode selection and access permission system up to PL d	Functionally safe operating mode selection and access permission system up to PL d	Access permission system
System	Compact all-in-one device	Modular system consisting of: ▸ PITreader – RFID reader ▸ Safe evaluation unit (SEU)	PITreader – RFID reader that can be combined with Pilz controller or third-party controller
Pushbutton	Integrated ▸ 2 or 4 pushbuttons ▸ Optionally with pictograms	3rd-party pushbutton	-
Safe evaluation unit (SEU)	Integrated	Modular, in separate device	-
Usage	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	Operation with Pilz or 3rd-party FS controller for access permission
Operating modes	Up to 5 safe operating modes	Up to 5 safe operating modes	-

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

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 key adapter h	▶ 1 x PITreader key adapter horizontal ▶ 1 x nut
PITreader key adapter v	▶ 1 x PITreader key adapter vertical ▶ 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)
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 1, 2, 3, 4, 5	Transponder key for PITreader, yellow plastic
PITreader key ye 5 service	Transponder key for PITreader, yellow plastic, authorization 5 = service function
PIT es wrench	PITestop installation wrench for PIT es pushbutton and PITreader

	Dimensions (H x W x D) in mm	Certification	Order number
	55 x 98 x 42.3	FCC, TÜV, UL	402 230
	55 x 98 x 42.3	FCC, TÜV, UL	402 231
	55 x 98 x 42.3	FCC, TÜV, UL	402 240
	55 x 98 x 42.3	FCC, TÜV, UL	402 241
▶ Permission 1 ▶ Permission 2 ▶ Permission 3 ▶ Permission 4	-	FCC, TÜV, UL	▶ 402 281 ▶ 402 282 ▶ 402 283 ▶ 402 284
	-	FCC, TÜV, UL	402 285
▶ Permission 1 ▶ Permission 2 ▶ Permission 3 ▶ Permission 4	-	FCC, TÜV, UL	▶ 402 291 ▶ 402 292 ▶ 402 293 ▶ 402 294
	-	FCC, TÜV, UL	402 295
1 set for PIT m3.1p	-	-	402 301
1 set for PIT m3.2p	-	-	402 302
1 set for PIT m3.2p	-	-	402 303
1 set for PIT m3.2p	-	-	402 305
▶ PITreader base unit (402 255) ▶ PIT m4SEU (402 250) ▶ PITreader key adapter h (402 308) ▶ Connector set (402 306)	72.5 x 45 x 45 [1]	CE, UL	402 251
Required accessories: PITreader key adapter	72.5 x 45 x 35	CE, UL	402 255
Required accessories for PITreader base unit (402 255)	-	CE, UL	402 308
Required accessories for PITreader base unit (402 255)	-	CE, UL	402 309
Comprising 1 x 5-pin female connector strip in spring force version, straight cable outlet	-	CE, UL	402 307
	90.5 x 90 x 25	CE, TÜV, UL	402 250
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, UL	402 306
	-	CE, UL	402 310
	-	CE, UL	402 260
▶ Permission 1 ▶ Permission 2 ▶ Permission 3 ▶ Permission 4 ▶ Permission 5	-	CE, UL	▶ 402 261 ▶ 402 262 ▶ 402 263 ▶ 402 264 ▶ 402 265
	-	CE, UL	402 269
	-	-	400 222

[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

▶ 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	Protection type
PIT js2	Manually operated control device	24 VAC/DC	-10 °C … +55 °C	IP50
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.
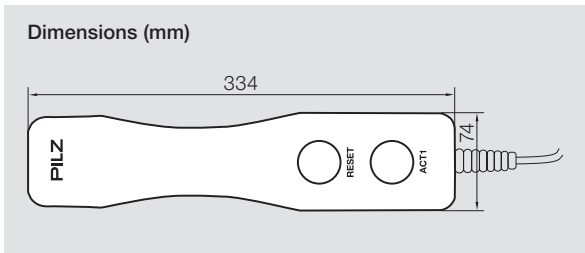
Dimensions (mm)

Dimensions (H x W x D) in mm	Housing material	Coiled cable		Order number
		Length	Length, stretched	
334 x 74 x 60	PC-ABS blend UL 94V0	1 m	4 m	401 100
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

Manually operated control device

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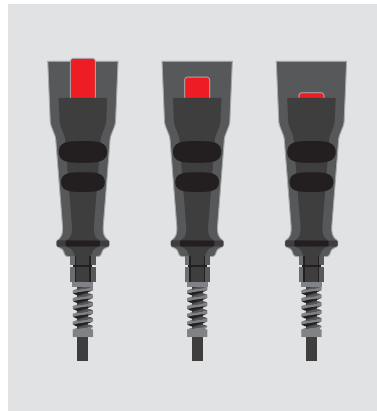
3-stage enabling switch: off-on-off

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	

Enabling switches

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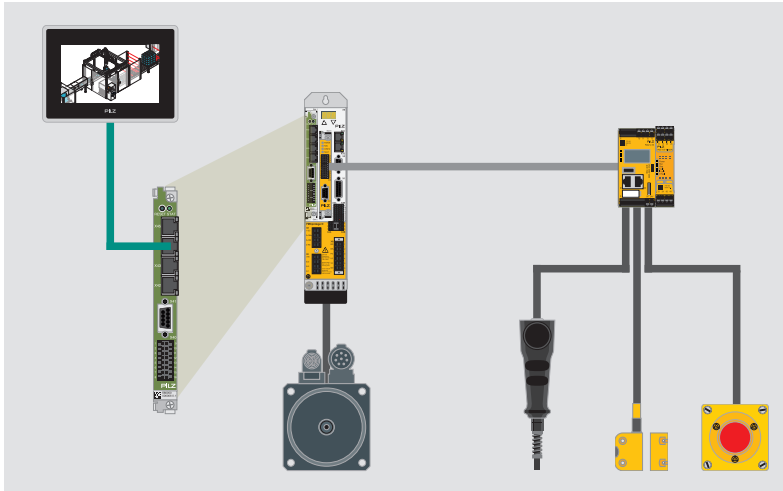
The safe, all-in-one solution with safe control and drive technologies.

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 he overreact with shock or panic
▸ Ergonomically moulded housing for comfortable operation
▸ Maintenance-free

Dimensions (mm)
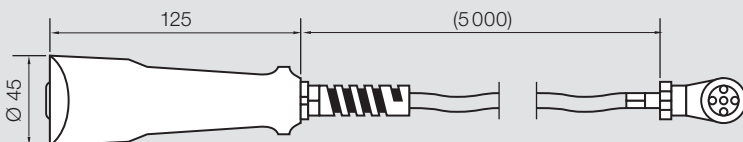
Technical features	Order number
▸ Color: black	401 110
▸ Operating temperature: 0 °C … 50 °C	
▸ Front protection type: IP65	401 112
▸ Electrical life: min. 100 000 cycles	401 111
▸ Operating voltage/current: 125 VAC/0.3 A or 30 VDC/0.7 A	401 201
▸ Housing material: polypropylene	
▸ Length of connection 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

Enabling switches

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 decentralized modules. These make it possible for youto 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.

▶ Decentralized modules PDP67
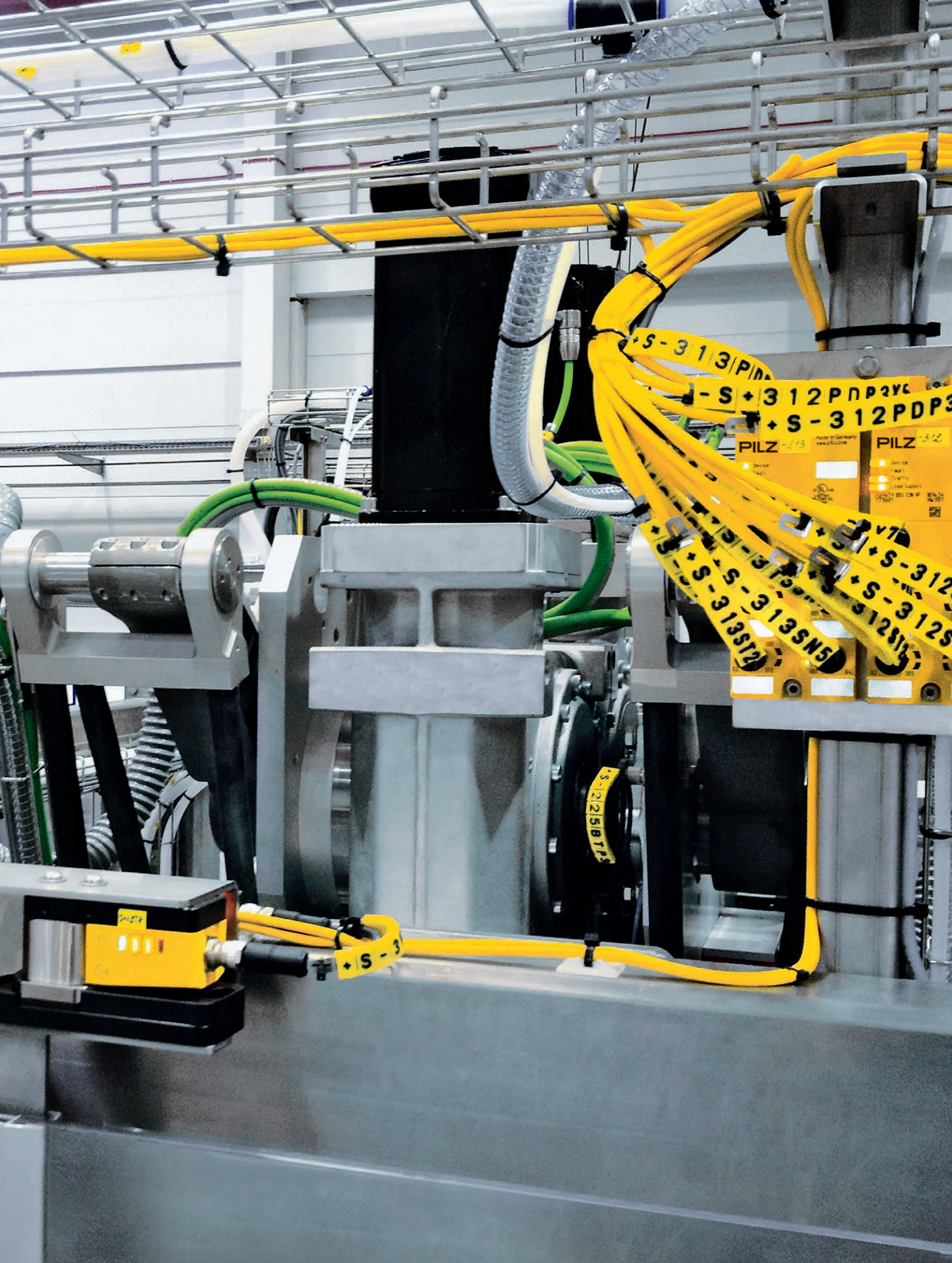
With the PDP67 modules you can achieve a high level of decentralization. The digital input module
PDP67 F 8DI ION forwards signals from the sensors connected decentrally in the field to various evaluation
devices, e.g. the configurable safe small controllers PNOZmulti 2. Up to 64 sensors can be connected.

PDP67 F 8DI ION   PDP67 F 4 code

Decentralized and passive – decentralized safety
The passive junction PDP67 F 4 code enables the
connection of up to four sensors PSENslock. As well as
the ability to connect to the configurable safe small
controllers PNOZmulti 2, the safety relays PNOZsigma
are also available.

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

PDP67 – Economical and safe
Integrated into dirt and water-repellent IP67 housings,
the PDP67 modules can even be used where there are
high demands on hygiene. The decentralized modules
optimize 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.

Type code for decentralized modules PDP67

PDP67 F 8DI ION HP VA

Product area Control technology	Design	Function	Number of inputs	Technology type	Variant	Material
Product range **D**ecentralized **P**eriphery	**67 To protection class IP67**	**F Failsafe**	**8DI 8 digital inputs** 4 4 digital inputs	**ION I/Onet p code** PSENcode	**HP High power**	**VA With stainless steel elements** PT Overmolded variant with plastic thread

iF DESIGN AWARD 2017

PDP67 F 8DI ION PT

New decentralized input module PDP67 F 8DI ION PT

Thanks to an improved manufacturing process, the new decentralized input module is a cost-effective alternative to existing solutions on the market. This new addition to the range of Pilz decentralized field devices allows modular machine concepts to be planned and implemented with ease.

Your benefits at a glance

▸ Less planning and design work thanks to simple installation
▸ Simple implementation of a modular machine concept
▸ Saving space in control cabinet
▸ Integrated in dirt and water-repellent housings
▸ Can be used for applications with high demands on hygiene

Technical details – modules for alternative connection options for sensors

PDP67 F 8DI ION

PDP67 Connector cs

Type	Features	Safety	Certification	Order number
PDP67 F 8DI ION	Decentralized input modulefor the configurable safe small controllers PNOZmulti 2	▸ PL e of EN ISO 13849-1 ▸ SIL CL 3 of EN/IEC 62061	DGUV, TÜV, UL	773 600
PDP67 F 8DI ION VA			DGUV, TÜV, UL	773 614
PDP67 F 8DI ION PT			DGUV, TÜV [1]	773 616
PDP67 F 8DI ION HP	Decentralized input module for ▸ Configurable safe small controllers PNOZmulti 2 ▸ High power ▸ Additional supply voltage for PSENslock and PSENopt		DGUV, TÜV, UL	773 601
PDP67 F 8DI ION HP VA			DGUV, TÜV, UL	773 615
PDP67 F 4 code	Passive junction PSENcode		UL	773 603
PDP67 F 4 code VA			UL	773 613
PDP67 Connector cs	Adapter for connection cable to the evaluation device	-	-	773 610
PDP67 Connector cs VA			-	773 612

[1] Product labelling for the North American market is currently in preparation

▶ 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.

Sensor technology PSEN connected directly

Sensor technology PSEN with integrated option for series connection and M8, 8-pin connection

IP67

[1] [2] [3] [4] [5]   [2] [1]) [3] [1])
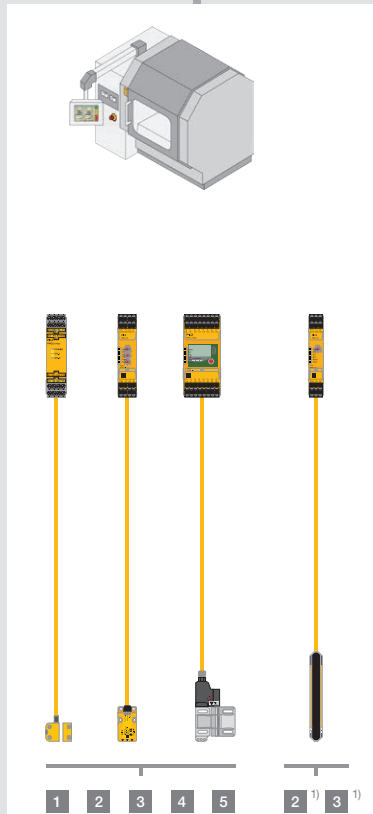
[1]) Also available as a shielded version

1 M8, 8-pin, socket, straight/angled, open-ended (pages 144, 148)

2 M12, 8-pin, socket, straight/angled, open-ended (pages 144, 148, 156)

3 M12, 5-pin, socket, straight/angled, open-ended (pages 144, 148, 152, 156)
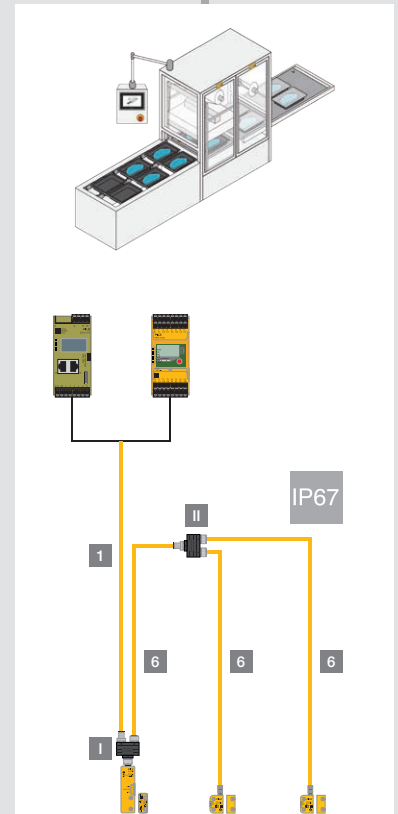
4 M8, 4-pin, socket, straight/angled, open-ended (page 148)

5 M12, 4-pin, socket, straight, open-ended (pages 152, 156)

6 M8, 8-pin, socket, plug, straight (page 144)

Type code for cable accessories

PSEN cable M8-8sf

Product area Pilz SENsors	Thread diameter	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)**

PSENcode

PSENslock

PSENmech

PSENrope

PSENmag

PSENhinge

PSENmlock

PSENopt

PSENscan

PSENvip

PSEN

Sensor technology PSEN with
integrated option for series connection
and M12, 8-pin connection

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

IP67

IP67

For connecting
to the PDP67 F4 code: `7` `12`

For the connection of p-type sensors,
the respective adapters are also required: `9` `10` `11`
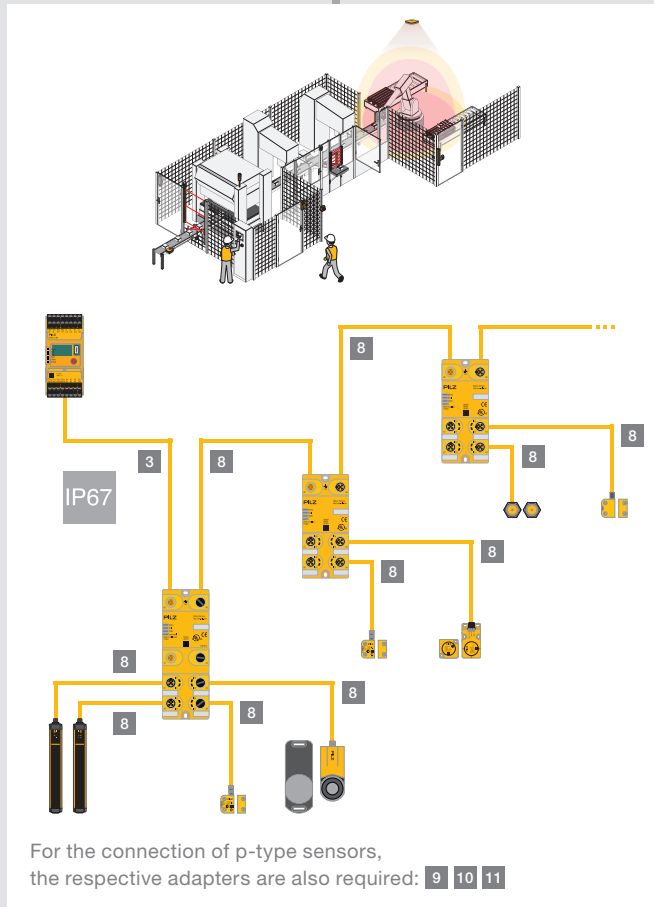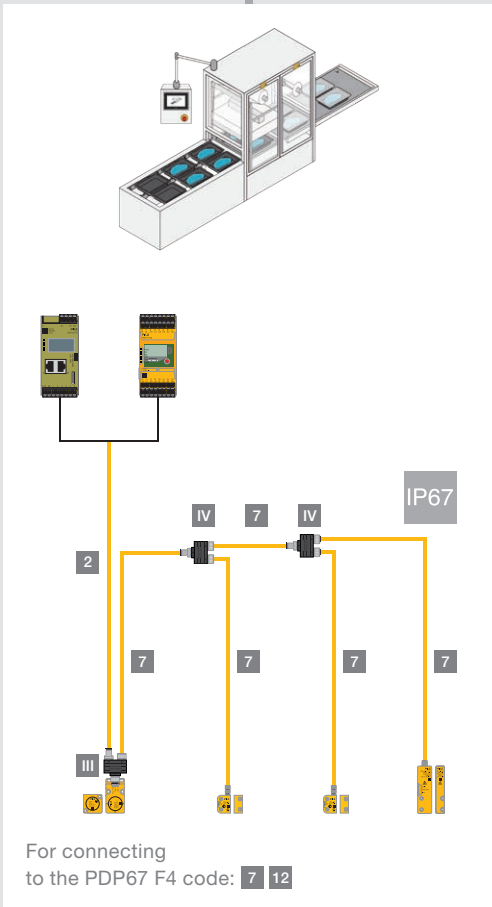
`7` M12, 8-pin, socket,
plug, straight
(pages 144, 146)

`8` M12, 5-pin, socket,
plug, straight/angled
(pages 146, 150, 152, 158)

`9` PSEN ma adapter
(pages 150, 152)

`10` PSEN cs adapter
(page 146)

`11` PSEN sl adapter
(page 146)

`12` PSS67/PDP67 cable M12-8sm
(page 146)

`I` PSEN Y junction M8 SENSOR
(page 144)

`II` PSEN Y junction M8 cable channel
(page 144)

`III` PSEN Y junction M12 SENSOR
(page 144)

`IV` PSEN Y junction M12 cable channel
(page 144)

PSENcode

PSENslock

PSENmech

PSENrope

PSENmag

PSENhinge

PSENmlock

PSENopt

PSENscan

PSENvip

PSEN

▶ Selection guide – Cable for PSENcode and PSEN

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	Cable for connection to any evaluation device	-
2	PSEN cable M12-8sf		◆
2	PSEN cable M12-8af		◆
3	PSEN cable M12-5sf		-
3	PSEN cable M12-5af		-

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

slock

Features	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	UL	533 150	-	533 151	533 152	533 153	533 154
▶ Connection 1: straight, M12, 8-pin, socket ▶ Connection 2: open cable	UL	-	540 319	540 320	540 321	540 333	540 326
▶ Connection 1: angled, M12, 8-pin, socket ▶ Connection 2: open cable	UL	-	540 322	540 323	540 324	-	540 325
▶ Connection 1: straight, M12, 5-pin, socket ▶ Connection 2: open cable	UL	-	630 310	630 311	630 312	630 298	630 297
▶ Connection 1: angled, M12, 5-pin, socket ▶ Connection 2: open cable	UL	-	630 347	630 348	630 349	-	630 350

Features	Order number
Y-connector for PSENcode; input socket in M8, 8-pin and output plug (2 x) in M12, 8-pin	540 337
Y-connector for PSENcode; input socket and output plug (2 x) in M12, 8-pin	540 338
▶ When not using Safety Device Diagnostics ▶ PSENcode, PSENslock: Signal output ▶ PSENslock: Lock signal	540 331
0.5 m, straight, M8, 8-pin, socket/plug	533 155
1 m, straight, M8, 8-pin, socket/plug	533 156
2 m, straight, M8, 8-pin, socket/plug	533 157
5 m (see table below for additional cable lengths)	540 341
Y-connector for PSENcode for direct connection to sensor; input socket, output socket and output plug in M12, 8-pin	540 315
Y-connector for PSENcode for cable outlet in the cable duct; input plug and output sockets in M12, 8-pin	540 316
Y-connector for PSENcode for direct connection to sensor; input socket, output socket and output plug in M8, 8-pin	540 317
Y-connector for PSENcode for cable outlet in the cable duct; input plug and output sockets in M8, 8-pin	540 318
Converter-adapter for PSEN with M8, 8-pin to M12, 8-pin	540 329
For up to 4 sensors	535 111
For up to 8 sensors	535 112

PSENcode

PSENslock

▶ Selection guide – Cable for PSENcode and PSEN

PSENcode

PSENslock

PSENcode and PSENslock – cable selection for connection to PDP67 F 4 code

PSEN cable M12-8sf

PDP67 F 4 code

Type		Description	Cable drag chain capability
7	PSEN cable M12-8sf M12-8sm	Cable for connection to PDP67 F 4 code	◆
12	PSS67/PDP67 cable M12-8sm	Cable for connection to any evaluation device	◆

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 F 8DI ION/PSS67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

Type		Description	Cable drag chain capability
8	PSS67/PDP67 cable M12-5sf M12-5sm	Cable for connection to PDP67 F 8DI ION/PSS67	-
8	PSS67/PDP67 cable M12-5af M12-5am		-

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralized periphery PNOZmulti
PDP67 F 8DI ION VA	Sensor junction box for decentralized periphery PNOZmulti with M12 thread in stainless steel

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

slock

Features	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	UL	540 340	540 341	540 342	540 343	540 344
▸ Connection 1: Straight, M12, 8-pin, plug ▸ Connection 2: open cable	UL	380 700	380 701	380 702	380 703	380 704

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	UL	773 603
Converter-adapter for PSEN with M8, 8-pin to M12, 8-pin	UL	540 329

Features	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	UL	380 208	380 209	380 210	380 220	380 211
▸ Connection 1: Angled, M12, 5-pin, socket ▸ Connection 2: Angled, M12, 5-pin, plug	UL	380 212	380 213	380 214	-	380 215

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, UL	773 616
Multiple interface PDP67, protection type IP67, PL e of EN ISO 13849-1, SIL CL 3 of EN/IEC 62061	DGUV, TÜV, UL	773 614

Features	Certification	Order number
0.5 m, straight, 5-pin, socket/plug	UL	380 710
1 m, straight, 5-pin, plug/socket	UL	380 712
1.5 m, straight, 5-pin, plug/socket	UL	380 711
2 m, straight, 5-pin, plug/socket	UL	380 713
0.10 m: ▸ Connection 1: M12, 8-pin, female connector, straight ▸ Connection 2: M12, 5-pin, male connector, straight	-	380 301
0.10 m: ▸ Connection 1: M12, 8-pin, female connector, straight ▸ Connection 2: M12, 5-pin, male connector, straight	-	380 325

▶ Selection guide – Cable for PSENmech, PSENrope

PSENmech

PSENrope

PSENmag

PSENmag

PSENmech and PSENrope – cable selection for connection to PDP67 F 8DI ION/PSS67

PSS67/PDP67 cable

Type	Description	Cable drag chain capability
PSS67/PDP67 cable	Cable for connection to PDP67 F 8DI ION/PSS67	-

PDP67 F 8DI ION PT

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralized periphery PNOZmulti

PSENmag – cable selection for connection to any evaluation device

PSEN cable M8-4sf
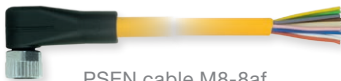
PSEN cable M8-8af

Type		Description	Cable drag chain capability
4	PSEN cable M8-4sf	Cable for connection to any evaluation device	◆
4	PSEN cable M8-4af		◆
1	PSEN cable M8-8sf		-
1	PSEN cable M8-8af		-
2	PSEN cable M12-8sf		◆
2	PSEN cable M12-8af		◆
3	PSEN cable M12-5sf		-

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

and PSENmag

Features	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	UL	380 705	380 709	380 706	380 707	380 708

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, UL	773 616

Features	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	UL	533 111	-	533 121	533 131	-	533 141
▶ Connection 1: angled, M8, 4-pin, socket ▶ Connection 2: open cable	UL	533 110	-	533 120	533 130	-	533 140
▶ Connection 1: straight, M8, 8-pin, socket ▶ Connection 2: open cable	UL	533 150	-	533 151	533 152	533 153	533 154
▶ Connection 1: angled, M8, 8-pin, socket ▶ Connection 2: open cable	-	-	-	-	533 162	-	-
▶ Connection 1: straight, M12, 8-pin, socket ▶ Connection 2: open cable	UL	-	540 319	540 320	540 321	540 333	540 326
▶ Connection 1: angled, M12, 8-pin, socket ▶ Connection 2: open cable	UL	-	540 322	540 323	540 324	-	540 325
▶ Connection 1: straight, M12, 5-pin, socket ▶ Connection 2: open cable	UL	-	630 310	630 311	630 312	630 298	630 297

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	UL	535 120
▶ 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	UL	535 110

PSENmech

PSENrope

PSENmag

▶ Selection guide – Cable for PSENmag

PSENmag

PSENmag

PSENmag – cable selection for connection to PDP67 F 8DI ION/PSS67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

	Type	Description	Cable drag chain capability
8	PSS67/PDP67 cable M12-5sf M12-5sm	Cable for connection to PDP67 F 8DI ION/PSS67	-
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 decentralized periphery PNOZmulti

PSENmag – cable selection for connection to any evaluation device

PSS67/PDP67 cable M12-5sf

Type	Description	Cable drag chain capability
PSEN cable M12-5sf/ M12-5sm VA	Connection cable of a 5-pin sensor with the PDP67 F 8DI ION VA	◆
PSEN cable M12-5sf VA	Cable for connection to any evaluation device	◆
PSEN cable M12-8sf VA	Cable for connection to any evaluation device	◆

Features	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	UL	380 208	380 209	380 210	380 220	380 211
▶ Connection 1: angled, M12, 5-pin, socket ▶ Connection 2: angled, M12, 5-pin, plug	UL	380 212	380 213	380 214	-	380 215
▶ Connection 1: straight, M8, 4-pin, socket ▶ Connection 2: straight, M12, 4-pin, plug	UL	380 200	380 201	380 202	-	380 203
▶ Connection 1: angled, M8, 4-pin, socket ▶ Connection 2: straight, M12, 4-pin, plug	UL	380 204	380 205	380 206	-	380 207

Features	Certification	Order number
0.10 m: ▶ Connection 1: M12, 4-pin, female connector, straight ▶ Connection 2: M12, 5-pin, male connector, straight	-	380 300

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, UL	773 616

Features	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	UL, ECOLAB	533 180	533 181
▶ Connection 1: straight, M12, 5-pin, socket ▶ Connection 2: open cable ▶ Threaded ring made of stainless steel, IP69K, temperature: -5 °C … 105 °C	UL, ECOLAB	533 170	533 171
▶ Connection 1: straight, M12, 8-pin, socket ▶ Connection 2: open cable ▶ Threaded ring made of stainless steel, IP69K, temperature: -5 °C … 105 °C	UL, ECOLAB	533 190	533 191

PSENmag

▶ 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	Cable for connection to any evaluation device	-
3	PSEN cable M12-5sf		-
3	PSEN cable M12-5af		-

PSENhinge – cable selection for connection to PDP67 F 8DI ION/PSS67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

	Type	Description	Cable drag chain capability
8	PSS67/PDP67 cable M12-5sf M12-5sm [1]	Cable for connection to PDP67 F 8DI ION/PSS67	-
8	PSS67/PDP67 cable M12-5af M12-5am [1]		-

[1] in addition, adapter 9 is required

	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 decentralized periphery PNOZmulti

PSENhinge

Features	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	UL	630 300	630 301	630 302	-	630 296
▶ Connection 1: straight, M12, 5-pin, socket ▶ Connection 2: open cable	UL	630 310	630 311	630 312	630 298	630 297
▶ Connection 1: angled, M12, 5-pin, socket ▶ Connection 2: open cable	UL	630 347	630 348	630 349	-	630 350

Features	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	UL	380 208	380 209	380 210	380 220	380 211
▶ Connection 1: angled, M12, 5-pin, socket ▶ Connection 2: angled, M12, 5-pin, plug	UL	380 212	380 213	380 214	-	380 215

Features	Certification	Order number
0.10 m: ▶ Connection 1: M12, 4-pin, female connector, straight ▶ Connection 2: M12, 5-pin, male connector, straight	-	380 300

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, UL	773 616

PSENhinge

▶ 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	Cable for connection to any evaluation device	-

PSENmlock – cable selection for series connection

PSEN cable M12-12sf

Type	Description	Cable drag chain capability
PSEN cable M12-12sf/ M12-12sm	Connection cable, e.g. for series connection of 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/PSENcs Y junction M12	Y-adapter for looping in a PSENcode in a 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

Features	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 ▸ Cross section: 0.25 mm^2 ▸ Rated current: 2 A	UL	570350	570351	570352	570353	570354	570355	570356

Features	Certification	Order number (by length)					
		1 m	2 m	3 m	5 m	10 m	20 m
▸ Connection 1: straight, M12, 12-pin, socket ▸ Connection 2: straight, M12, 12-pin, plug ▸ Cross section: 0.25 mm^2 ▸ Rated current: 2 A	UL	570357	570358	570359	570360	570361	570362

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	-	570486
▸ Connector X1: M12, 8-pin, female connector ▸ Connector X2: M12, 8-pin male connector ▸ Connector X3: M12, 8-pin, female connector	-	570489
▸ Connector X1: M12, 12-pin, female connector ▸ Connector X2: M12, 8-pin male connector	-	570487

PSENmlock

▶ Selection guide – Cable for PSENopt and PSENopt II

PSENopt

PSENopt

PSENopt II

PSEN op cable M12-4sf

PSEN op cable M12-5af

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

	Type	Description	Cable drag chain capability
5	PSEN op cable M12-4sf	Cable for Type 2 and Type 4 light curtain and single-beam safety light barrier for connection to any evaluation device	-
5	PSEN op cable M12-4af		-
3	PSEN op cable M12-5sf	Cable for Type 2, Type 3 and Type 4 light curtains for connection to any evaluation device	-
3	PSEN op cable M12-5af		-
2	PSEN op cable M12-8sf	Cable for Type 2 (body protection) and Type 4 light curtains for connection to any evaluation device	◆
2	PSEN op cable M12-8af		◆
	PSEN op cable M12-4sf shielded	Cable for Type 2 and Type 4 light curtains for connection to any evaluation device	-
	PSEN op cable M12-4af shielded		-
	PSEN op cable M12-8sf shielded	Cable for Type 4 light curtain, for connection to any evaluation device	-
	PSEN op cable M12-8af shielded		-

PSENopt

Features	Certification	Order number (by length)					
		3 m	5 m	10 m	20 m	30 m	50 m
▶ Connection 1: unshielded, straight, M12, 4-pin, socket ▶ Connection 2: open cable	UL	630 300	630 301	630 302	-	630 296	630 362
▶ Connection 1: unshielded, angled, M12, 4-pin, socket ▶ Connection 2: open cable	UL	630 341	630 342	630 343	-	630 344	630 363
▶ Connection 1: unshielded, straight, M12, 5-pin, socket ▶ Connection 2: open cable	UL	630 310	630 311	630 312	630 298	630 297	630 364
▶ Connection 1: unshielded, angled, M12, 5-pin, socket ▶ Connection 2: open cable	UL	630 347	630 348	630 349	-	630 350	630 365
▶ Connection 1: unshielded, straight, M12, 8-pin, socket ▶ Connection 2: open cable	UL	540 319	540 320	540 321	540 333	540 326	-
▶ Connection 1: unshielded, angled, M12, 8-pin, socket ▶ Connection 2: open cable	UL	540 322	540 323	540 324	-	540 325	-
▶ Connection 1: shielded, straight, M12, 4-pin, socket ▶ Connection 2: open cable	UL	630 303	630 304	630 305	-	630 309	630 366
▶ Connection 1: shielded, angled, M12, 4-pin, socket ▶ Connection 2: open cable	UL	630 306	630 307	630 308	-	630 319	630 367
▶ Connection 1: shielded, straight, M12, 8-pin, socket ▶ Connection 2: open cable	UL	630 313	630 314	630 315	-	630 328	630 368
▶ Connection 1: shielded, angled, M12, 8-pin, socket ▶ Connection 2: open cable	UL	630 316	630 317	630 318	-	630 329	630 369

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PSENopt

▶ Selection guide – Cable for PSENopt and PSENopt II

PSENopt

PSENopt

PSENopt II

PSENopt and PSENopt II – cable selection for connection to PDP67 F 8DI ION/PSS67

PSS67/PDP67 cable M12-5sf

PDP67 F 8DI ION PT

Type	Description	Cable drag chain capability
8 PSS67/PDP67 cable M12-5sf M12-5sm	▶ Cable for connection to PDP67 F 8DI ION/PSS67	-
8 PSS67/PDP67 cable M12-5af M12-5am	▶ An additional adapter is required for 8-pin receiver (380 326)	-

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

Type	Description
PDP67 F 8DI ION PT	Sensor junction box for decentralized periphery PNOZmulti
PDP67 F 8DI ION HP	Decentralized input module for PNOZmulti

PSENopt – accessory selection for cascadable light 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	-

Features	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	UL	380 208	380 209	380 210	380 220	380 211
▶ Connection 1: angled, M12, 5-pin, socket ▶ Connection 2: angled, M12, 5-pin, plug	UL	380 212	380 213	380 214	-	380 215

Features	Certification	Order number
▶ Connection 1: straight, M12, 8-pin, socket ▶ Connection 2: straight, M12, 5-pin, plug	UL	380 326

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, UL	773 616
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, UL	773 601

Features	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	630 280	-	630 281
▶ Connection 1: shielded, straight, M12, 4-pin, socket ▶ Connection 2: shielded, angled, M12, 4-pin, socket	-	630 282	-
▶ Connection 1: shielded, straight, M12, 4-pin, socket ▶ Connection 2: 2 x shielded, angled, M12, 4-pin, socket	630 295	-	-

PSENopt

▶ Selection guide – Cable for PSENopt Advanced

PSENopt
Advanced

PSENopt Advanced – cable selection for connection to any evaluation device

PSEN op cable axial M12 12-pole

Type	Description	Cable drag chain capability
PSEN op cable axial M12 12-pin	Cable for light curtains PSENopt Advanced for connection to any evaluation device	◆
PSEN op cable M12-5sf	Cable for light curtains PSENopt Advanced for connection to any evaluation device	-

Note: The PSENmlock cables can also be used to connect PSENopt Advanced (see page 154).

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 93)

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

Features	Certification	Order number (by length)					
		3 m	5 m	10 m	20 m	30 m	50 m
▶ Connection 1: unshielded, straight, M12, 12-pin, socket ▶ Connection 2: open cable	UL	631 080	631 081	631 082	631 083	631 084	631 085
▶ Connection 1: unshielded, straight, M12, 5-pin, socket ▶ Connection 2: open cable	UL	630 310	630 311	630 312	630 298	630 297	630 364

Features	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

Features	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

Features	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

PSENopt

▶ Selection guide – Cable for PSENopt slim and PSEN

PSENopt slim

PSENopt slim – cable selection and adapter

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)

PSEN op cable M12-5sf

Type	Description	Cable drag chain capability
PSEN op cable M12-5sf	Unshielded, straight, M12, 5-pin, socket	-

PSENscan

PSENscan – cable selection

PSEN cable axial M12 8-pole

Type	Description	Cable drag chain capability
PSEN cable axial M12 8-pin	I/Os and voltage supply	◆
PSEN op Ethernet cable	Connection cable to PC/network	-

PSENopt

PSENscan

scan

Features	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

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

Features	Certification	Order number (by length)			
		3 m	5 m	10 m	20 m
Open cable	UL	630 310	630 311	630 312	630 298

Features	Certification	Order number (by length)				
		3 m	5 m	10 m	20 m	30 m
▶ Connection 1: straight, M12, 8-pin, socket ▶ Connection 2: open cable	UL	540 319	540 320	540 321	540 333	540 326
▶ Connection 1: RJ45, 4-pin ▶ Connection 2: M12, 4-pin, plug, D-coded	-	631 072	-	631 073	-	-

PSENopt

PSENscan

▶ Selection guide – Cable for PSENvip and cable acc

PSENvip 2

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

Sensor technology PSEN – accessory selection for customisable plugs and sockets

PSEN/PDP67 M12-8sf
screw terminals

PSEN/PDP67 M12-8sm
screw terminals

Type	Description
PSS67 M12 connector M12-5sf	Connector socket
PSS67 M12 connector M12-5sm	Connector plug
PSS67 M12 connector M12-5af	Connector socket
PSS67 M12 connector M12-5am	Connector plug
PSEN/PDP67 M12-8sf screw terminals	Connector socket
PSEN/PDP67 M12-8sm screw terminals	Connector plug

PSENvip

PSEN

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Features	Order number (by length)			
	8 m	**10 m**	**15 m**	**20 m**
▶ Connection 1: shielded, straight, M12, 4-pin, socket ▶ Connection 2: Mini I/O	584 569	584 570	584 571	584 572

Features	Certification	Order number
▶ Connection 1: straight, M12, socket ▶ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm^2	UL	380 309
▶ Connection 1: straight, M12, plug ▶ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm^2	UL	380 308
▶ Connection 1: angled, M12, socket ▶ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm^2	UL	380 311
▶ Connection 1: angled, M12, plug ▶ Connection 2: screw terminal suitable for 5-core cable, max. 0.75 mm^2	UL	380 310
▶ Connection 1: straight, M12, socket ▶ Connection 2: screw terminal suitable for 8-core cable, max. 0.5 mm^2	UL	540 332
▶ Connection 1: straight, M12, plug ▶ Connection 2: screw terminal suitable for 8-core cable, max. 0.5 mm^2	UL	540 334

PSENvip

PSEN

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▶ Safety Concept

▶ Safety Design

▶ System Implementation

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▶ CE Marking

▶ USA

▶ NR-12

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▶ Lockout Tagout System

▶ Inspection of Safeguarding Devices

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

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▶ Support

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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.

Automation technology

COMPONENTS
SYSTEMS
SERVICES

Innovative   Ecological
Safe   Economical

Presented by:

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energy saving by Pilz

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pilz
the spirit of safety

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DIN EN ISO 9001
REG. NO.2462

PILZ
THE SPIRIT OF SAFETY

Control technology

PILZ

THE SPIRIT OF SAFETY

▶ Relays: Electronic monitoring relays PMDsigma and PMDsrange,
  safety relay PNOZsigma, PNOZ X, PNOZcompact, PNOZelog and PNOZpower
▶ Configurable small controllers PNOZmulti 2, PNOZmulti Mini, PNOZmulti
▶ Controllers and I/O systems PSSuniversal, PSSuniversal 2
▶ Automation system PSS 4000

Pilz control technology –
for safety and automation.

▶ Control technology

Pilz offers the right solution for every control technology situation. From stand-alone applications to networked and distributed systems – for safety and automation. Meet your automation requirements cost-effectively, reliably and from a single source with optimally matched components and systems: from the simple monitoring relays PMD to safety relays PNOZ, the configurable small controllers PNOZmulti and the programmable controllers PSSuniversal PLC. They will allow you to implement a multitude of applications in compliance with the relevant standards. Our software tools enable simple operation and make commissioning easier. Combine that with network components and software and you get complete automation architectures. Benefit from short downtimes and high plant availability due to extensive diagnostic options.

Contents

COMPONENTS

Sensor, control and drive
technology

SYSTEMS

Automation system

Automation
technology

Innovative

Safe

Ecologi

Pilz is your solution supplier for all automation tasks. Including standard control functions. Pilz developments protect man, machine and the environment.

Pilz has a tradition as a family-run company stretching back over 60 years. Real proximity to customers is visible in all areas, instilling confidence through individual consultation, total flexibility and reliable service. Worldwide, round the clock, in 42 subsidiaries and branches, as well as 27 sales partners on every continent.

More than 2 200 staff, each one of them an ambassador for safety, make sure that your staff – your company's most valuable asset – can work safely and free from injury.

SERVICES

Consulting, engineering
and training

ns

Economical

cal

cal

PILZ

THE SPIRIT OF SAFETY

Automation
solutions from Pilz –
at home in every
industry.

Modbus

ETHERNET POWERLINK

CC-Link

INTERBUS

EtherCAT

EtherNet/IP

Pilz automation solutions

Pilz offers everything that you need for the automation of your plant and machinery: Innovative components and systems in which safety and automation are merged within hardware and software.

From sensor and control technology to drive technology, the ease of commissioning, operation and diagnostics plays an important role for all components and systems from Pilz.

You benefit from flexible solutions for machines with an elementary function range through to large interlinked plants. With us you can standardize your safety, implement safety and automation in one periphery or find solutions for complete automation.

Pilz solutions are embedded into the relevant system environment – whether a new structure or a retrofit – and are open for a variety of interfaces and functionalities.

The perfect combination:

Control technology from Pilz offers numerous application options, including monitoring of electrical

Programming IEC 61131-3

Rapid Installation

Pilz automation solutions

▶ Simple configuration, programming and visualization
  through innovative software solutions
▶ High flexibility due to individually expandable solutions
▶ Openness of communication
▶ High availability thanks to extensive diagnostic options
▶ One system for safety and automation

and functional safety, through to complete machine control.

Safe sensors and decentralized modules from Pilz guarantee the efficient, compliant use of plant and machinery in combination with various control systems. Our turnkey systems and universally compatible solutions offer a high savings potential.

Drive technology from Pilz is characterized by drive-integrated safety functions, safe logic functions and the connection of visualization, sensor and actuator technology.

Operator and visualization systems from Pilz complete your plant and machinery.

Automation software from Pilz allows you to quickly and easily implement your planning, programming, configuration, commissioning, diagnostics and visualization.

Pilz offers you automation solutions for the safety of man, machine and the environment.

▶ Pilz control technology – for safety and automation

The optimum solution for every requirement – with these control systems and components you can implement each application in compliance with the standards. User-friendly software assists you in implementing your automation projects. From a stand-alone machine to networked plants – with us your automation can be complete and simple.

Small machines or interlinked plants: the optimum solution for your specific automation task!

Relays	Configurable small control systems

Easy to configure!

▶ Reliability of one of the leading brands
   in automation technology
▶ Optimum cost/performance ratio
▶ Maximum safety with minimum space requirement
▶ Certified safety, because international standards
   and regulations are met
▶ Fast commissioning thanks to units
   with plug-in connection terminals

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Webcode: web150079

Configuration made simple!

▶ Cost-effective and long-lasting: worldwide safety
   standard for many automation environments
   and communication systems
▶ Flexible: configuration using certified software
   blocks, simple adjustment and adaptation
▶ Just one system from planning to maintenance
▶ Exact adaptation to the application using
   expansion modules
▶ Optimum visualization using the web-based
   visualization software PASvisu

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Webcode: web150495

Control systems

Simple programming of large plants!

▸ Processing of safety and automation functions
▸ Can be used as a stand-alone controller or
  as part of a network
▸ Intuitive programming of complex functions
▸ High level of flexibility thanks to modular
  system structure
▸ Extensive selection of modules to meet your
  specific requirements

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I/O systems

System for third-party controllers

▸ Communication with the controller takes place
  via common fieldbus protocols
▸ Functions for safety and automation are processed
  decentrally at field level
▸ Fast commissioning and simple configuration
  thanks to the independent periphery test
▸ High level of flexibility thanks to modular
  system structure

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PSSuniversal 2: page 144
Webcode: web150509

Relays

Configurable small control systems

Control systems and I/O systems

▶Relays

Electrical or functional safety – our relays provide the perfect
solution for any application at an optimum cost/performance
ratio. Choose one of the leading brands in automation
technology – a brand with many years of experience and
outstanding service.

▶ Electronic monitoring relays PMDsigma

With electronic monitoring relays, the focus is on electrical safety. Monitoring relays reduce the number of hazardous situations for man and machine and increase the service life of plant and machinery. Save costs and be sure of an efficient production cycle.

PMD s10

Applications PMD s10

Using the measured true power, it is possible to derive variables such as fill level, volume, torque or air pressure. The following example applications illustrate potential areas of use:

▶ Contamination of sieves or filters on ventilation systems
▶ To check for dry running or pump blockage
▶ Viscosity of fluids on mixers
▶ Wear and tear on tools
▶ To control the brush pressure on car washes
▶ To monitor conveyors for blockages or wear and tear

Technical details – Electronic monitoring relays PMDsigma

PMD s20

Type	Application area	Features
PMD s10	Monitoring and conversion of true power for single/three-phase AC/DC supplies, monitoring of overload and underload. Suitable for use with frequency-controlled motors and current transformers.	▶ Menu-driven stepless adjustment of function parameters via display and rotary knob ▶ Display for measurements, diagnostics and menu navigation ▶ Measuring range is set automatically for current and voltage
PMD s20	Monitors the insulation resistance of unearthed AC/DC power supplies (IT networks), e.g. on ships, in areas used for medical applications, as a trigger when impermissible insulation resistances occur. Meets the requirements of DIN EN 61557-8, IEC 60364-7-710 and DIN VDE 0100-710.	▶ Response value R_{on}: selectable from 10 … 200 kΩ ▶ Rated mains voltage: 0 … 400 V AC/DC ▶ Rated mains voltage U_L: 0 … 300 V AC/DC

Relays

Applications PMD s20

The PMD s20 can be used to monitor the insulation resistance of unearthed AC/DC systems. Thanks to the separate supply voltage, monitoring of the de-energized system is possible. Typical application areas include:

▶ Clinical operating theatres
▶ Offshore installations such as wind turbines, sewage treatment plants and shiplifts
▶ Electroplating and surface finishing systems

Your benefits at a glance
▶ Quick and easy settings using the rotary knob (push and turn) to reduce set-up and commissioning times
▶ Error-proof: menu-guided configuration with device-internal cross-comparison
▶ Simple handling when replacing devices thanks to exchangeable program memory for porting data
▶ Minimal downtimes thanks to extended diagnostics and measurement indication via display

	Approvals	Order number	
▶ Analog output for current and voltage: voltage output 0 … 10 V, current output convertible from 0 … 20 mA to 4 … 20 mA ▶ 2 relay outputs (auxiliary contacts (C/O)) for monitoring underload and overload ▶ Measuring voltage (3 AC), U_M (AC/DC): 100 … 550 V ▶ Measuring current (I_M): 1 … 12 A AC/DC ▶ Dimensions (H x W x D) in mm: 100/98 [1] x 45 x 120	CE, cULus Listed	▶ Spring-loaded terminals PMD s10 C	761 100
		▶ Plug-in screw terminals PMD s10	760 100
▶ Supply voltage U_B AC/DC: 24 … 240 V AC/DC ▶ Frequency range AC: 50 … 60 Hz ▶ Start suppression/reaction time: selectable from 0 … 30 s ▶ Hysteresis: selectable from 0 … 50 % ▶ Dimensions (H x W x D) in mm: 100/98 [1] x 45 x 120	CE, cULus Listed	▶ Spring-loaded terminals PMD s20 C	761 120
		▶ Plug-in screw terminals PMD s20	760 120

Keep up-to-date on PMDsigma:

Webcode: web150376

Online information at www.pilz.com

[1] Height incl. spring-loaded terminals/plug-in screw terminals

Relays

▶ Electronic monitoring relays PMDsrange

With monitoring relays, the focus is on the protection of persons and machinery against insulation faults, residual voltages, overvoltage, overcurrent, overload, temperature overload as well as monitoring standstill and true power. Significantly reduce hazardous situations for human and machine, while at the same time increasing the service life of your plant.

S3UM   S1IM   S1WP

Taking control of every situation
Reliable electronic monitoring and control of your plant or machinery is always the priority. Save costs and guarantee an efficient production cycle. Simply by using monitoring relays! You'll find the right device for every monitoring task.

User-friendly features
PMDsrange units in 22.5 mm slimline housing cover the widest range of functions. Selectable measuring ranges and a high number of operating voltages enable flexible use. Quick and easy installation, practical terminals, a variety of operator elements as well as luminous displays all help to make commissioning easier and ensure the units are perfectly tailored to your specific application.

Many applications

You can use the PMDsrange devices in a multitude of applications: for monitoring the temperature of motors, for monitoring voltage at bottle conveyor systems, to monitor blockages at pumps, and many other applications.

Your benefits at a glance
- Parameters can be set on the front, thereby reducing commissioning times
- Save space in the control cabinet: widths of just 22.5 mm
- Rapid diagnostics via LED status display
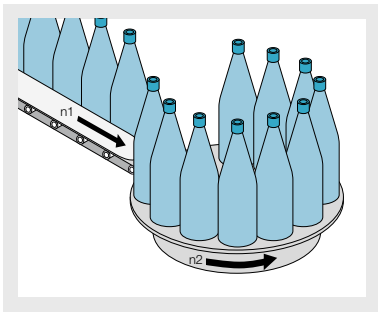
Relays

Bottling plant with voltage monitoring

Use voltage monitors, for example, to monitor voltage supplies on bottling plants. The monitoring relay ensures that the plant is shut down in a controlled manner. It also protects against an uncontrolled restart.
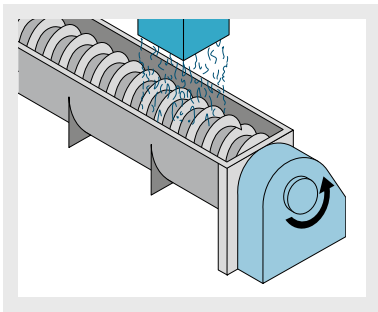
Screw conveyor with current monitoring

You need to monitor current, e.g. at a screw conveyor? It can provide protection against blockage and wear and tear, thereby helping with preventive maintenance.
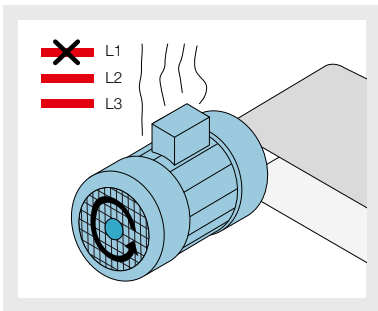
Motor with thermistor monitoring

Use thermistor monitoring to protect your motors from overheating. Also prevent automatic start-up. This is particularly important for adverse cooling and where frequent start-up or braking of the motor is required. Thermistor monitoring relays such as S1MS are also available with ATEX approval.

Keep up-to-date on PMDsrange:

Webcode: web150375
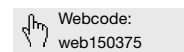
Online information at www.pilz.com

▶ Technical details – PMDsrange

Selection guide – Electronic monitoring relays PMDsrange

S3UM

S1PN

S1IM

S1EN

S1WP

S1MS

Type	Application area	
S3UM	Monitoring of overvoltage and undervoltage as well as the phase sequence in three-phase supplies	▶ Monitoring of supplies with and without neutral conductors ▶ Trip device for undervoltage and overvoltage ▶ Evaluates phase sequence ▶ Detects asymmetry and phase failure
S1PN	Monitoring of phase sequence and phase failure on three-phase supplies	▶ Measuring voltage up to 690 V AC ▶ Monitoring of rotary field direction = phase sequence, rotation direction on drives
S1IM	Monitors AC/DC currents for max. current values, single-phase	▶ 12 measuring ranges from 0.002 ... 15 A, selectable ▶ Reaction time can be set to up to 10 seconds ▶ Operates to either normally energized or normally de-energized mode ▶ Galvanic isolation between measuring and supply voltage ▶ UP version: measuring inputs are not polarity-sensitive
S1EN	Monitoring of insulation and earth faults on galvanically isolated AC/DC supplies (IT networks), single and three-phase. Meets the requirements of DIN EN 61557-8	▶ For DC and AC supplies ▶ Normally energized mode ▶ Fault latching or automatic reset ▶ Normal/test mode ▶ External reset button can be connected
S1WP	Monitoring and conversion of true power, DC supplies and single-/three-phase AC supplies, monitoring of overload and underload	▶ 9 different measuring ranges ▶ Large voltage measuring range ▶ Analog output can be switched for current and voltage ▶ Relay output for monitoring underload and overload ▶ Suitable for use with frequency-controlled motors ▶ Suitable for current transformers
S1MS	Temperature monitoring circuits in accordance with DIN EN 44081 to protect motors, generators, storage areas, etc. from overheating	▶ For DC and AC supplies ▶ Normally energized mode ▶ Measuring circuit for connecting a temperature sensor (PTC resistor) ▶ Automatic reset
S1MS Ex	As for S1MS, potentially explosive areas: II (3) G [Ex ic] IIC Gc and II (3) D [Ex ic] IIIC Dc	

Common features
▶ Dimensions (H x W x D) in mm: 87 x 22.5 x 121
▶ Selectable measuring ranges available in many operating voltages
▶ With screw terminals

Technical features	Approvals	Order number [1]
▸ Supply voltage (U_B): AC: 120, 230 V; DC: 24 V ▸ Output contact: 1 auxiliary contact (C/O) ▸ Measuring voltage (3 AC) (U_M): AC: 42, 100/110, 230, 400/440, 440/480, 415/460, 500/550 V, selectable	▸ CE, cULus Listed, CCC ▸ CE, CCC ▸ CE, CCC	▸ 24 V DC (U_B), 230 V AC (U_M) ⎯⎯ 837 260 ▸ 24 V DC (U_B), 400/440 V AC (U_M) ⎯ 837 270 ▸ 24 V DC (U_B), 415/460 V AC (U_M) ⎯ 837 280
▸ Supply voltage (U_B): AC: 200 … 240, 400 … 500, 550 … 690 V ▸ Output contacts: 2 auxiliary contacts (2 C/O)	▸ CE, cULus Listed, CCC ▸ CE, CCC ▸ CE, CCC	▸ 200 … 240 V ⎯⎯⎯⎯⎯ 890 200 ▸ 400 … 500 V ⎯⎯⎯⎯⎯ 890 210 ▸ 550 … 690 V ⎯⎯⎯⎯⎯ 890 220
▸ Supply voltage (U_B): AC: 24, 42 … 48, 110 … 127, 230 … 240 V; DC: 24 V ▸ Output contact: 1 auxiliary contact (C/O)	CE, cULus Listed, CCC	▸ 110 … 130 V AC (U_B), 15 A (I_M) ⎯ 828 040 ▸ 230 … 240 V AC (U_B), 15 A (I_M) ⎯ 828 050 ▸ 24 V DC (U_B), 15 A (I_M) ⎯⎯⎯ 828 035

▸ Supply voltage (U_B): AC/DC: 24 … 240 V
▸ Output contact: 1 auxiliary contact (C/O)
▸ Rated mains voltage (monitored supply):
  - 50 kΩ version: AC/DC: 0 … 240 V
  - 200 kΩ version: AC/DC: 0 … 400 V
▸ Max. measuring current (DC):
  - 50 kΩ version: 2.4 mA
  - 200 kΩ version: 1.0 mA
	CE, cULus Listed, CCC	▸ 24 … 240 V AC/DC (U_B), 50 kΩ ⎯ 884 100
		▸ 24 … 240 V AC/DC (U_B), 200 kΩ ⎯ 884 110

▸ Supply voltage (U_B): DC: 24 V; AC/DC: 230 V ▸ Output contact: 1 auxiliary contact (C/O) ▸ Measuring voltage: 3 AC/DC: 0 … 120, 0 … 240, 0 … 415, 0 … 550 V 1 AC/DC: 0 … 70, 0 … 140, 0 … 240, 0 … 320 V	CE, cULus Listed, UL/cUL, CCC	▸ 24 V DC (U_B), 0 … 240 V AC/DC (U_M), 9 A (I_M) ⎯ 890 010 ▸ 24 V DC (U_B), 0 … 415 V AC/DC (U_M), 9 A (I_M) ⎯ 890 020 ▸ 24 V DC (U_B), 0 … 550 V AC/DC (U_M), 9 A (I_M) ⎯ 890 030
▸ Supply voltage (U_B): AC: 48, 110, 230, 240, 400 V; AC/DC: 24 V ▸ Output contacts: 2 auxiliary contacts (2 C/O)	▸ CE, cULus Listed, CCC ▸ CE, cULus Listed, CCC ▸ CE, CCC	▸ 24 V AC/DC (U_B) ⎯⎯⎯⎯ 839 775 ▸ 230 V AC (U_B) ⎯⎯⎯⎯⎯ 839 760 ▸ 400 V AC (U_B) ⎯⎯⎯⎯⎯ 839 770
▸ Supply voltage (U_B): AC: 48, 110, 230, 240 V; AC/DC: 24 V ▸ Dimensions (H x W x D) in mm: 112.5 x 26 x 135	CE, cULus Listed, CCC	▸ 24 V AC/DC ⎯⎯⎯⎯⎯ 839 775 ▸ 230 V AC ⎯⎯⎯⎯⎯⎯ 839 760 ▸ 240 V AC ⎯⎯⎯⎯⎯⎯ 839 765

[1] Other versions on request

Order number features: U_B = Supply voltage;
U_M = Measuring voltage; I_M = Measuring current

Technical documentation for electronic monitoring relays PMDsrange:

Webcode: web150635
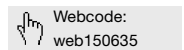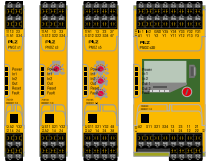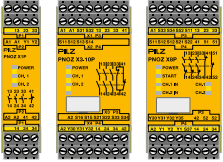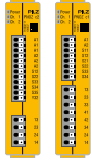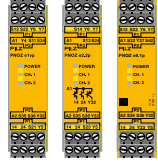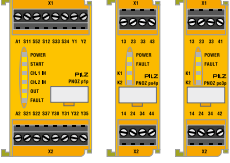
Online information at www.pilz.com

▶ Safety relays PNOZ®

In 1987, Pilz patented the first E-STOP relay to protect man and machine. That was a milestone in safety technology. Today, the PNOZ safety relays are proven daily in millions of applications worldwide. In addition to the classic E-STOP function, our safety relays also monitor safety gates, light beam devices, two-hand controls, pressure-sensitive mats and many other safety functions.

We can offer the optimum safety solution for each application. Our safety relays are distinguished by a variety of supply voltage ranges, the number of safety contacts, the number of terminals or the ability to plug in terminals. Unit types in push-in technology offer a great advantage in terms of both economy and safety. They help you to reduce costs through short commissioning and service times. Based on their different features and functionalities, our products can be divided into the following product groups:

PNOZsigma
- Maximum functionality in minimum width
- Operating modes and times are selectable
- Scalability thanks to modular structure

PNOZ X
- Tailor-made safety for each function
- Electromechanical, potential-free
- With universal power supply

PNOZcompact
- Square, simple, yellow
- Ideal for high volume manufacturers of series machines
- Basic function of a safety application

PNOZelog
- Easy to link
- Non-wearing
- Extended diagnostics

PNOZpower
- High loads from 8 A to 16 A
- Switch motor loads directly
- Modular output contacts

Relays

Finding your PNOZ
This diagram will help you to choose.
You have specific requirements,
we have the right solution.

START

More than three
safety functions/
configurable/web-based
visualization?

Yes

PNOZmulti 2
Further information from page 74
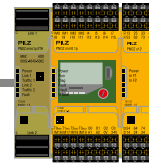
PNOZmulti Mini
Further information from page 84

No

Breaking capacity > 8 A?

Yes

PNOZmulti
Further information from page 92

No

PNOZsigma
Further
information
from page 22

No

Ability to
connect safety functions
via AND/OR logic

Yes

Good scalability/
user-friendly diagnostics?

No

PNOZ

PAS

PVIS®
Professional
diagnostic solution
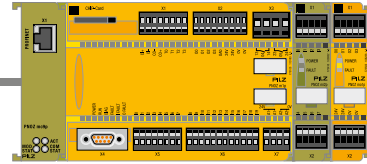
Software tools PNOZmulti
Further information from page 70

Yes

PNOZelog
Further information
from page 46

Plug-in terminals/
universal power supply?

Yes

No
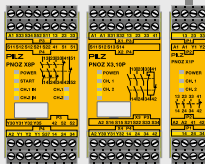
PNOZ X
Further information
from page 36
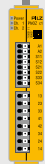
PNOZcompact
Further information
from page 44
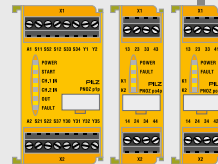
PNOZpower
Further information
from page 56

Relays

▶ Protection of man and machine

It pays to use safety technology: The protection of man and machine through the targeted control of hazardous movements, cost savings thanks to fewer accidents, reduced downtimes and fewer production losses – these are real benefits that you can enjoy when you use safe control technology from Pilz.

Safety relays PNOZ – certified worldwide
When using the safety relays PNOZ, the aim is to keep the risk to man and machine as low as possible. Internationally coordinated statutory instruments were introduced to ensure that the same level of protection could be guaranteed in all countries. Our safety relays

comply with these international standards and regulations. The safety relay PNOZ has been approved by BG, TÜV and many other notified bodies and offers users considerable benefits. Long service life and high availability ensure it is cost-effective to use.

Machine safety in the workplace

Machinery Safety Audit

Inspection of safeguards

Risk assessment

Validation

Safety concept

PL   SIL

System implementation

tuev-sued.de/ps-zert

Safety design

IEC   PL
ISO   SIL

PILZ
THE SPIRIT OF SAFETY

Machine conformity and certification

CE marking

International compliance

ISO   IEC
EN   ANSI

20 | PILZ
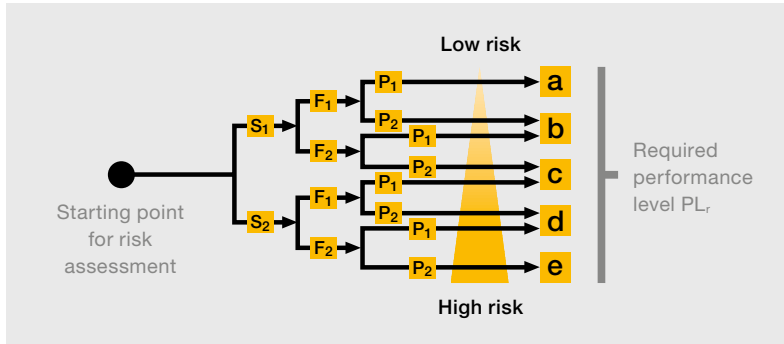
Risk analysis in accordance with EN ISO 13849-1

EN ISO 13849-1

As the successor standard to EN 954-1, EN ISO 13849-1 is based on the familiar categories. Equally, it examines complete safety functions, including all the components involved in their design. EN ISO 13849-1 goes beyond the qualitative approach of EN 954-1 to include a quantitative assessment of the safety functions. A performance level (PL) is used for this, based on the categories.

Consequences and severity		Class CL = Fr + Pr + Av				
	S	3 – 4	5 – 7	8 – 10	11 – 13	14 – 15
Death, losing an eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
Permanent, losing fingers	3		OM	SIL 1	SIL 2	SIL 3
Reversible, medical treatment	2			OM	SIL 1	SIL 2
Reversible, first aid	1				OM	SIL 1

Risk assessment and definition
of the required safety integrity level (SIL)

Safety assessment in accordance with EN/IEC 62061

According to the standard EN/IEC 62061, safety requirements in control technology can be divided into safety integrity levels. SIL 3 represents the highest risk reduction and protection level, where the safety function must always be maintained. The risk is estimated through consideration of the severity of injury (Se), the frequency and duration of exposure to the hazard (Fr), probability of occurrence of a hazardous event (Pr) and the possibility of avoiding or limiting the harm (Av).

Your benefits at a glance

The use of safety relays PNOZ offers you:

▶ The security and innovative strength of one of the leading brands in automation technology
▶ The appropriate solution for each application
▶ High plant availability thanks to user-friendly diagnostics
▶ Low downtimes for your plant or machinery
▶ Optimum cost/performance ratio
▶ Faster commissioning, for example, through units with plug-in terminals
▶ Maximum safety with minimum space requirement
▶ Simple wiring, fast commissioning
▶ A solid partner with expertise and outstanding service
▶ Certified safety, because our products comply with international standards and regulations and have been tested and approved worldwide
▶ Quality guarantee, we are certified to DIN ISO 9001
▶ Use of products that are geared towards the future, thanks to innovative developments
▶ Complete solution comprising evaluation devices, compatible sensor technology and control and signal devices

Relays

Keep up-to-date about the standards:

Webcode: web83082
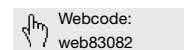
Online information at www.pilz.com

▶ Safety relays PNOZsigma

The compact safety relays PNOZsigma combine many years of experience with today's very latest safety technology: you can achieve maximum safety and cost-effectiveness with minimum effort. With particularly narrow housing widths and multifunctionality compressed into each unit, PNOZsigma provides maximum functionality in minimum width. So you can implement safety technology faster, with greater flexibility and therefore more efficiently, while saving space.

PNOZ s1   PNOZ s3   PNOZ s5   PNOZ s30

Small number of types – suitable for a variety of uses
▶ Selectable operating modes and timers enable each unit to be flexible in its application
▶ A single unit type monitors different safety functions
▶ Your stockholding can be reduced to a few unit types

Rapid installation:
With spring-loaded terminals
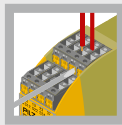
Wiring work is reduced by 20 %:
Contact expansion via connectors
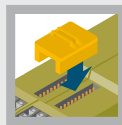
Simple configuration:
designation and position of the terminals is the same on all unit types

Maximum flexibility:
Operating modes and timer functions are selectable
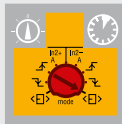
Rapid assembly via spring clips:
No need for tools
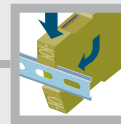
Diagnostics in seconds:
Via 6 LED displays – no external measuring devices required
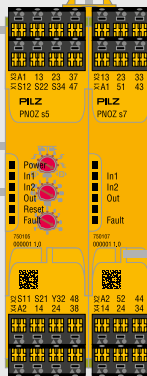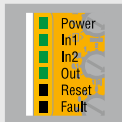
Safe from manipulation:
Setting elements have a lockable cover

Your benefits at a glance
▶ Narrower widths save space within the control cabinet, and therefore costs
▶ Reduction in wiring costs through push-in technology and contact expansion through the use of connectors
▶ Rapid commissioning and high availability
▶ Low logistics costs: few unit types covering many safety functions
▶ Opt for the complete solution from Pilz and add optimally matched and approved safety components to PNOZsigma: from the E-STOP button and safe sensors such as safety switches and light curtains to operator terminals for diagnostics and visualization

Relays

n=0   n>max

n↺   (M)

PMCtendo SZ   PNOZ s30 +
              PNOZ s22

PNOZ s4   PSENcode

PMI

PSENopt   PNOZ s3 +
          PNOZ s7.1/s7.2

P≈

(M)

PMCtendo SZ   PMD s10

PNOZ s6

PNOZ s5   PITestop
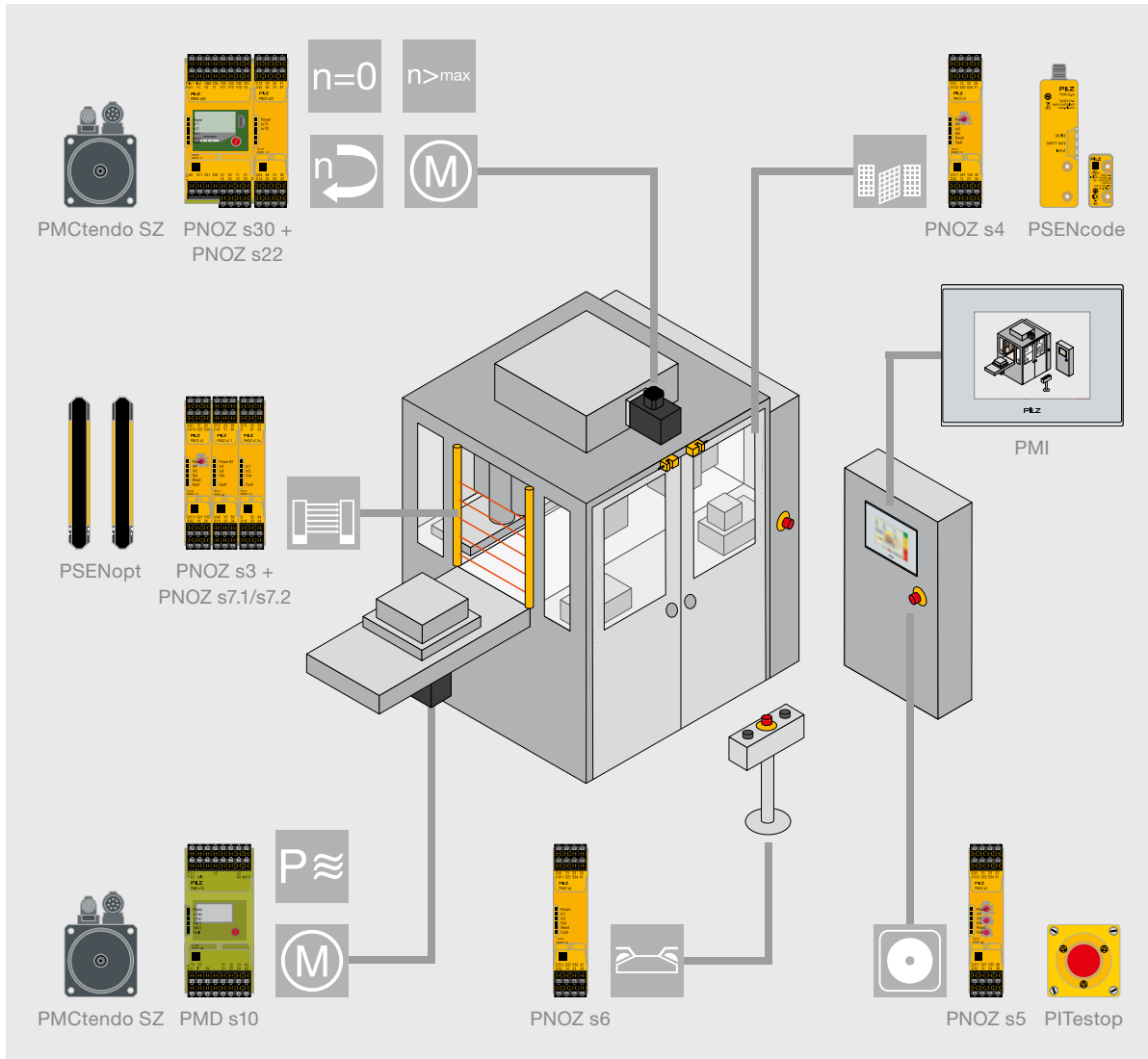
The appropriate solution for every safety application –
e.g. use of the safety relays PNOZsigma on a packaging machine.

min

max
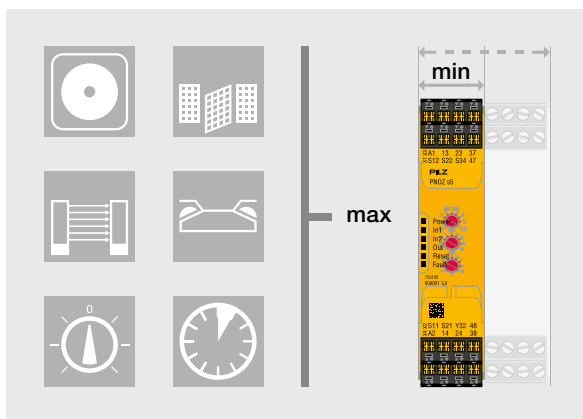
Up to 50 % space saving

▸ Widths starting at 12.5 mm

▸ Housing is up to 50 % narrower
  with the same functionality [1]

▸ Reduced space requirement
  in the control cabinet saves costs

[1] Compared to standard electromechanical
    safety relays available on the market

Keep up-to-date
on safety relays
PNOZsigma:

Webcode:
web150099

Online information
at www.pilz.com

▶ Safety relay PNOZsigma – Tried and tested in special applications
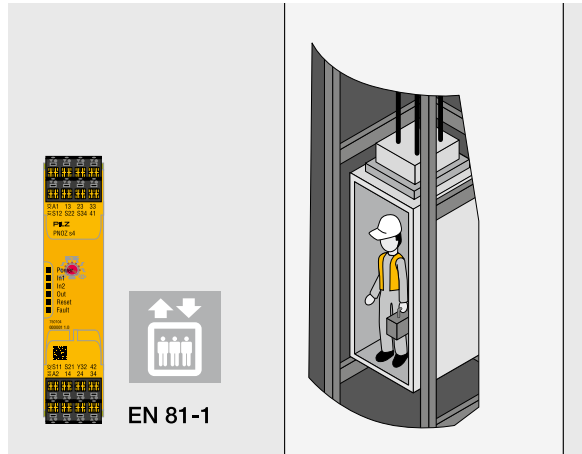
EN 81-1

Safety relay PNOZ s4 with lift approval

The "Lifts standard" EN 81-1 defines the safety rules for the "construction and installation of lifts; Part 1: Electric lifts". The PNOZ s4 has this approval and guarantees lift operators and lift manufacturers maximum functionality in minimum width. With a width of 22.5 mm, the PNOZ s4 achieves PL e as defined in EN ISO 13849-1, and SIL CL 3. The areas of application of the PNOZ s4 range from passenger lifts, freight and goods lifts to all types of lifting devices which are subject to this standard.
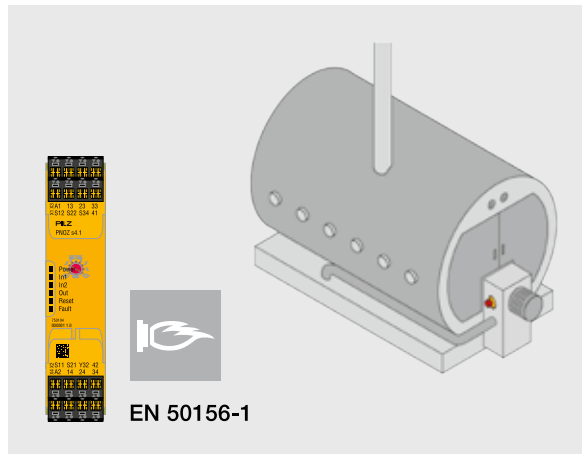
EN 50156-1

Safety relay PNOZ s4.1 – for use in burner controls

Thanks to three safe, diverse safety contacts, the PNOZ s4.1 is approved for use in burner controls. It is approved in accordance with the standard EN 50156-1 for electrical equipment on furnaces, in particular with regard to the requirements for application design and installation. Safety valves of furnaces can be monitored using PNOZ s4.1. The operating modes can be set easily and conveniently using a rotary switch.

More contacts with PNOZsigma –
Simply and quickly

Multiple expansion with PNOZ s7.1 and PNOZ s7.2

Using a base unit and a PNOZ s7.1, it is possible to expand the number of safety contacts almost without limit. A series of up to ten PNOZ s7.2 units can be connected to a PNOZ s7.1. If you need even more safety contacts, an additional PNOZ s7.1 can be added. No wiring is involved – just a connector and one simple hand movement.

At just 17.5 mm wide, the PNOZ s7.1 has three safety contacts, while the PNOZ s7.2 has four safety contacts plus one auxiliary contact. They can be combined with other PNOZsigma expansion units at any time.

PNOZ s3 + PNOZ s7.1 + PNOZ s7.2 + PNOZ s7.2
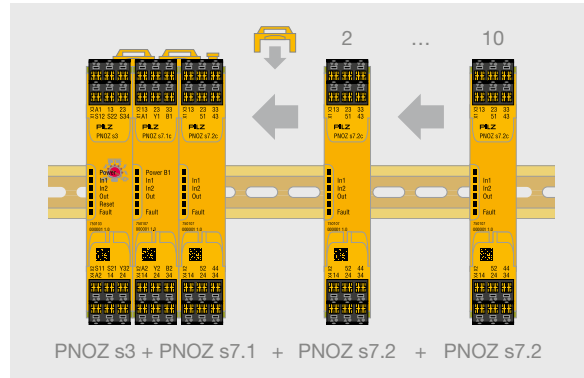
Fast contact expansion – it's easy with PNOZsigma!

PNOZ s3 + PNOZ s20   +   PNOZ s20   +   PNOZ s20

Fast contact expansion – with PNOZsigma also possible completely free of wear!
Up to 5 contact expansion modules PNOZ s20 are possible at the base unit.

PNOZ s3 + PNOZ s7.1 + PNOZ s20   +   PNOZ s20   +   PNOZ s20
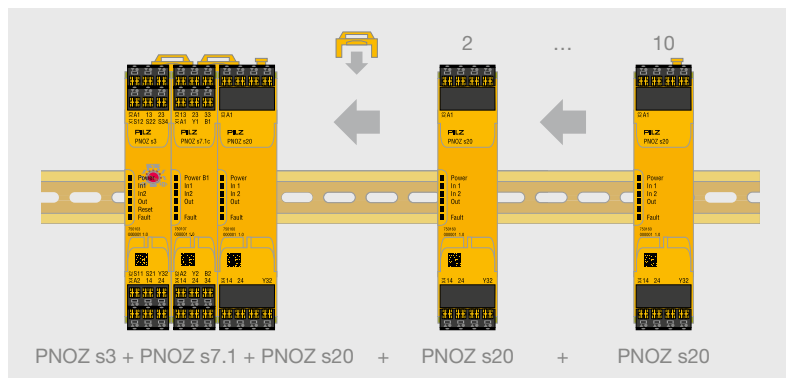
Expansion almost without limit – in conjunction with
the contact expansion module PNOZ s7.1.

**Contact expansion
module PNOZ s20 with
safe semiconductor outputs**

Apart from contact expansion with instantaneous safety contacts, contact expansion with safe semiconductor outputs is also available. If you need a maximum of ten semiconductor outputs, then connect the contact expansion module PNOZ s20 directly to a base unit. If you require even more safe semiconductor outputs, connect the contact expansion module PNOZ s7.1; with this module, you can then expand the number of semiconductor outputs to the desired number.

Your benefits at a glance

▸ Wiring work is reduced by
20 % by expanding the
contacts via connectors

▸ Flexible application as the
number of safety contacts
and semiconductor outputs
can be expanded through
cascading

Keep up-to-date
on safety relays
PNOZsigma:

Webcode:
web150099

Online information
at www.pilz.com

Relays

▶ Safety relay PNOZ s30 – Convenient speed monitoring

SSR

SSM

SDI

SOS

Relays

The stand-alone safety relay PNOZ s30 ensures safe monitoring of your machines for standstill, speed, position, shear pin breakage, speed range and direction of rotation up to PL e of EN ISO 13849-1 and up to SIL CL 3 of EN/IEC 62061. Using the PNOZ s30 ensures compliance with the Machinery Directive with respect to drive monitoring, i.e. the requirement to safely monitor and maintain the operating status of the drive when the drive is shut down. With PNOZ s30, you save costs and protect your machine and personnel.

PNOZ s30

Increased safety of operating personnel

For example, movement at reduced speed during set-up mode increases operator safety and reduces set-up times. Safe working with the safety gate open and faster access to the machine once standstill is initiated, protect you and your products. Productivity is increased, as an unnecessary shutdown is prevented. PNOZ s30 with safe functions such as safe speed range (SSR), safe speed monitoring (SSM), safe direction (SDI) and safe operating stop (SOS) is the right solution for stand-alone drive monitoring.

Simple use

A display makes configuration and fault indication simple and convenient. The speed monitor PNOZ s30 is suitable for all common motor feedback systems and proximity switches.

Applications

Choose PNOZ s30 for applications such as wind turbines, machining centers, balancing machines, high rack storage systems, centrifuges, filling systems, amusement parks and many others.

PNOZ s30 +
PNOZ s22

PSENopt

PMI

PITestop

The number of relay contacts can be multiplied
by combining PNOZ s30 and PNOZ s22.
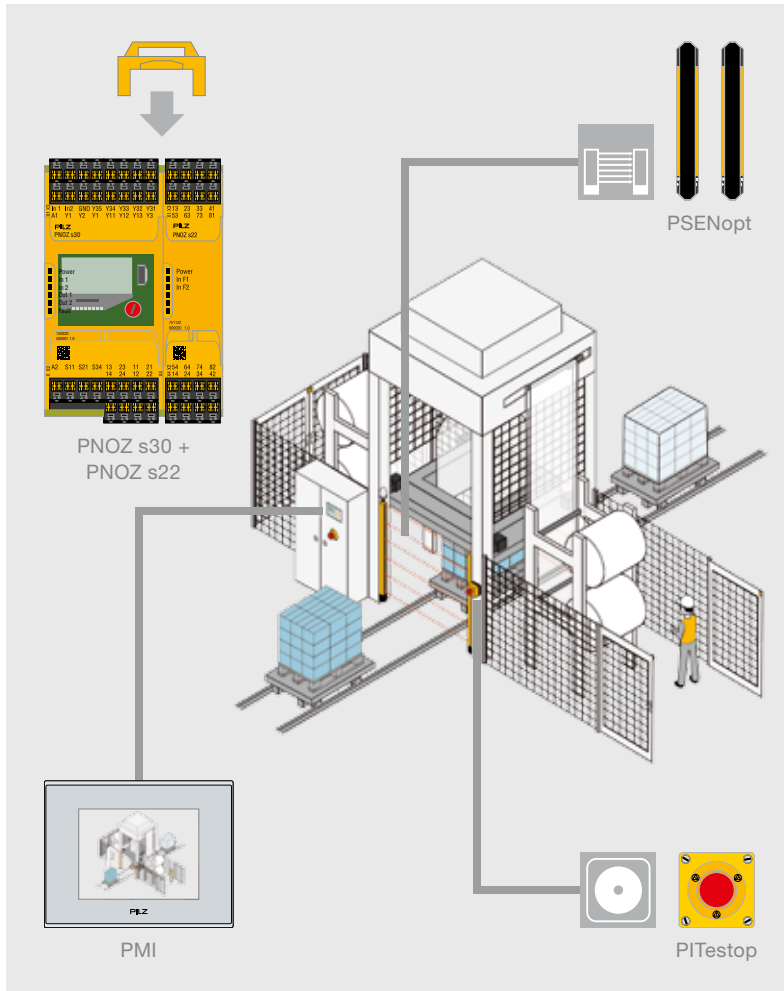
Your benefits at a glance

▸ Increased productivity and
safety for operating personnel
▸ Productivity is increased by
avoiding unnecessary shutdown
processes: advance warning is
given when a defined warning
threshold is reached
▸ Save time during setup and
when units are exchanged,
thanks to convenient operation
via rotary knob (push and turn)
▸ Suitable for all common motor
feedback systems and proximity
switches
▸ Contact expansion module
PNOZ s22: duplication of
the relay contacts enables
the application's function range
to be expanded

Contact expansion module PNOZ s22 – twice as good

PNOZ s22 provides two relay functions which can be controlled separately
and which comply with PL e of EN ISO 13849-1. Each relay function provides
three N/O contacts and one N/C contact. These can be controlled separately
so that the outputs can be assigned different functions, depending on the
base unit. Safe separation between the two relay functions enables different
potentials to be switched.

PNOZ s22

Keep up-to-date
on safety relays
PNOZ s30:

🖑 Webcode:
web150619

Online information
at www.pilz.com

▶ Safety relay PNOZ s50 for safe brake control

The stand-alone safety relay PNOZ s50 provides a cost-effective solution for controlling two brakes up to category PL e of EN ISO 13849-1. The contactless technology allows very short reaction times to be achieved, enhancing personal protection. You can take advantage of the full flexibility and the individual shutdown options for your application of this manufacturer-independent solution.

SAFE BRAKE CONTROL

PNOZ s50

Safe, contactless braking – so it's non-wearing

PNOZ s50 helps to make your plant energy efficient: application cycle times are shortened because temporary overexcitation is followed by selectable voltage reduction (pulse width modulation PWM). The safety relay enables rapid switching in emergency situations and slow, low-wearing switching in normal operation, thereby helping to reduce maintenance costs.

As an addition to the PNOZsigma product range, PNOZ s50 also has a rotary knob for menu navigation and a display for showing set-up parameters and diagnostic messages.

Both motor brakes and safety brakes can be safely controlled and monitored with the safety relay PNOZ s50. Safety is significantly improved due to "wear monitoring", particularly on motor-integrated holding brakes.

Find out more in the animation for the safety relay PNOZ s50.

Safety relay PNOZ s50

PNOZ s50

Technical features

- ▶ Stand-alone unit
- ▶ 2 brakes up to PL e of EN ISO 13849-1 / SIL CL 3 of EN/IEC 62061
- ▶ 1 brake up to PL d of EN ISO 13849-1 / SIL CL 3 of EN/IEC 62061
- ▶ 2 x 2-pole safe electronic digital outputs for 24 V DC, each with 4.5 A
- ▶ Approvals: CE, cULus Listed, EAC (Eurasian), TÜV

- ▶ Temporary overexcitation with subsequent voltage reduction
- ▶ Ambient temperature: 0 … 45 °C
- ▶ Number of inputs:
  - Failsafe: 4
  - Standard: 4
- ▶ Number of failsafe semiconductor outputs:
  - 1-pole: 3
  - 2-pole: 2

PSENcode

PMI

PITestop

Your benefits at a glance
▸ Highest level of safety
up to PL e when controlling
2 brakes (holding brakes or
safety brakes)
▸ Contactless technology
up to 4.5 A per brake
enables short reaction times,
a long-lasting solution and
high availability
▸ Reduced cycle times through
temporary overexcitation with
subsequent voltage reduction
▸ High safety and low wear
on the brake thanks to fast
and slow shutdown of the
power circuits
▸ Rapid diagnostics by means
of the display
▸ Manufacturer-independent
brake control thanks to safe,
digital inputs

With the safety relay PNOZ s50, you can safely control braking in many application
areas – e.g. in stage technology, on tooling machines and on packaging machines.
If, in addition to the holding brake, you also need to safeguard a second brake, then
PNOZ s50 provides you with the ideal solution.

		Order number
▸ Supply voltage: - 1-pole: 24 V DC - 2-pole: 24 VDC, 48 VDC ▸ Voltage tolerance: - 1-pole: –15 % … +20 % - 2-pole: –10 % … +10 % ▸ Output current of semiconductor outputs (1-pole): 0.1 A ▸ Test pulse outputs of semiconductor outputs (1-pole): 2	▸ Reduced voltage of semiconductor outputs (2-pole): 6 V, 8 V, 12 V, 16 V, 24 V ▸ Output current of semiconductor outputs (2-pole): - 24 VDC supply voltage: Continuous duty (1 output/2 outputs): 1 x 6.5 A/2 x 4.5 A Overexcitation (1 output/2 outputs): 1 x 6.5 A/max. 10 A - 48 V DC supply voltage: Continuous duty (1 output/2 outputs): 1 x 3.25 A/2 x 2.25 A Overexcitation (1 output/2 outputs): 1 x 3.25 A/2 x 3.25 A	751 500 (with spring-loaded terminals)

Keep up-to-date
on the safety relay
PNOZ s50:

Webcode:
web150117
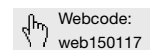
Online information
at www.pilz.com

▶ Selection guide – PNOZsigma

Safety relays PNOZsigma

Type	Application					Performance Level (PL) – EN ISO 13849-1	Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061
PNOZ s1	◆	◆				c	2
PNOZ s2	◆	◆				e	3
PNOZ s3	◆	◆	◆			e	3
PNOZ s4	◆	◆	◆			e	3
PNOZ s4.1	◆	◆	◆			e	3
PNOZ s5	◆	◆	◆	◆		e	3
PNOZ s6				◆ EN 574, Type IIIC		e	3
PNOZ s6.1				◆ EN 574, Type IIIA		c	1
PNOZ s7	Contact expansion					e	3
PNOZ s7.1	Contact expansion					e	3
PNOZ s7.2	Contact expansion					e	3
PNOZ s8	Contact expansion					c	2
PNOZ s9	Contact expansion or safe timer			◆		e	3
PNOZ s10	Contact expansion					e	3
PNOZ s11	Contact expansion					e	3
PNOZ s20	Contact expansion					e/d [2]	3/2 [2]
PNOZ s22	Contact expansion for PNOZ s30 and PNOZ mm0.1p/mm0.2p					e	3

Type	Application			Performance Level (PL) – EN ISO 13849-1	Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061
	n=0	n>max	n⟲		
PNOZ s30	Safe speed and standstill monitor ◆ ◆ ◆			e	3

Type	Application	Performance Level (PL) – EN ISO 13849-1	Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061
PNOZ s50 [3]	Safe brake control ◆	e	3

Relays

Output contacts				Semiconductor outputs		Supply voltage (U_B)	Dimensions (H x W x D) in mm
Safe		Auxiliary contacts		Safe	Auxiliary outputs		
2	-	-	1	-	-	24 V DC	100/98 [1] x 12.5 x 120
3	-	1	1	-	-	24 V DC	100/98 [1] x 17.5 x 120
2	-	-	1	-	-	24 V DC	100/98 [1] x 17.5 x 120
3	-	1	1	-	-	24 V DC, 48 … 240 V AC/DC	100/98 [1] x 22.5 x 120
3	-	1	1	-	-	24 V DC, 48 … 240 V AC/DC	100/98 [1] x 22.5 x 120
2	2	-	1	-	-	24 V DC, 48 … 240 V AC/DC	100/98 [1] x 22.5 x 120
3	-	1	1	-	-	24 V DC, 48 … 240 V AC/DC	100/98 [1] x 22.5 x 120
3	-	1	1	-	-	24 V DC, 48 … 240 V AC/DC	100/98 [1] x 22.5 x 120
4	-	1	-	-	-	24 V DC	100/98 [1] x 17.5 x 120
3	-	-	-	-	-	24 V DC	100/98 [1] x 17.5 x 120
4	-	1	-	-	-	24 V DC	100/98 [1] x 17.5 x 120
2	-	-	1	-	-	24 V DC	100/98 [1] x 12.5 x 120
-	3	1	-	-	-	24 V DC	100/98 [1] x 17.5 x 120
4	-	1	-	-	-	24 V DC	100/98 [1] x 45.0 x 120
8	-	1	-	-	-	24 V DC	100/98 [1] x 45.0 x 120
-	-	-	-	2	1	24 V DC	100/98 [1] x 22.5 x 120
2 x 3	-	2 x 1	-	-	-	24 V DC	100/98 [1] x 22.5 x 120

Output contacts				Semiconductor outputs		Supply voltage (U_B)	Dimensions (H x W x D) in mm
Safe		Auxiliary contacts		Safe	Auxiliary outputs		
2	-	2	4	-	-	24 … 240 VAC/DC	100/98 [1] x 45.0 x 120

Semiconductor outputs		Semiconductor outputs		Supply voltage (U_B)	Dimensions (H x W x D) in mm
2-pin	1-pin	Safe	Auxiliary outputs		
2	3	-	-	24 VDC, 48 VDC	100/98 [1] x 45.0 x 120
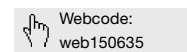
Technical documentation on safety relays PNOZsigma:

Webcode: web150635

Online information at www.pilz.com

[1] Height incl. spring-loaded terminals/plug-in screw terminals
[2] Depending on the application
[3] For technical details, see page 28

▶ Technical details – PNOZsigma

Relays

Safety relays PNOZsigma – Base units

energy saving by Pilz

PNOZ s1

PNOZ s2

PNOZ s3

PNOZ s4

PNOZ s4.1

PNOZ s5

PNOZ s6

PNOZ s6.1

Type	Features
PNOZ s1	▸ Single-channel wiring ▸ Manual/automatic start
PNOZ s2	▸ Single-channel wiring ▸ Monitored start ▸ Manual/automatic start ▸ Safe separation
PNOZ s3	▸ Single- and dual-channel wiring ▸ Detection of shorts across contacts ▸ Monitored start ▸ Manual/automatic start ▸ Start-up testing
PNOZ s4	▸ Single- and dual-channel wiring ▸ Detection of shorts across contacts ▸ Monitored start ▸ Manual/automatic start ▸ Start-up testing ▸ Approval to EN 81-1/A3 in accordance with the Lifts Directive
PNOZ s4.1	▸ Single- and dual-channel wiring ▸ Detection of shorts across contacts ▸ Monitored start ▸ Manual/automatic start ▸ Start-up testing ▸ 3 safe, diverse safety contacts ▸ Approval in accordance with EN 50156-1 for electrical equipment for furnaces
PNOZ s5	▸ Single- and dual-channel wiring ▸ Detection of shorts across contacts ▸ Monitored start ▸ Manual/automatic start ▸ Start-up testing ▸ Timer functions: delay-on de-energization ▸ Time range: 0 … 300 s
PNOZ s6	▸ Dual-channel wiring ▸ Detection of shorts across contacts
PNOZ s6.1	▸ Dual-channel wiring ▸ Detection of shorts across contacts

Outputs: Voltage/current/ rating	Approvals	Order number	
		Spring-loaded terminals	Plug-in screw terminals
DC1: 24 V/3 A/72 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	751 101	750 101
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	751 102	750 102
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	751 103	750 103
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V DC _____ 751 104 ▸ 24 V DC, coated version _____ 751 184 ▸ 48 … 240 V AC/DC _ 751 134	▸ 24 V DC _____ 750 104 ▸ 48 … 240 V AC/DC _ 750 134
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V DC _____ 751 124 ▸ 48 … 240 V AC/DC _ 751 154	▸ 24 V DC _____ 750 124 ▸ 48 … 240 V AC/DC _ 750 154
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V DC _____ 751 105 ▸ 24 V DC, coated version _____ 751 185 ▸ 48 … 240 V AC/DC _ 751 135	▸ 24 V DC _____ 750 105 ▸ 48 … 240 V AC/DC _ 750 135
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V DC _____ 751 106 ▸ 48 … 240 V AC/DC _ 751 136	▸ 24 V DC _____ 750 106 ▸ 48 … 240 V AC/DC _ 750 136
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V DC _____ 751 126 ▸ 48 … 240 V AC/DC _ 751 156	▸ 24 V DC _____ 750 126 ▸ 48 … 240 V AC/DC _ 750 156

Technical documentation on safety relays PNOZsigma:

Webcode: web150635

Online information at www.pilz.com

▶ Technical details – PNOZsigma

Safety relays PNOZsigma – Contact expansion modules

energy saving by Pilz

Type	Features
PNOZ s7	Safe separation
PNOZ s7.1	▸ Cascading module for connection to PNOZ s7.2 ▸ Safe separation of safety contacts ▸ LEDs for input and switch status ▸ Can also be used with other safety control devices, without a PNOZsigma base unit: one input circuit affects the output relays
PNOZ s7.2	Contact expansion module in conjunction with PNOZ s7.1
PNOZ s8	Contact expansion
PNOZ s9	▸ Safe separation ▸ Timer functions: delay-on energization, delay-on de-energization, pulsing, retriggerable ▸ Time range: 0 … 300 s
PNOZ s10	Safe separation
PNOZ s11	Safe separation
PNOZ s20	▸ Contact expansion with 2 instantaneous safety outputs and 1 auxiliary output, each in semiconductor technology ▸ Single- and dual-channel wiring
PNOZ s22	▸ 2 safety contacts that can be controlled separately ▸ Contact expansion for speed monitor PNOZ s30 and base units PNOZ mm0.1p/mm0.2p of configurable compact controllers PNOZmulti Mini

PNOZ s7

PNOZ s8

PNOZ s9

PNOZ s10

PNOZ s11

PNOZ s20

PNOZ s22

Safety relays PNOZsigma – Speed monitoring

Type	Features
PNOZ s30	▸ Safe monitoring of standstill, speed, direction of rotation and shear pin breakage ▸ Parameters for device functions can be freely set ▸ Parameters are entered via rotary knob (push and turn) in conjunction with a monochrome display ▸ Set parameters are saved on a chip card ▸ Integrated display shows the set limit values/ parameters as well as the current speed ▸ Tolerances can be freely set for each limit value

PNOZ s30

Outputs: Voltage/current/rating	Approvals	Order number Spring-loaded terminals	Plug-in screw terminals
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▶ 24 V DC ——— 751 107 ▶ 24 V DC, coated version ——— 751 187	750 107
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	751 167	750 167
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	751 177	750 177
DC1: 24 V/3 A/72 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	751 108	750 108
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▶ 24 V DC ——— 751 109 ▶ 24 V DC, coated version ——— 751 189	750 109
DC1: 24 V/12 A/300 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	751 110	750 110
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	751 111	750 111
▶ Total output of external load, semiconductor 93 W ▶ Switching capability: - 2 safety outputs with load: 1.5 A/40 W - 1 safety output with load: 2 A/50 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	751 160	750 160
DC1: 24 V/6 A/150 W	cULus Listed, EAC (Eurasian), TÜV, CCC	751 132	750 132

	Outputs: Voltage/current/rating	Approvals	Order number
▶ Axis position monitoring is available as an option with the standstill function ▶ Advance warning of shutdown when a certain threshold is reached ▶ Accessories: - Chip card reader: 779 230 - PNOZsigma chip card manager set (software incl. licence, SIM card adapter, chip card reader): 750 030 - SmartCardCommander with SIM card adapter (software incl. licence, SIM card adapter): 750 031	DC1: 24 V/4 A/100 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ 751 330 (spring-loaded terminals) ▶ 750 330 (plug-in screw terminals)

Technical documentation on safety relays PNOZsigma:
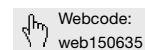
Webcode: web150635

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Relays

▶ Safety relays PNOZ X

Safety relays from the product group PNOZ X are proven through their reliability and robustness and have a wide application range in the most varied of safety applications. PNOZ is the most widely used safety relay in the world. One PNOZ is used per safety function.
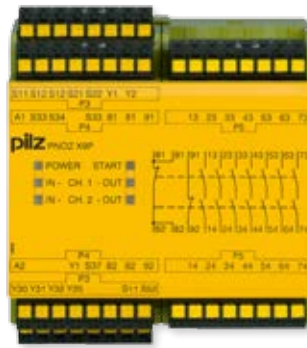
PNOZ X1P   PNOZ X3P   PNOZ X9P

Customized safety for each application

Technical features are the voltage-free, electromechanical contacts in 2-relay technology. The sizes vary from 22.5 to 90 mm, the number of contacts from two to eight. Whatever your safety requirement – PNOZ X has already proved itself a million times over in tough industrial environments. Why not take advantage!

Your benefits at a glance
▶ Technology proven over many years of use
▶ Huge selection of products
▶ For all safety functions such as monitoring E-STOP devices, safety gates, light beam devices, muting, pressure-sensitive mats and two-hand control and many more
▶ Delayed and instantaneous contact expansion modules, safe timers, safe monitoring relays for standstill, speed and other functions
▶ Excellent price/ performance ratio
▶ Rapid commissioning thanks to plug-in terminals
▶ Maximum safety with minimum space requirement
▶ Complete solution comprising evaluation devices, compatible sensor technology, control and signal devices
▶ Low storage costs thanks to universal power supply and plug-in terminals

Keep up-to-date on safety relays PNOZ X:
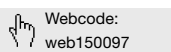
Webcode: web150097

Online information at www.pilz.com

Relays

PMUT X1P   PITsign

n=0

PSWZ X1P   PMCtendo

PNOZ X2.8P   PSENcode

PSENopt   PNOZ X2.7P

PMI

PITestop   PNOZ XV1P

P2HZ X4P

PNOZ X2P   PITestop
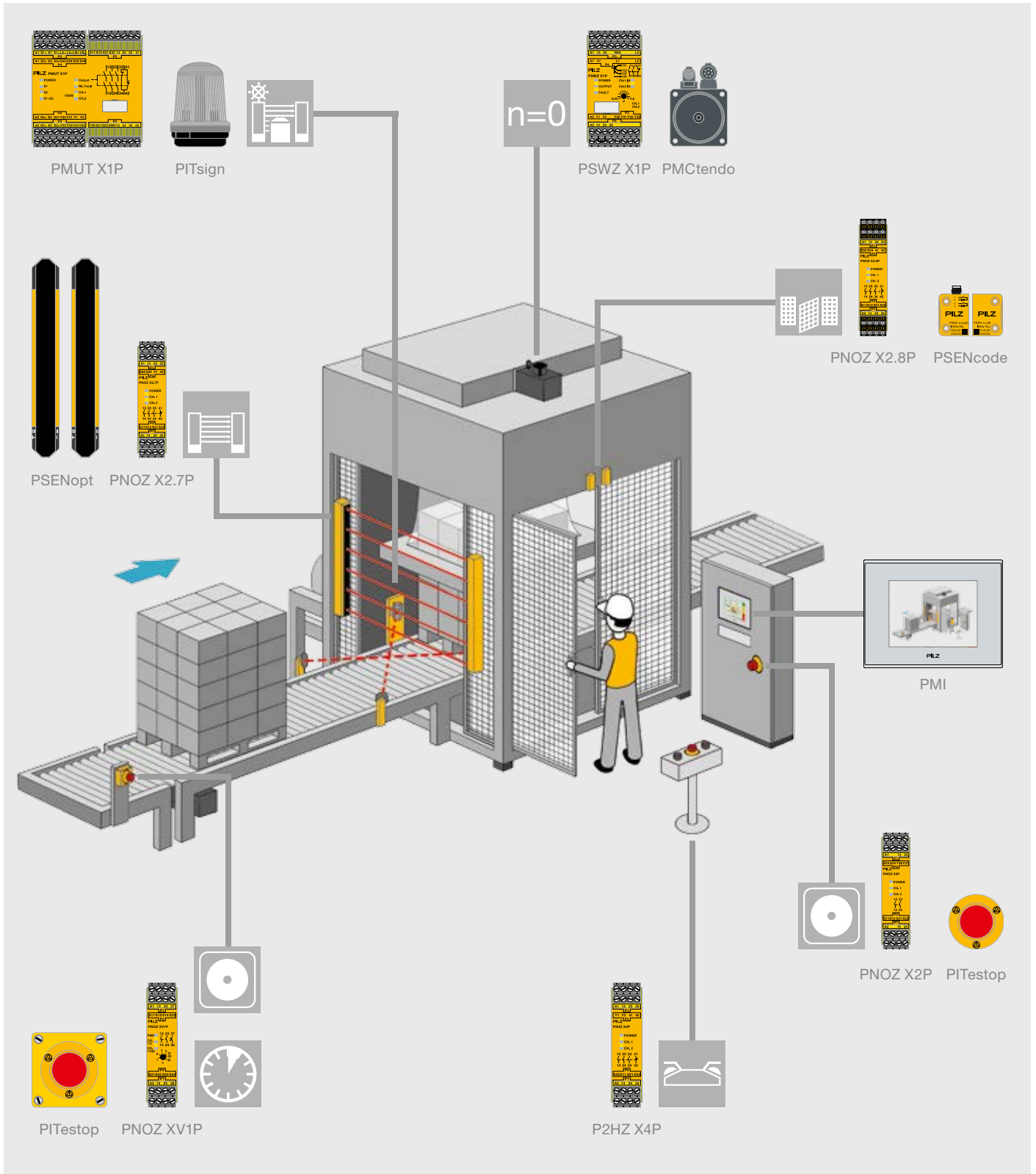
Example: using safety relays PNOZ X on a packaging machine.

Selection guide – PNOZ X

Relays

Safety relays PNOZ X							
Type	**Application**						**Performance Level (PL) – EN ISO 13849-1**
PNOZ X1P	◆	◆					e
PNOZ X2P	◆	◆					e
PNOZ X2.7P	◆	◆	◆				e
PNOZ X2.8P	◆	◆	◆				e
PNOZ X3P	◆	◆	◆				e
PNOZ X7P	◆	◆					e
PNOZ X8P	◆	◆	◆				e
PNOZ X9P	◆	◆	◆				e
PNOZ X10.11P	◆	◆	◆				e
PNOZ X11P	◆	◆	◆				e
PNOZ XV1P	◆	◆	◆				e (d) [2]
PNOZ XV3P	◆	◆	◆				e (d) [2]
PNOZ XV3.1P	◆	◆	◆				e (d) [2]
PMUT X1P	◆		◆	◆			e
P2HZ X1P					◆	EN 574, Type IIIC	e
P2HZ X4P					◆	EN 574, Type IIIC	e
PSWZ X1P						◆	e
PZE X4P	Contact expansion						e

Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061	Output contacts				Supply voltage (U_B)	Dimensions (H x W x D) in mm
	Safe		Non-safety-related			
3	3	-	1	-	24 V DC	101/94 [1] x 22.5 x 121
3	2	-	-	-	▸ 24 V AC/DC ▸ 48 … 240 V AC/DC	101/94 [1] x 22.5 x 121
3	3	-	1	-	▸ 24 V AC/DC ▸ 24 … 240 V AC/DC	101/94 [1] x 22.5 x 121
3	3	-	1	-	▸ 24 V AC/DC ▸ 24 … 240 V AC/DC	101/94 [1] x 22.5 x 121
3	3	-	1	1	▸ 24 V AC/DC ▸ 24 … 240 V AC/DC	101/94 [1] x 45 x 121
3	2	-	-	-	▸ 24 V AC/DC ▸ 110 … 120, 230 … 240 V AC	101/94 [1] x 22.5 x 121
3	3	-	2	2	▸ 24 V DC ▸ 24, 110, 230 V AC	101/94 [1] x 45 x 121
3	7	-	2	2	▸ 12 V DC ▸ 24 V DC, 100 … 240 V AC	101/94 [1] x 90 x 121
3	6	-	4	-	24 V DC	101/94 [1] x 90 x 121
3	7	-	1	2	▸ 24 V DC, 24 V AC ▸ 110 … 120, 230 … 240 V AC	101/94 [1] x 90 x 121
3	2	1	-	-	24 V DC	101/94 [1] x 22.5 x 121
3	3	2	-	-	24 V DC	101/94 [1] x 45 x 121
3	3	2	1	-	▸ 24 V DC ▸ 24 … 240 V AC/DC	101/94 [1] x 90 x 121
3	3	-	1	5	24 V DC	101/94 [1] x 90 x 121
3	3	-	1	2	▸ 24 V DC ▸ 24, 42, 110, 115, 230, 240 V AC	101/94 [1] x 45 x 121
3	3	-	1	-	24 V AC/DC	101/94 [1] x 22.5 x 121
3	2	-	1	1	24 … 240 V AC/DC	101/94 [1] x 45 x 121
3	4	-	-	-	24 V DC	101/94 [1] x 22.5 x 121

[1] Height incl. spring-loaded terminals/plug-in screw terminals
[2] Value applies to instantaneous (delayed) safety contacts

Technical documentation on safety relays PNOZ X:

Webcode: web150635
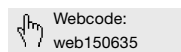
Online information at www.pilz.com

▶ Technical details – PNOZ X

Safety relays PNOZ X

PNOZ X1P

PNOZ X2P

PNOZ X2.7P

PNOZ X2.8P

PNOZ X3P

PNOZ X7P

PNOZ X8P
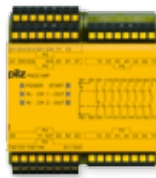
PNOZ X9P

PNOZ X10.11P
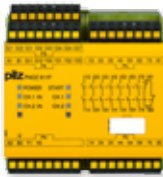
PNOZ X11P

Type	Features
PNOZ X1P	1-channel operation
PNOZ X2P	▶ 2-channel operation with detection of shorts across contacts ▶ Automatic or monitored start can be selected
PNOZ X2.7P	▶ 2-channel operation with or without detection of shorts across contacts ▶ Monitored start
PNOZ X2.8P	▶ 2-channel operation with or without detection of shorts across contacts ▶ Automatic start
PNOZ X3P	▶ Dual-channel wiring, with or without detection of shorts across contacts ▶ Monitored or automatic start can be selected ▶ 1 semiconductor output ▶ Safety gate function with N/C / N/O combination
PNOZ X7P	1-channel operation
PNOZ X8P	▶ 2-channel operation with or without detection of shorts across contacts ▶ Monitored or automatic start can be selected ▶ 2 semiconductor outputs
PNOZ X9P	▶ Dual-channel wiring, with or without detection of shorts across contacts ▶ Monitored or automatic start can be selected ▶ 2 semiconductor outputs
PNOZ X10.11P	▶ Dual-channel wiring, with or without detection of shorts across contacts ▶ Monitored or automatic start can be selected
PNOZ X11P	▶ Dual-channel wiring, with or without detection of shorts across contacts ▶ Monitored or automatic start can be selected ▶ 2 semiconductor outputs

Outputs: Voltage/current/ rating	Approvals	Order number	
		Spring-loaded terminals	Plug-in screw terminals
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	787 100	777 100
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V AC/DC _____ 787 303 ▸ 48 … 240 V AC/DC ____ 787 307	▸ 24 V AC/DC _____ 777 303 ▸ 48 … 240 V AC/DC ____ 777 307
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V AC/DC _____ 787 305 ▸ 24 … 240 V AC/DC ____ 787 306	▸ 24 V AC/DC _____ 777 305 ▸ 24 … 240 V AC/DC ____ 777 306
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V AC/DC _____ 787 301 ▸ 24 … 240 V AC/DC ____ 787 302	▸ 24 V AC/DC _____ 777 301 ▸ 24 … 240 V AC/DC ____ 777 302
DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▸ 24 V AC/DC _____ 787 310 ▸ 24 … 240 V AC/DC ____ 787 313	▸ 24 V AC/DC _____ 777 310 ▸ 24 … 240 V AC/DC ____ 777 313
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V AC/DC _____ 787 059 ▸ Others available on request	▸ 24 V AC/DC _____ 777 059 ▸ Others available on request
DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V AC _____ 787 770 ▸ 24 V DC _____ 787 760 ▸ Others available on request	▸ 24 V AC _____ 777 770 ▸ 24 V DC _____ 777 760 ▸ Others available on request

DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V DC _____ 787 609
		▸ 24 V DC,
		  100 … 240 V AC _____ 787 606
			▸ 12 V DC _____ 777 607
			▸ 24 V DC _____ 777 609
			▸ 24 V DC,
			  100 … 240 V AC _____ 777 606

DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	787 750	777 750

DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 24 V DC, 24 V AC _____ 787 080
		▸ 110 … 120 V AC _____ 787 083
		▸ 230 … 240 V AC _____ 787 086
			▸ 24 V DC, 24 V AC _____ 777 080
			▸ 110 … 120 V AC,
			  24 V DC _____ 777 083
			▸ 230 … 240 V AC,
			  24 V DC _____ 777 086

Technical documentation on safety relays PNOZ X:

Webcode: web150635
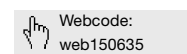
Online information at www.pilz.com

▶ Technical details – PNOZ X

Safety relays PNOZ X

PNOZ XV1P

PNOZ XV3P
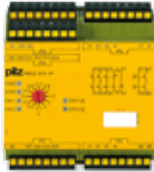
PNOZ XV3.1P

PMUT X1P

P2HZ X1P

P2HZ X4P

PSWZ X1P

PZE X4P

Type	Features
PNOZ XV1P	▸ Dual-channel wiring, with or without detection of shorts across contacts ▸ Monitored or automatic start can be selected
PNOZ XV3P	▸ Dual-channel wiring, with or without detection of shorts across contacts ▸ Monitored or automatic start can be selected
PNOZ XV3.1P	▸ Dual-channel wiring, with or without detection of shorts across contacts ▸ Monitored or automatic start can be selected ▸ Universal power supply 24 … 240 V AC/DC
PMUT X1P	▸ Up to 4 muting sensors ▸ Monitoring and switching muting lamps ▸ Parallel and sequential muting ▸ Simultaneity monitoring ▸ 5 semiconductor outputs ▸ Reset input ▸ Override function via key switch in the case of a fault ▸ LED status indicators
P2HZ X1P	2 semiconductor outputs
P2HZ X4P	22.5 mm width
PSWZ X1P	▸ Safe standstill monitoring ▸ 1 or 2-channel operation ▸ No external components required ▸ Fault signal if simultaneity time is exceeded ▸ Reset input ▸ Detects open circuits
PZE X4P	1-channel operation

Relays

Outputs: Voltage/current/ rating	Approvals	Order number	
		Spring-loaded terminals	Plug-in screw terminals
DC1: 24 V/5 A/125 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ 0.1 … 3 s _____ 787 601 ▶ 1 … 30 s _____ 787 602	▶ 0.1 … 3 s _____ 777 601 ▶ 1 … 30 s _____ 777 602
DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ 3 s _____ 787 512 ▶ 30 s _____ 787 510 ▶ Others available on request	▶ 3 s _____ 777 512 ▶ 30 s _____ 777 510 ▶ Others available on request
DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ 3 s selectable, 24 … 240 V AC/DC _____ 787 532 ▶ 30 s selectable, 24 … 240 V AC/DC _____ 787 530 ▶ Others available on request	▶ 3 s selectable, 24 … 240 V AC/DC _____ 777 532 ▶ 30 s selectable, 24 … 240 V AC/DC _____ 777 530 ▶ Others available on request
DC1: 24 V/8 A/200 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	788 010	778 010
DC1: 24 V/5 A/125 W	CE, cULus Listed, EAC (Eurasian), BG, CCC	▶ 24 V DC _____ 787 340 ▶ Others available on request	▶ 24 V DC _____ 777 340 ▶ Others available on request
DC1: 24 V/5 A/125 W	CE, cULus Listed, EAC (Eurasian), BG, KOSHA, CCC	▶ 24 V AC _____ 787 354 ▶ 24 V DC _____ 787 355	▶ 24 V AC _____ 777 354 ▶ 24 V DC _____ 777 355
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ U_M: 0.5 V _____ 787 949 ▶ U_M: 3 V _____ 787 950 ▶ U_M: 0.0075 … 0.5 V _____ 787 951	▶ U_M: 0.5 V _____ 777 949 ▶ U_M: 0.5 V, coated version _____ 777 959 ▶ U_M: 3 V _____ 777 950 ▶ U_M: 0.0075 … 0.5 V _____ 777 951
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	787 585	777 585

Technical documentation on safety relays PNOZ X:

Webcode: web150635

Online information at www.pilz.com

▶ Safety relay PNOZcompact

The safety relay is optimized for functionality and can be used in all areas of engineering. In series machine production in particular, the use of the PNOZcompact has many advantages thanks to its concentrated functionality: This allows high-volume projects with a high degree of standardization to be implemented economically. Choose a PNOZ safety relay – the original and a byword for safety relays.
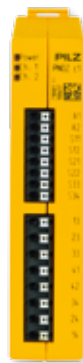
PNOZ c1
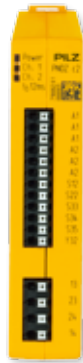
PNOZ c2

Square, simple, yellow

You want to safely monitor an E-STOP device, safety gate or light beam device? Is it important to you to save time through simple installation and maintenance? Then we have the right solution for you – the safety relay PNOZcompact.

PNOZ c1 is ideal for monitoring E-STOP devices or safety gates. A block diagram with connection example is printed on the side of the unit and is a great help. PNOZ c2 is predestined for the safe monitoring of type 4 light beam devices, e.g. PSENopt from Pilz, or sensors with OSSD outputs in accordance with EN 61496-1 with a guaranteed maximum reaction time of 12 ms. You save time through simple installation because the transmitter and receiver are supplied with voltage directly via the evaluation device.

Safety relay PNOZcompact

Common features

▶ PL e of EN ISO 13849-1, Safety Integrity Level (SIL) CL 3 of IEC 62061
▶ Supply voltage (U_B): 24 V DC
▶ LEDs to display operating voltage and switch status
▶ Spring-loaded terminals fixed on the device

Type	Application area	Dimensions (H x W x D) in mm
PNOZ c1	E-STOP relay and safety gate monitor	105 [1] x 22.5 x 100
PNOZ c2	For monitoring type 4 light beam devices or sensors with OSSD outputs in accordance with EN 61496-1	105 [1] x 22.5 x 100

Relays

PNOZ c1

PNOZ c1
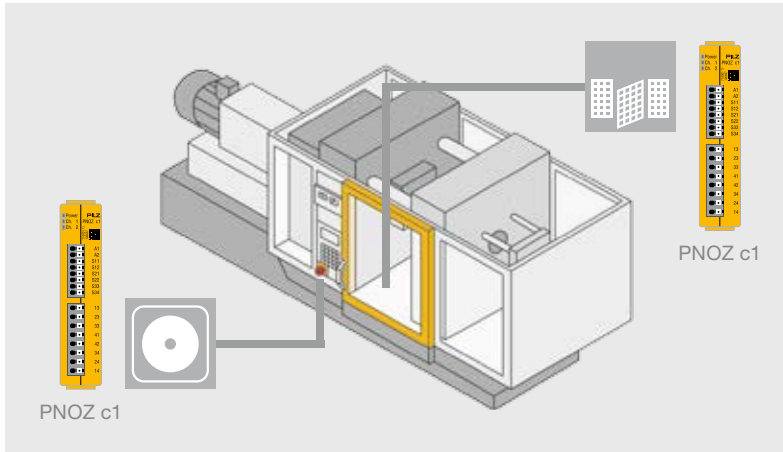
Monitor an E-STOP device or safety gate –
in any application – safe, simple, compact.
Use one safety relay per safety function.

Your benefits at a glance
▸ Save space in the control
cabinet thanks to the
compact design
▸ Simple installation and
maintenance saves you time:
push-in spring-loaded
terminals fixed on the device,
can be connected without
the need for tools
▸ Tool-free assembly:
simply attach the device
to the top hat rail

Relays

max.
12 ms
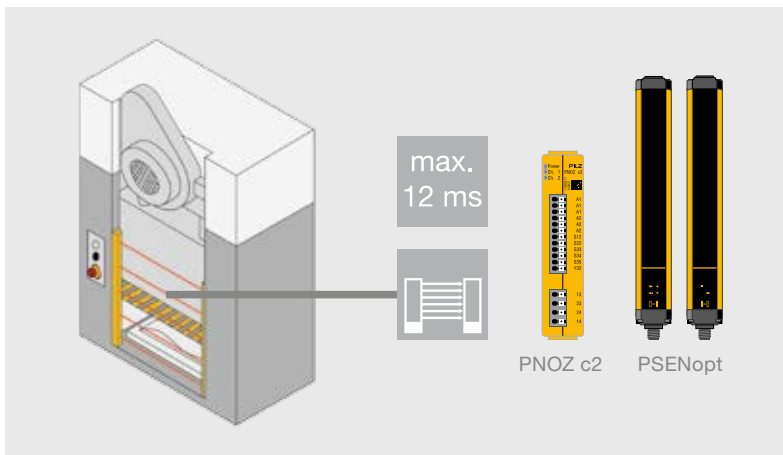
PNOZ c2   PSENopt

Monitor light beam devices, e.g. PSENopt from Pilz, or sensors
with OSSD outputs safely, simply and in a compact form.
All common light beam devices can also be connected.

Keep up-to-date
on safety relays
PNOZcompact:

Features	Approvals	Order number
▸ 3 safety contacts/1 auxiliary contact (3 N/O/1 N/C) ▸ 2-channel wiring with detection of shorts across contacts ▸ Manual or automatic start ▸ STOP category: 0	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	710001
▸ 2 safety contacts (N/O)/1 semiconductor output ▸ 2-channel wiring without detection of shorts across contacts ▸ Monitored or automatic start ▸ Guaranteed maximum reaction time: 12 ms	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	710002

Webcode:
web150086

Online information
at www.pilz.com

[1] Height incl. spring clip

▶ Safety relay PNOZelog

You can use the product group PNOZelog to monitor up to four safety functions. PNOZelog combines the experience from electromechanical safety relays with the benefits of modern electronics and is 100% wear-free.

PNOZ e1.1p   PNOZ e6.1p

Extended diagnostics, easy to link

Wear-resistance, safety, long service life and high availability ensure it is cost-effective to use. What's more, the PNOZelog can be linked simply through logic AND/OR operations. Diagnostics on the PNOZelog have been extended. Power-up tests, self-checking and runtime tests guarantee maximum safety.

Complete safety functions through logic function operations

Units in the PNOZelog product range can be linked via logic operations to form complete safety functions. AND/OR operations are both available. The use of logic functions means that the output requires no additional wiring. As a result, both outputs on the PNOZelog units are freely available. As many units as necessary can be connected in series – ideal for monitoring up to four safety functions.

PNOZelog can be linked through logic AND/OR operations.

As a result of the internal logic AND operation, two safety functions can be covered simultaneously – with just a single unit!
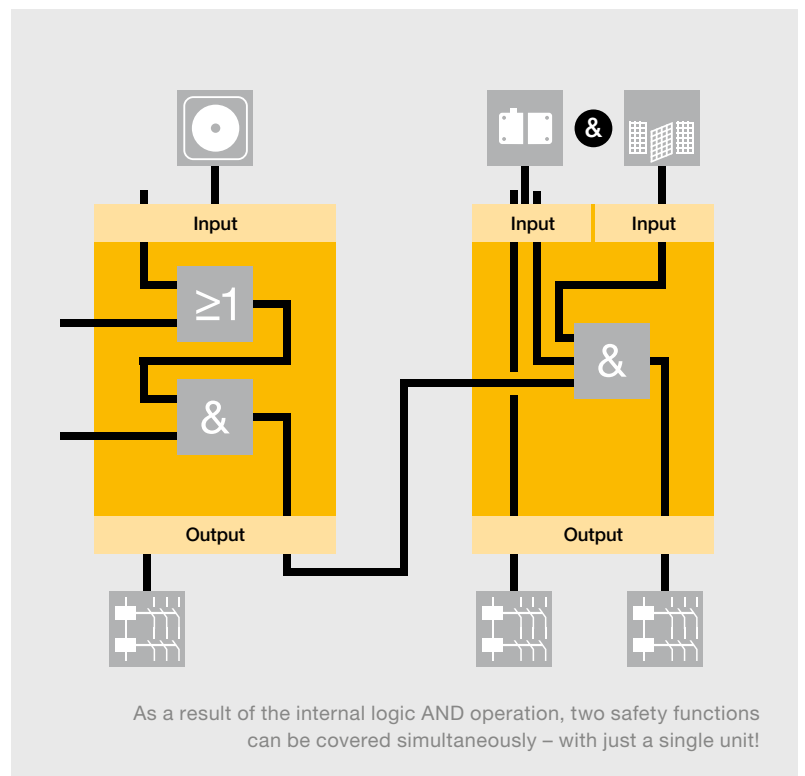
Less wiring due to linkable outputs.

Relays

PITsign   PNOZ e1.1p

PNOZ e3.1p   PSENcode

PSENopt   PNOZ e7p

PMI

PNOZ e4.1p

PITestop   PNOZ e5.11p

PNOZ e2.1p
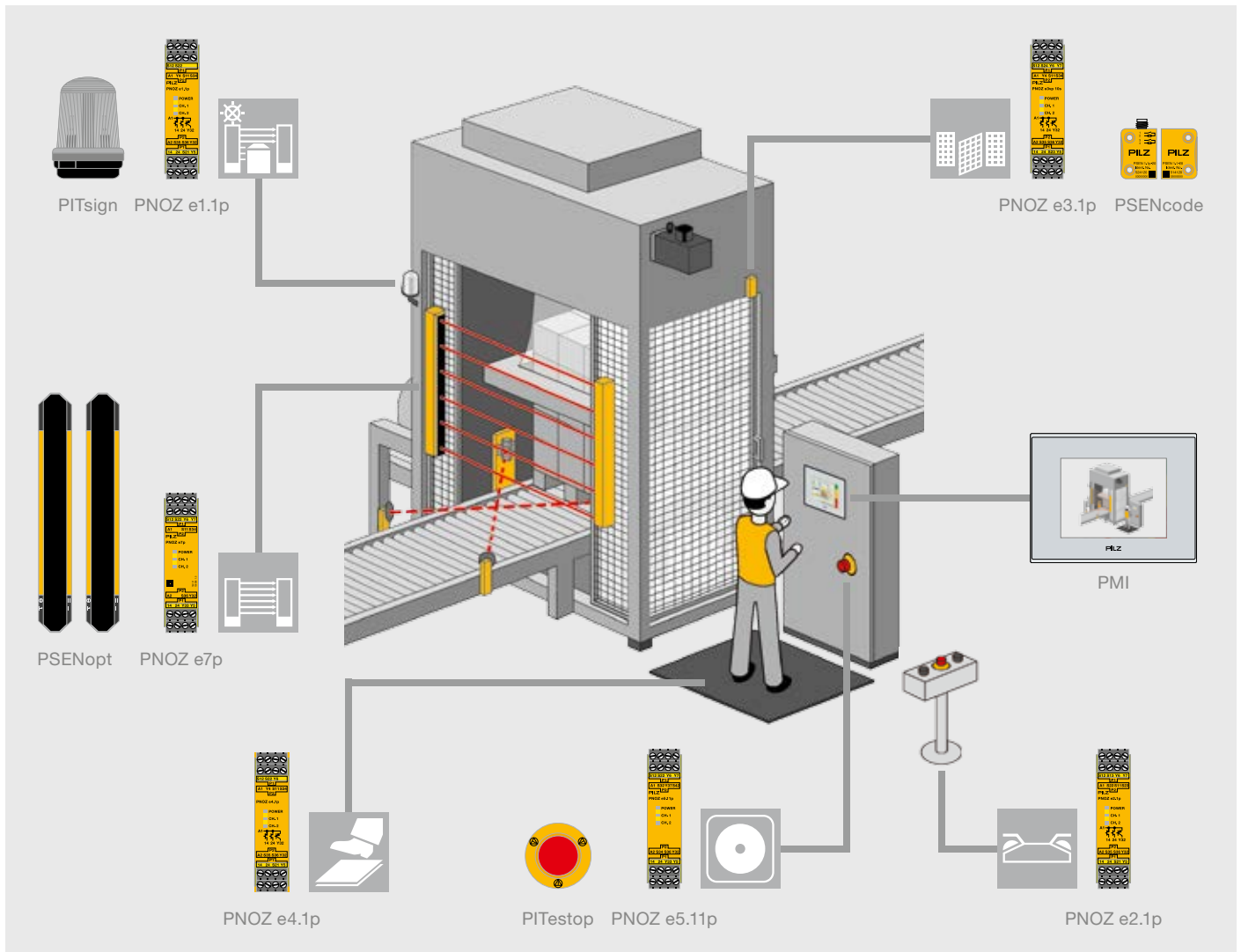
Your benefits at a glance

▸ Less wiring thanks to simple logic operations (AND/OR)

▸ High availability thanks to extended diagnostics

▸ Consistent use of semiconductor technology means no maintenance is necessary –
  there are no malfunctions due to contact welding, contamination, bounce or burning

▸ Continuous self-checks provide the highest level of safety – fault detection is not linked to the on/off cycle

▸ Long service life, even with frequent operations or cyclical functions

▸ Safe switching operations even on the smallest of loads

▸ Rapid commissioning thanks to plug-in terminals; no additional tools are required

▸ Complete solution comprising evaluation devices, compatible sensor technology and control and signal devices

Keep up-to-date
on safety relays
PNOZelog:

Webcode:
web150101

Online information
at www.pilz.com

▶ Selection guide – PNOZelog

Safety relay PNOZelog

Type	Application						Performance Level (PL) – EN ISO 13849-1
PNOZ e1p	◆	◆	◆				e
PNOZ e1.1p	◆	◆	◆				e
PNOZ e1vp	◆	◆	◆				e
PNOZ e2.1p				◆		EN 574, Type IIIC	e
PNOZ e2.2p				◆		EN 574, Type IIIA	e
PNOZ e3.1p	◆						e
PNOZ e3vp	◆						e
PNOZ e4.1p					◆		d
PNOZ e4vp					◆		d
PNOZ e5.11p	◆	◆	◆				e
PNOZ e5.13p	◆	◆	◆				e
PNOZ e6.1p	◆	◆	◆				e
PNOZ e6vp	◆	◆	◆				e
PNOZ e7p			◆				e
PNOZ e8.1p with PLID d1	◆	◆	◆				d
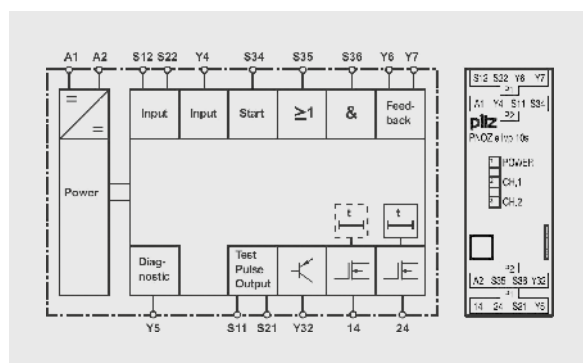
Block diagram of PNOZ e1vp

Linking of multiple units using PNOZ e1vp as an example

The units of the PNOZelog product range can be logically linked to each other and to units of the PNOZmulti product range. On the PNOZelog, input S35 is intended for the logical OR operation and input S36 for the logical AND operation. Safety outputs 14 and 24 of the PNOZelog are suitable for logical operations.

Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061	Semiconductor outputs			Relay outputs		Logic operations	
	Safe		Non-safety-related	Safe		&	≥1
3	2		1	-	-		
3	2		1	-	-	◆	◆
3	2	◆	1	-	-	◆	◆
3	2		1	-	-	◆	◆
1	2		1	-	-	◆	◆
3	2		1	-	-	◆	◆
3	2	◆	1	-	-	◆	◆
2	2		1	-	-	◆	◆
2	2	◆	1	-	-	◆	◆
3	2		2	-	-	◆ [1]	
3	2		2	-	-	◆ [1]	
3	2		1	4	-	◆	◆
3	2	◆	1	4	-	◆	◆
3	2		1	-	-	◆	
2	2		2	-	-	◆	◆

[1] Also AND-linked internally
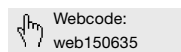
Relays

Technical documentation on safety relays PNOZelog:

Webcode: web150635

Online information at www.pilz.com

▶ Technical details – PNOZelog

Safety relay PNOZelog

PNOZ e1.1p

PNOZ e2.1p

PNOZ e3.1p

PNOZ e4.1p

Type	Application area	Outputs	Outputs: Voltage/ current/ rating
PNOZ e1p	Emergency stop, safety gate and light beam monitoring	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e1.1p	Emergency stop, safety gate and light beam monitoring	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e1vp	Emergency stop, safety gate and light beam monitoring	Using semiconductor technology: ▶ 2 safety outputs delayed/ instantaneous, delay-on de-energization selectable ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e2.1p PNOZ e2.2p	PNOZ e2.1p: in accordance with EN 574, requirement class IIIC; PNOZ e2.2p: in accordance with EN 574, requirement class IIIA: two-hand monitoring	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e3.1p	Safety gate monitoring	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e3vp	Safety gate monitoring	Using semiconductor technology: ▶ 2 safety outputs delayed/ instantaneous, delay-on de-energization selectable ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e4.1p	Evaluation device for safety mats	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 2 A/50 W
PNOZ e4vp	Evaluation device for safety mats	Using semiconductor technology: ▶ 2 safety outputs delayed/ instantaneous, delay on de-energization selectable ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs	24 V DC/ 1.5 A/40 W

Common features
▶ Supply voltage (U_B): 24 V DC
▶ Dimensions (H x W x D) in mm: 101/94 [1)] x 22.5 x 121

Relays

Relays

Features	Approvals	Order number	
		Spring-loaded terminals	Plug-in screw terminals
▸ Monitored or automatic start can be selected ▸ Selectable monitoring of shorts across contacts	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 130	774 130
▸ Monitored or automatic start can be selected ▸ One AND and one OR input for logic AND/OR connections between several PNOZelog units ▸ Selectable monitoring of shorts across contacts	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 133	774 133
▸ Delay time selectable ▸ Monitored or automatic start can be selected ▸ One AND and one OR input for logic AND/OR connections between several PNOZelog units ▸ Selectable monitoring of shorts across contacts	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 10 s ____ 784 131 ▸ 300 s ____ 784 132	▸ 10 s ____ 774 131 ▸ 300 s ____ 774 132

▸ One AND and one OR input for logic
  AND/OR connections between several PNOZelog units
▸ Shorts across contacts are monitored
  via two test pulse outputs
▸ Status indicator
▸ Feedback loop for monitoring external contactors
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ PNOZ e2.1p:
		  784 136
		▸ PNOZ e2.2p:
		  784 135
			▸ PNOZ e2.1p:
			  774 136
			▸ PNOZ e2.2p:
			  774 135

▸ Evaluation device for safety sensors
  PSEN 2.1p-10 and PSEN 2.1p-11 and
  position switch with N/C / N/O combination
▸ Monitored or automatic start can be selected
▸ One AND and one OR input for logic
  AND/OR connections between several PNOZelog units
▸ Selectable monitoring of shorts across contacts
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 139	774 139

▸ Evaluation device for safety sensors
  PSEN 2.1p-10 and PSEN 2.1p-11 and
  position switch with N/C / N/O combination
▸ Delay time selectable, either monitored or
  automatic start possible
▸ One AND and one OR input for logic
  AND/OR connections between several PNOZelog units
▸ Selectable monitoring of shorts across contacts
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 10 s ____ 784 137
		▸ 300 s ____ 784 138
			▸ 10 s ____ 774 137
			▸ 300 s ____ 774 138

▸ For connecting pressure-sensitive mats
  from Mayser (type SM/BK) and Bircher (type ESM5x)
▸ One AND and one OR input for logic
  AND/OR connections between several PNOZelog units
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 180	774 180

▸ For connecting pressure-sensitive mats
  from Mayser (type SM/BK) and Bircher (type ESM5x)
▸ Delay time selectable
▸ One AND and one OR input for logic
  AND/OR connections between several PNOZelog units
▸ With or without reset function
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	10 s ____ 784 181	10 s ____ 774 181
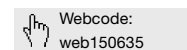
[1] Height incl. spring-loaded terminals/plug-in screw terminals

Technical documentation on safety relays PNOZelog:

Webcode:
web150635

Online information at www.pilz.com

▶ Technical details – PNOZelog

Safety relay PNOZelog

PNOZ e5.11p

PNOZ e5.13p

PNOZ e6.1p

PNOZ e7p

Type	Application area	Outputs	Outputs: Voltage/current/rating
PNOZ e5.11p	Combination unit for monitoring 2 safety functions, AND-linked internally, AND input for logical connection of multiple units	Using semiconductor technology: ▶ 2 safety outputs ▶ 2 auxiliary outputs	24 V DC/ 1.5 A/40 W
PNOZ e5.13p	Combination unit for monitoring 2 safety functions, AND-linked internally, AND input for logical connection of multiple units	Using semiconductor technology: ▶ 2 safety outputs ▶ 2 auxiliary outputs	24 V DC/ 1.5 A/40 W
PNOZ e6.1p	Emergency stop, safety gate and light beam monitoring	Using semiconductor technology: ▶ 2 safety outputs ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs Relay outputs: ▶ 4 safety contacts (N/O)	Outputs using semiconductor technology: 24 VDC/4 A/50 W Relay outputs: DC1: 24 V/6 A/150 W
PNOZ e6vp	Emergency stop, safety gate and light beam monitoring	Using semiconductor technology: ▶ 2 safety outputs delayed/instantaneous, delay on de-energization selectable ▶ 1 auxiliary output, can be switched to a diagnostic output ▶ 2 test pulse outputs Relay outputs: ▶ 4 safety contacts (N/O)	Outputs using semiconductor technology: 24 V/4 A/50 W Relay outputs: DC1: 24 V/6 A/150 W
PNOZ e7p	Safety light beam devices, start buttons	Using semiconductor technology: ▶ 2 safety outputs ▶ 2 test pulse outputs ▶ 1 auxiliary output	24 V DC/ 1.5 A/40 W
PNOZ e8.1p	Evaluation device for safe line monitoring with PLID d1	Using semiconductor technology: ▶ 2 safety outputs ▶ 2 auxiliary outputs	24 V DC/ 1.5 A/40 W

Common features
▶ Supply voltage (U_B): 24 V DC
▶ Dimensions (H x W x D) in mm: 101/94 [1)] x 22.5 x 121,
PNOZ e6.1p and PNOZ e6vp: 101/94 [1)] x 45 x 121 mm

Relays

Relays

Features	Approvals	Order number	
		Spring-loaded terminals	Plug-in screw terminals
▸ Connection possibilities for E-STOP pushbuttons, safety gate limit switches, start buttons, proximity switches, position switches with N/C / N/C combination ▸ For processing signals from output switching elements of light grids (OSSDs) ▸ Monitored or automatic start can be selected	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 190	774 190
▸ Connection possibilities for E-STOP pushbuttons, safety gate limit switches, start buttons, proximity switches, PSEN 2.x safety sensors, position switches with N/C / N/C or N/C / N/O combination ▸ For processing signals from output switching elements of light grids (OSSDs) ▸ Monitored or automatic start can be selected	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 191	774 191
▸ Connection possibilities for E-STOP pushbuttons, safety gate limit switches, start buttons, proximity switches ▸ For processing signals from output switching elements of light grids (OSSDs) ▸ Monitored or automatic start can be selected ▸ One AND and one OR input for logic AND/OR connections between several PNOZelog units ▸ Selectable monitoring of shorts across contacts	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 192	774 192
▸ Connection possibilities for E-STOP pushbuttons, safety gate limit switches, start buttons, proximity switches ▸ For processing signals from output switching elements of light grids (OSSDs) ▸ Delay time selectable ▸ Monitored or automatic start can be selected ▸ One AND and one OR input for logic AND/OR connections between several PNOZelog units ▸ Selectable monitoring of shorts across contacts	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 193	774 193
▸ Connection possibilities for safety light beam devices PSEN op2S-1-1, PSEN op4S-1-1, PSEN op4S-1-2, start buttons ▸ Two operating modes selectable ▸ Monitored or automatic start can be selected ▸ One linking input for logic AND connections between multiple units	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	784 197	774 197
▸ Connection possibilities for PLID d1, E-STOP pushbuttons, safety gate limit switches, start buttons, proximity switches, position switches with N/C / N/C combination ▸ For processing signals from output switching elements of light grids (OSSDs) ▸ Monitored or automatic start can be selected ▸ Monitoring of shorts across contacts can be selected for E-STOP application	TÜV, UL/cUL, CCC	784 198	774 198

1) Height incl. spring-loaded terminals/plug-in screw terminals

Technical documentation on safety relays PNOZelog:

Webcode: web150635

Online information at www.pilz.com

Relays
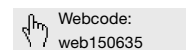
▶ Safe line inspection device PLIDdys – Safe power-

The safe line inspection device PLIDdys provides safe power-up on two-wire connections,
ensuring maximum safety on long cable routes.

With PLIDdys, unintended power-up or plant start-up can be excluded in the event of an error. This is particularly beneficial on interlinked plants or on plant sections distributed over a wide area, which may not always be clearly visible. The extremely compact design means that PLIDdys can be easily retrofitted in an existing plant and incorporated in, for example, the sensor or switch. In combination with the evaluation device PNOZ e8.1p, the line inspection device PLIDdys is the optimum solution for safe cables/connections.

PLID d1 + PNOZ e8.1p

PLID d1 C

Selection guide – Safe line inspection device PLIDdys

Type	Application area
PLID d1	Line inspection device PLIDdys in combination with the evaluation device PNOZ e8.1p
PNOZ e8.1p	Evaluation device for safe line inspection with PLID d1

up in conjunction with PNOZ e8.1p
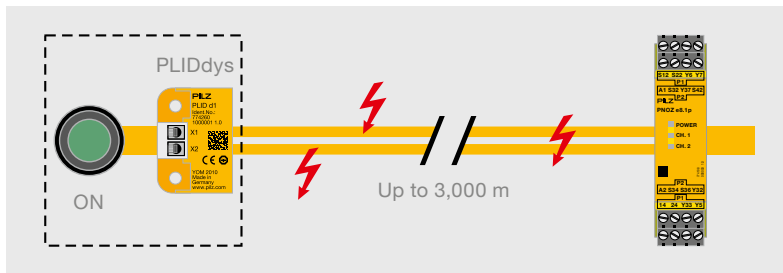
Monitoring for potential wiring errors and protection against power-up in the event of an error.

Your benefits at a glance
▸ All potential wiring errors are detected through constant line inspection by PLIDdys, no need for customized tests
▸ PLIDdys can be looped into the existing wiring, so few additional costs
▸ Easy to integrate into existing plants thanks to its small dimensions
▸ Saves costs, as the prevailing periphery can be retained
▸ Suitable for cable lengths up to 3,000 meters

Example applications of the line inspection device PLIDdys

Safe inspection of long cable routes in critical environments

▸ Cable cars, lift systems
▸ Wind turbines
▸ Conveyor belts in open cast mining or underground
▸ Tunnel boring machinery
▸ Press lines
▸ Fairground rides
▸ Drag chain applications
▸ Interlinked/distributed plant sections

Features	Approvals	Order number
▸ Cable cross section 0.5 mm² ... 1.5 mm² ▸ Maximum cable length 3,000 m ▸ Cable resistance max. 220 Ω ▸ Power supply 24 V DC ▸ Weight 10 g ▸ Temperature range –30 °C … +70 °C ▸ Dimensions (H x W x D) in mm: 36 x 26 x 12.1 [1)]	TÜV, UL/cUL	▸ PLID d1 C with spring-loaded terminals ———————— 784 260 ▸ PLID d1 with plug-in screw terminals ———————— 774 260

▸ Outputs using semiconductor technology:
  - 2 safety outputs
  - 2 auxiliary outputs
▸ Outputs: Voltage/current/rating: 24 VDC/1.5 A/40 W
▸ Monitored or automatic start can be selected
▸ Monitoring of shorts across contacts can be selected
for E-STOP application
▸ Dimensions (H x W x D) in mm: 101/94 [2)] x 22.5 x 121
	TÜV, UL/cUL, CCC	▸ PNOZ e8.1p C
		with spring-loaded
		terminals ———————— 784 198
		▸ PNOZ e8.1p
		with plug-in
		screw terminals ————— 774 198

[1)] Depth incl. spring-loaded terminals/plug-in screw terminals
[2)] Height incl. spring-loaded terminals/plug-in screw terminals

Keep up-to-date on safe line inspection device PLIDdys:

Webcode:
web150901

Online information at www.pilz.com

▶ Safety relays PNOZpower

The safety relays PNOZpower are suitable for monitoring E-STOP devices, safety gates and light beam devices. PNOZpower can switch currents of up to 16 A AC/DC per contact. An overall breaking capacity of 40 A is available per module.

PNOZ p1p   PNOZ po3p

Switching high loads safely

External contactors and contactor combinations are no longer required. The control circuit and main circuit are switched with one safety relay. The EC type examination is valid for the whole safety circuit.

Modular and flexible

The base unit processes the inputs; the output modules are specifically matched to the respective load. The number and capacity of the required safety contacts can be scaled, depending on the application. A maximum of five modules can be connected to the base unit. Modules are wired to the base unit via an internal bus system.

PNOZ p1p   PNOZ po3p   PNOZ po3.1p   PNOZ po3.2p

4 A   8 A   16 A

POWER
16 A

Breaking capacity

PNOZ pe1p

PNOZsigma

PMCtendo

Your benefits at a glance
▶ External contactor combinations
and their respective wiring
are no longer required,
saving costs, space and
commissioning time
▶ Diagnostics via LED: operating
and fault status is visible on
each module, resulting in
reduced downtimes
▶ Plug-in connection terminals:
pre-wired and easy to
exchange if there is a fault
▶ Redundant load switching
▶ Scalable and flexible by
selecting compatible modules –
you only pay for the functions
that you actually use
▶ Complete solution comprising
evaluation devices, compatible
sensor technology and control
and signal devices

Volt-free switching with the PNOZ pe1p control module
In conjunction with at least one expansion module from the
PNOZpower range, the PNOZ pe1p control module safely shuts down
motors or supply voltages on valves and contactors.

The PNOZ pe1p can be controlled using the following evaluation devices:

▶ Safety relays PNOZsigma, PNOZ X and PNOZelog
▶ Configurable small controllers PNOZmulti
Benefit to you: Potential-free switching up to 16 A.

PNOZ pe2p

PNOZ m B0

PNOZ po3.2p

Connection to PNOZmulti
Specially developed for connection
to the PNOZmulti configurable small
controllers, PNOZpower units can be
docked via the coupling connector
PNOZ pe2p.

The PNOZpower safety relays and the PNOZmulti configurable small controllers
can be combined simply using the coupling connector PNOZ pe2p.
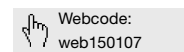
▶ Selection guide – PNOZpower

Base units – Safety relays PNOZpower

Type	Application area	Application				Performance Level (PL) – EN ISO 13849-1
PNOZ p1p	Base unit	◆	◆	◆		e
PNOZ p1vp	Base unit, delayed	◆	◆	◆	◆	e (d) [1]

Contact expansion modules – Safety relays PNOZpower

Type	Output contacts		Performance Level (PL) – EN ISO 13849-1
	Safe	Non-safety-related	
PNOZ po3p	3	1	e
PNOZ po3.1p	8	-	e
PNOZ po3.2p	4	-	e
PNOZ po3.3p	3	-	e
PNOZ po4p	4	-	e

Accessories – Safety relays PNOZpower

Type	Application area	Application	Performance Level (PL) – EN ISO 13849-1
PNOZ pe1p	Control module	For control via safety contacts or safe semiconductor outputs	e
PNOZ pe2p	Bus interface	Coupling connector for connecting PNOZpower expansion modules to a higher-level controller	e
PNOZ pps1p	Power supply	-	-

Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061	Number of expansion modules	Supply voltage	Dimensions (H x W x D) in mm
3	Min. 1, max. 4 expansion modules	24 V DC	94 x 45 x 135
3	Min. 1, max. 8 expansion modules (max. 4 delayed and 4 instantaneous)	24 V DC	94 x 45 x 135

[1] Value applies to instantaneous (delayed) safety contacts

Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061	Number of expansion modules			Dimensions (H x W x D) in mm
	AC1	AC3	DC1	
3	240 V/4 A/960 VA	-	24 V/4 A/96 W	94 x 22.5 x 121
3	240 V/8 A/2000 VA	-	24 V/8 A/200 W	94 x 45 x 121
3	240 V/16 A/4000 VA	-	24 V/16 A/400 W	94 x 90 x 135
3	240 V/16 A/4000 VA 400 V/10 A/4000 VA 500 V/8 A/4000 VA	240 V/3.0 kW 400 V/5.5 kW 500 V/4.0 kW	24 V/16 A/400 W	94 x 90 x 135
3	240 V/4 A/960 VA	-	24 V/4 A/96 W	94 x 22.5 x 121

Safety Integrity Level (SIL) CL – claim limit in accordance with IEC 62061	Number of expansion modules	Supply voltage	Dimensions (H x W x D) in mm
3	Min. 1, max. 4 expansion modules	24 V DC	94 x 22.5 x 121
3	Min. 1, max. 6 expansion modules	24 V DC	29 x 23.5 x 22
-	-	100 … 240 V AC	94 x 45 x 121

Keep up-to-date on safety relays PNOZpower:

Webcode: web150107

Online information at www.pilz.com

▶ Technical details – PNOZpower

Safety relays PNOZpower

PNOZ p1p

PNOZ pe1p

PNOZ pe2p

PNOZ pps1p

PNOZ po3p

PNOZ po3.2p

Type	Application area	Inputs/outputs	Supply voltage
PNOZ p1p	Base unit	2 semiconductor outputs	24 V DC
PNOZ p1vp	Base unit, delayed	2 semiconductor outputs	24 V DC
PNOZ pe1p	Control module	Expansion module control output connected to the PNOZpower bus	24 V DC
PNOZ pe2p	Bus interface	Output connected to PNOZpower bus	24 V DC
PNOZ pps1p	Power supply	-	100 … 240 V AC/DC
PNOZ po3p **PNOZ po4p**	Expansion modules	▶ PNOZ po3p: - 3 safety contacts (N/O) - 1 auxiliary contact (N/C) ▶ PNOZ po4p: - 4 safety contacts (N/O)	Via PNOZpower bus
PNOZ po3.1p	Expansion module	8 safety contacts (N/O)	Via PNOZpower bus
PNOZ po3.2p	Expansion module	4 safety contacts (N/O)	Via PNOZpower bus
PNOZ po3.3p	Expansion module	3 safety contacts (N/O)	Via PNOZpower bus

Features	Approvals	Order number Plug-in screw terminals
▸ Dual-channel wiring, with or without detection of shorts across contacts ▸ Monitored or automatic start can be selected ▸ Connection between PNOZ p1p and expansion modules via PNOZpower bus, using jumpers on the back of the unit	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 300
▸ Dual-channel wiring, with or without detection of shorts across contacts ▸ Monitored or automatic start can be selected ▸ Delay time can be selected via rotary switch and potentiometer ▸ Connection between PNOZ p1vp and expansion modules via PNOZpower bus, using jumpers on the back of the unit	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ 30 s ____ 773 950 ▸ 300 s ____ 773 951
▸ 1-channel operation, without detection of shorts across contacts ▸ 2-channel operation, with or without detection of shorts across contacts ▸ Connection between PNOZ pe1p and expansion modules via PNOZpower bus, using jumpers on the back of the unit ▸ Status indicator for output relay, supply voltage and fault ▸ Connection for feedback loop	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 900
▸ Control via safety contacts or safe semiconductor outputs ▸ 1-channel operation, without detection of shorts across contacts ▸ Connection between PNOZ pe2p and expansion modules via PNOZpower bus	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	779 125
▸ Galvanic isolation ▸ Short-circuit-proof ▸ 24 V DC at plug-in connector on back of unit for PNOZpower bus and at terminals ▸ LEDs for supply voltage, output voltage and fault	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 200

▸ 2-channel operation with the ability to detect short circuits via the base unit
▸ LEDs for switch status of channels 1/2, supply voltage and fault
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▸ PNOZ po3p:
		  773 634
		▸ PNOZ po4p:
		  773 635

	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 630
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 631
▸ 2-channel operation with the ability to detect short circuits via the base unit ▸ LEDs for switch status of channels 1/2, supply voltage and fault ▸ Suitable for safety-related switching of loads with utilisation category AC3 (e.g. motor) ▸ External start/stop input for non-safety-related load switching	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773 632

Technical documentation on safety relays PNOZelog:

Webcode:
web150635

Online information at www.pilz.com

Relays
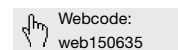
▶ Safety Device Diagnostics

In combination with e.g. PNOZsigma or PNOZ X, Safety Device Diagnostics (SDD) provides simple and extensive diagnosis of safety devices. The signal I/Os of the safety devices, such as PSENcode, have their functions extended. Status information is interrogated, 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.

| PNOZ s3 | SDD ES ETH | | PSEN cs5.1p |

Fewer service calls, higher 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 error 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 within the framework of Industrie 4.0.

Complete solution for extended diagnostics

Safety Device Diagnostics consists of a fieldbus module plus junction box and safety devices (e.g. sensors) and, in combination with e.g. PNOZsigma or PNOZ X, offers a cost-effective complete solution. 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 the 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 area Pilz network components	Version
Product group **SDD ES – S**afety **D**evice **D**iagnostics **E**lectronic module **S**tandard	**ETH** **Communication module with ETH interface** PROFIBUS Communication module with PROFIBUS interface PROFINET Communication module with PROFINET interface

Relays

PMI

PSEN cs5.11

PITestop

SDD ES ETH + PNOZ s3
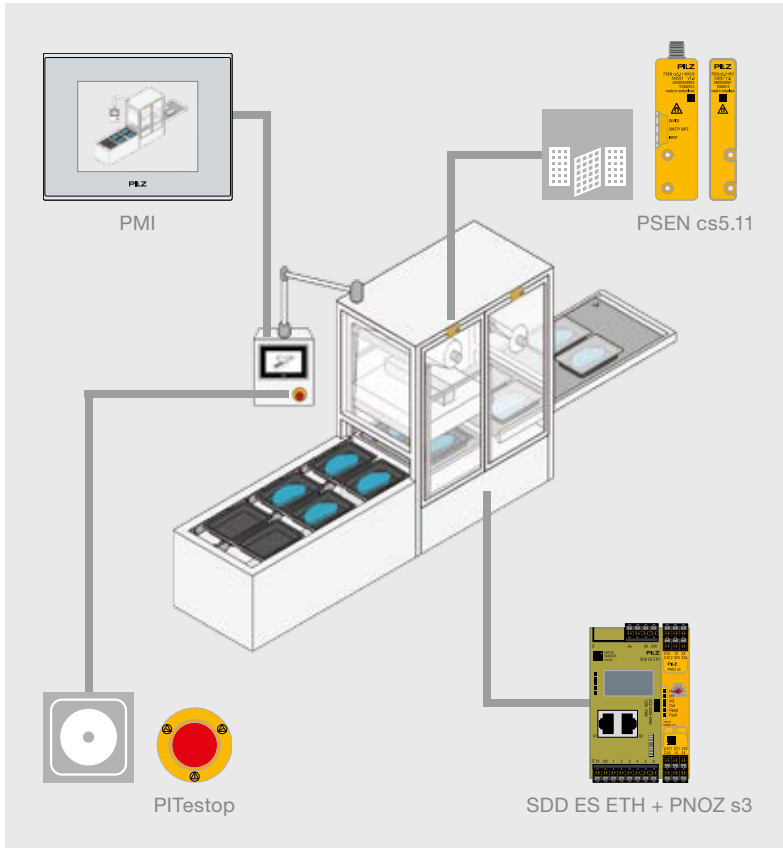
Your benefits at a glance

▸ Comprehensive diagnostics
for reducing service calls
and downtimes
▸ Simple diagnostics thanks
to use of the same sensors
and optional IP67 cabling
▸ Information is received
directly via the display on
the fieldbus module
▸ 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
or PNOZsigma

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

The coded safety switches PSENcode, which are often connected in series,
are ideal here; see PSENcode slimline design.

Keep up-to-date
on Safety Device
Diagnostics:

Webcode:
web150456

Online information
at www.pilz.com

▶ Technical details – Safety Device Diagnostics

Safety Device Diagnostics

Common features
- ▶ System consisting of fieldbus module, distributor and safety devices (e.g. PSENcode slimline design)
- ▶ Automatic activation of safety devices by 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):
  - Diagnostic data: < 1 second
  - Safety-related data: see individual safety device

SDD ES ETH

Type
SDD ES ETH
SDD ES PROFIBUS
SDD ES PROFINET
PSEN Y junction M8-M12/M12 PIGTAIL
PSEN Y junction M12-M12/M12 PIGTAIL
PSEN Y junction M12 SENSOR
PSEN Y junction M12 cable
PSEN Y junction M8 SENSOR
PSEN Y junction M8 cable
PSEN ix2 F4 code
PSEN ix2 F8 code
SDD ES ETH starter set I

Relays

Features	Approvals	Order number
Communication module with ETH connection	CE, cULus Listed	540 130
Communication module with PROFIBUS connection	CE, cULus Listed	540 132
Communication module with PROFINET connection	CE, cULus Listed	540 138
Junction with pigtail IP67 for one sensor	-	540 337
Junction with pigtail IP67 for one sensor	-	540 338
Junction without pigtail IP67 for one sensor	-	540 315
Junction without pigtail IP67 for one sensor	-	540 316
Junction without pigtail IP67 for one sensor	-	540 317
Junction without pigtail IP67 for one sensor	-	540 318
Distributor IP20 for up to four sensors	UL/cUL	535 111
Distributor IP20 for up to eight sensors	UL/cUL	535 112
▸ Communication module with ETH connection ▸ Two PSENcode sensors ▸ Junction box ▸ PSEN cable ▸ Ethernet cable ▸ Power supply ▸ Spring-loaded terminals	-	540 110

Technical documents for Safety Device Diagnostics:

Webcode:
web150635
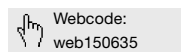
Online information at www.pilz.com

▶ Configurable small controllers

The configurable small controllers bridge the gap between classic safety relays and large programmable control systems. Use the configurable small controllers PNOZmulti to implement multiple safety functions. Functional safety to protect man and machine is thus achievable both simply and flexibly. On small machines, the small controllers PNOZmulti also perform automation tasks. Your plant and machinery is visualized optimally using the web-based visualization software PASvisu.

Configurable small controllers

▶ Configurable small controllers PNOZmulti – Many

PNOZ

With PNOZmulti, the pioneer among configurable safety technology, you can be sure you've made the right decision. Why? It's quite simple: Because with PNOZmulti you can rely on a system in use successfully worldwide, always at the forefront of technology. The configurable small controllers bridge the gap between classic safety relays and large programmable control systems. Use the configurable small controllers PNOZmulti mainly to implement multiple safety functions. Functional safety to protect man and machine is thus achievable both simply and flexibly.

PNOZ m B0   PNOZ m B1

Configurable control systems PNOZmulti 2

PNOZmulti 2 is the very latest generation. If you need to monitor more than four safety functions, PNOZmulti is the right solution for you. The full function range of the "classic" PNOZmulti base units is now available in a unit measuring 45 mm in width. The modular structure is as flexible as your application.

PNOZ mm0.1p

Configurable compact controllers PNOZmulti Mini

PNOZmulti Mini is worthwhile if you have three or more safety functions. You choose between four base units and a small number of expansion modules. Additional output contacts are possible using the contact expansion modules from the product group PNOZsigma.

PNOZ m1p ETH

Configurable safety systems PNOZmulti

PNOZmulti is the classic safety system. The system is characterized by a diverse range of modules and communication options.
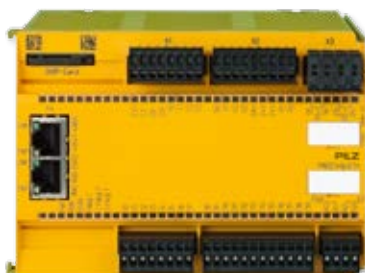
Your benefits at a glance

▶ Cost-effective and long-lasting: worldwide safety standard for many automation environments and communication systems
▶ Just one system from planning to maintenance
▶ Flexible: configuration using certified software blocks, simple adjustment and adaptation
▶ Customized costs: exact adaptation to your application using expansion modules
▶ Minimal machine downtimes and high plant availability through simple, user-friendly diagnostics
▶ Maximum safety – depending on the wiring, safety categories up to PL e and SIL CL 3
▶ Simple wiring means short commissioning times
▶ Potential for rationalization because safety components cover automation tasks
▶ Suitable for international use due to worldwide certification
▶ User-friendly thanks to technical support

functions, one solution!

All for one and one for all

The software tool PNOZmulti Configurator will convince you with its simple operation: install, open, work intuitively. Furthermore, you have several options for carrying out diagnostics – for high plant availability and minimal downtimes. The range of fieldbuses and communication possibilities are a major benefit of PNOZmulti. It allows the system to be used independently of the higher-level operation control system. A wide selection of expansion modules ensures maximum flexibility and safety for your application. Input and output modules, motion monitoring modules and link modules are available.

Potential for rationalization:

Safety components cover automation tasks

PNOZmulti is powerful enough to assume complete machine control on smaller machines. You can count on products of an extremely high quality. Moreover, as there is no need for an additional control system, PNOZmulti can make savings in a range of areas, from hardware costs and space in the control cabinet to procurement and stock holding costs.

Configurable small controllers
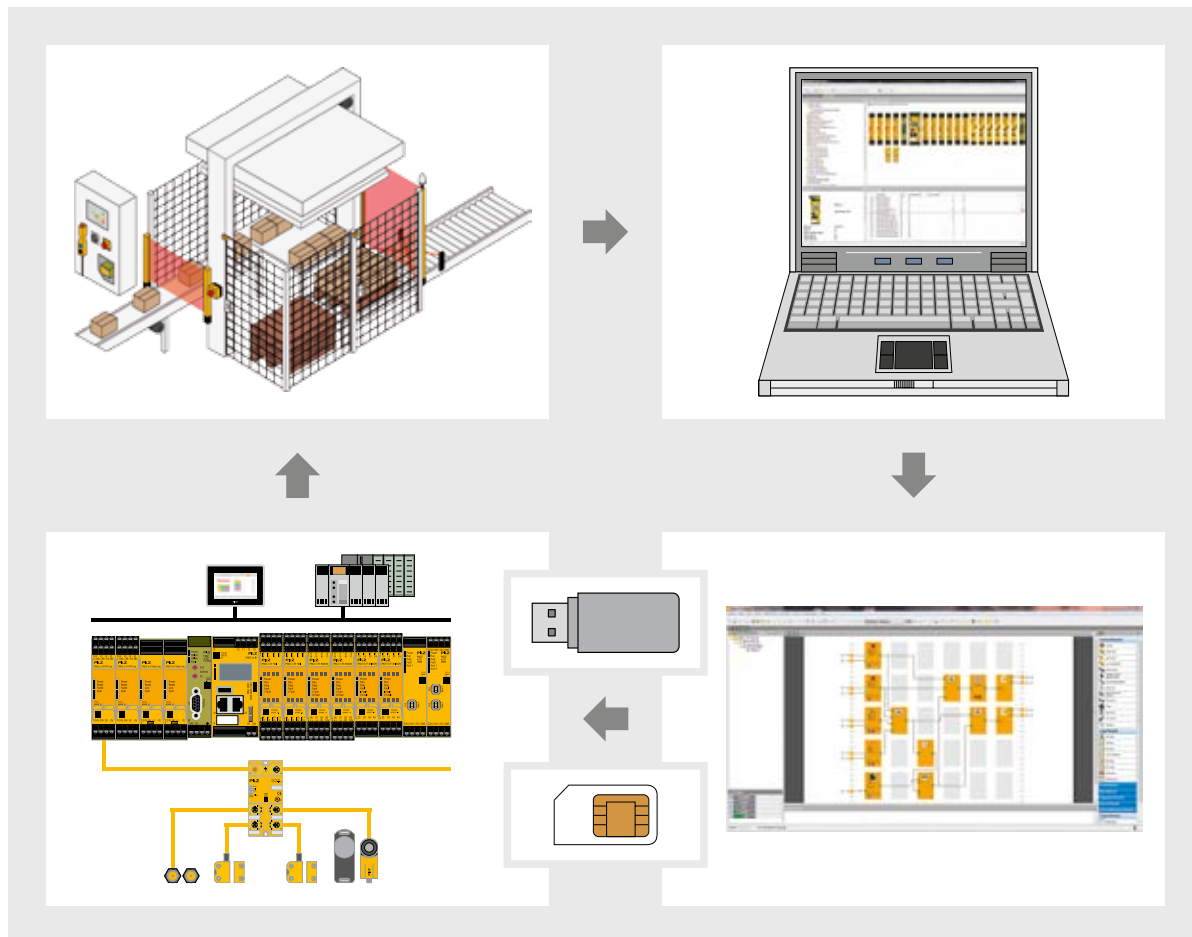
From your application to the solution with PNOZmulti. Configure the hardware and the safety circuit using the convenient software tool PNOZmulti Configurator. The configuration, which is stored on an exchangeable storage medium (chip card or USB stick), is inserted into the base unit and installed. This shortens your time-to-market and allows you to harness great cost-saving potential in all engineering phases – from planning all the way to maintenance!

Keep up-to-date on configurable small controllers PNOZmulti:

Webcode:
web150495

Online information at www.pilz.com

▶ Software for the configurable small controllers

PNOZ

PNOZmulti small controllers make design, configuration, documentation and commissioning simple.
Easy diagnostic solutions reduce standstill times on your plant or machine. Our user-friendly software tools are available to do this. With the PNOZmulti Configurator, you can create your safety circuit on the PC. The software has a broad function and command range so that even large-scale projects can be easily implemented.
For user-friendly diagnostics, you can use the tools of the diagnostic solution PVIS. You can keep a close eye on your automation system using the web-based visualization software PASvisu.
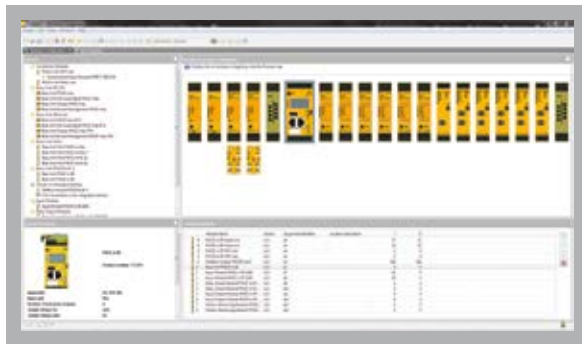
Simple hardware configuration by means of drag&drop.

Simple application creation, linking using the mouse.

Flexible to use and child's play to operate
First select the necessary hardware by drag&drop.
The hardware consists of a base unit and, if necessary, expansion modules. The number of available inputs and outputs is displayed in table form. The software tool provides support, for example, by listing the expansion modules available for the selected base unit. The tool can also help if the permitted number of expansion modules has been exceeded or if the modules have been positioned incorrectly. Online help with documentation is available throughout configuration.

Mouse used for wiring
The graphics-based user interface conforms to the Windows® standard; the elements of the safety circuit are available as icons or in selection menus. Simply drag them onto the user interface and link them using the mouse.

You protect the safety circuit against tampering with passwords and transfer it to the base unit. A chip card or, with the PNOZ m B1, a USB stick is used as the exchangeable storage medium.

Configurable small controllers

PNOZmulti

A wide range of logic connections can be combined to form a macro.

Your benefits at a glance
▶ The PNOZmulti Configurator
  is a universal tool for all
  engineering phases –
  planning, project development,
  commissioning, operation
  and maintenance
▶ Short time-to-market thanks
  to time and cost saving
▶ PVIS minimizes machine
  downtimes through the
  fast, effective rectification
  of faults

The technical
details for the
PNOZmulti
Configurator
can be found
on page 106.

Keep up-to-date
on the software
tool PNOZmulti
Configurator:

Webcode:
web150399

Online information
at www.pilz.com

Enter a new dimension with macro elements
The logic connections that are defined between inputs and outputs can be
combined into macro elements. Once created, macro elements are stored
in the macro library. They are then available for use in all further configurations.
A simple import and export function and the ability to edit macros within the
editor reduce your engineering time and save costs. Macros can also be read
and write protected, so protecting your expertise.

PVIS®
**Professional
diagnostic solution**

Reducing downtimes using the diagnostic solution PVIS
PVIS helps to visualize diagnostic information for PVIS-enabled control systems,
such as small controllers PNOZmulti or drive technology PMC. Together with
the PMI operator terminals, this provides you with a complete, fully integrated
diagnostic solution. With the PVIS OPC and OPC UA tools, PVIS is available on
the basis of standard software interfaces so that it can be integrated in almost
any environment. The OPC UA standard is used for smart factory plants
within the framework of Industrie 4.0. If a fault occurs, features such as plain
text messages with precise information on the location, clearly defined
responsibilities and integrated first fault display all ensure that production
is quickly restarted. The PNOZmulti Configurator contains the PNOZmulti
project, texts for diagnostics, proposed solutions and much more.
The benefits are obvious: simpler project development, greater flexibility
and reduction of downtimes.

Keep up-to-date
on the software
tool "Diagnostic
solution PVIS":

Webcode:
web150398

Online information
at www.pilz.com

Configurable small controllers

▶ Optimum visualization and simple diagnostics

PNOZ

PAS

PVIS

Use perfectly matched software to visualize your plant and machinery that use the small controllers PNOZmulti. Using an OPC UA server connection, you can easily link PNOZmulti to the web-based visualization software PASvisu and import all variables of the small controller. So you can combine the control of your machine's safety functions with all the benefits on offer from the PASvisu. Thanks to a direct connection to the PNOZmulti small controllers, the full function range of the software (including diagnostic capability) is available with version 1.4 of the visualization software PASvisu.

PMIvisu with visualization software PASvisu

PNOZ m B1   PNOZ mm0p   PNOZ m1p ETH

Simple diagnostics

The configurable control systems PNOZmulti provide you with many options for performing diagnostics: for high plant availability and minimal downtimes. Use our PMI operator terminals and the Ethernet TCP/IP and Modbus TCP interfaces for status messages to the connected PLC controller or the higher-level fieldbus. Fieldbus modules which can be replaced without the program needing to be changed are available for the latter. PNOZmulti units can be connected to all common communication networks.

Your benefits at a glance
- Simple, intuitive handling and maximum suitability for use
- Fast, safe automation
- Future-proof and platform-independent
- Use of current web technologies: HTML5, CSS3 and JavaScript
- Accelerated projects: from engineering and runtime to maintenance
  - Linking between PAS4000 and PASvisu projects enables shorter project times
  - Faster engineering, as variables do not need to be entered and assigned manually
- Platform independence thanks to the use of web technology enables flexible application on a wide range of end devices
- Reduced downtimes thanks to remote access with true client/server functionality
- Uniform look-and-feel thanks to project-wide design templates (CSS3 style sheets)

All your automation at a glance!

Your automation projects can be managed using the web-based visualization software PASvisu for simple configuration and optimum visualization.
This provides you with a convenient, comprehensive overview of your plant – locally and via remote access; with sophisticated visualization thanks to the most diverse style sheets.

Configurable small controllers

Keep up-to-date on the web-based visualization software PASvisu:

Webcode:
web150503
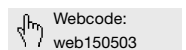
Online information at www.pilz.com

▶ Configurable control systems PNOZmulti 2 – The

PNOZ

Use the configurable control systems PNOZmulti 2 to implement multiple safety functions on your plant or machinery. The base units are just 45 mm wide, have an illuminated display and are modular and expandable so that they can grow with the requirements and size of your machine. In this way, you only pay for what you actually use.

You create the safety architecture just once, independently of the higher level plant control. This provides benefits in terms of time and cost savings. You can do this with the help of the intuitive PNOZmulti Configurator. The software tool impresses with its wide variety of certified blocks. They allow PNOZmulti to be used irrespective of machine type, plant type, country or branch of industry.

Configurable small controllers

PNOZ m B1

Base unit PNOZ m B1 – for large-scale projects
▶ Fine granularity of the application – no inputs or outputs on the base unit, number controllable depending on the type of I/O modules used
▶ 2 integrated Ethernet interfaces
▶ Modbus TCP on board
▶ Can be used for large-scale projects
  - up to 1024 connection lines possible in the PNOZmulti Configurator (version 10 or higher)
  - max. 12 safe expansion modules can be connected on the right side as well as one output module for standard applications
  - max. 4 link modules and max. 1 fieldbus module can be connected on the left side
▶ USB stick as storage medium

energy saving by Pilz

PNOZ m B0

Base unit PNOZ m B0 – the universal option
▶ 20 safe inputs, up to 8 of which can be configured as standard outputs
▶ 4 safe semiconductor outputs
▶ 4 test pulse outputs, up to 4 of which can be configured as standard outputs
▶ Max. 6 expansion modules can be connected on the right side
▶ Max. 4 link modules and max. 1 fieldbus module and 1 communication module can be connected on the left side
▶ Up to 80 % less energy consumption than comparable products
▶ Chip card as storage medium

future-proof solution

PNOZmulti 2 – for large-scale automation projects in conjunction with the web-based visualization software PASvisu, the operator terminals PMI, safe sensor technology PSEN and decentralized periphery PDP67.
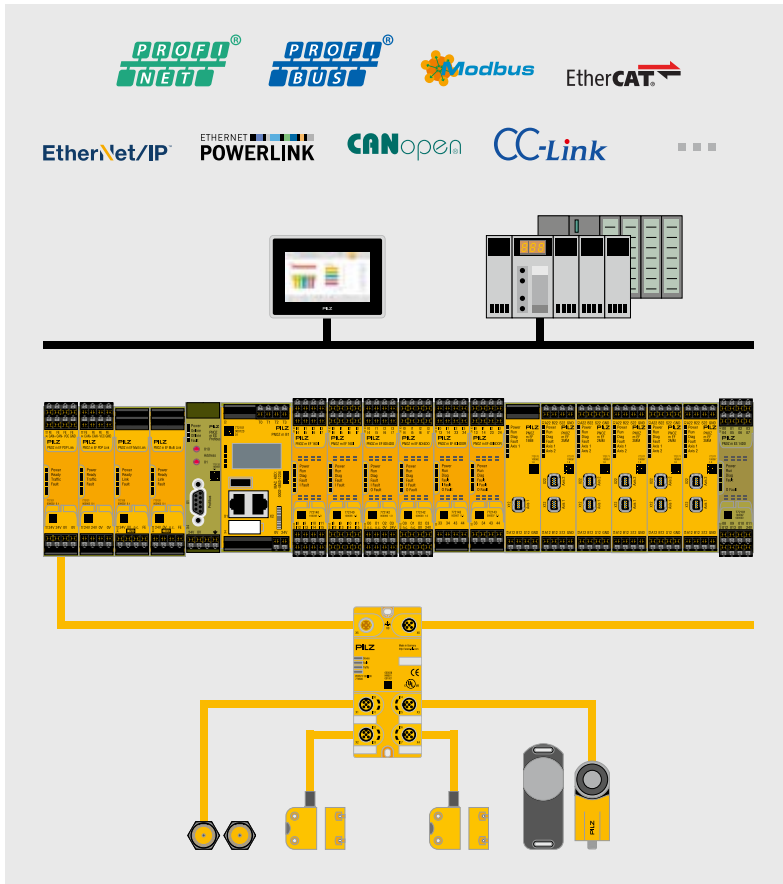
Your benefits at a glance

▸ Certified hardware and software for reliable operation

▸ Easy to configure thanks to user-friendly software tools

▸ Short time-to-market as the inputs and outputs are freely configurable

▸ The appropriate modules for every requirement – flexible, simple, economical to expand

▸ Comprehensive diagnostic options mean short downtimes

▸ Fast commissioning thanks to simple wiring with plug-in terminals

▸ Maximum safety – up to PL e and SIL CL 3, depending on the application

Configurable small controllers

High plant availability and minimal downtimes

The configurable control systems PNOZmulti 2 provide you with many options for performing diagnostics. Use our PMI operator terminals, the Ethernet TCP/IP and Modbus TCP interfaces, the status messages to the connected PLC controller or higher-level fieldbus. Fieldbus modules which can be replaced without the program needing to be changed are available for the latter. PNOZmulti 2 units can be connected to all common communication networks. The diagnostic solution PVIS is easy to install and can be selected in the PNOZmulti Configurator with just a few clicks. Your plant and machinery is visualized optimally using the web-based visualization software PASvisu.

Keep up-to-date on configurable control systems PNOZmulti 2:

Webcode: web150500

Online information at www.pilz.com

▶ Expansion modules – for particular requirements

Safe motion monitoring modules

The safe motion monitoring modules ensure safe monitoring of your drives. Your plant and machinery are thus even more productive:

▶ Safety functions in accordance with EN 61800-5-2 (adjustable speed electrical power drive systems)
▶ Safe stop 1: SS1
▶ Safe stop 2: SS2
▶ Safe speed range: SSR
▶ Safe speed monitor: SSM
▶ Safe direction: SDI
▶ Safe operating stop: SOS
▶ Connection to all common incremental encoders via industry-compatible Mini I/O interface

The safe motion monitoring modules are easily parameterized using the software tool PNOZmulti Configurator with certified software blocks. An independent module program (mIQ) is created for this and is executed on the module. This brings considerable benefits for you, the user: For example, fine-grained configuration of several monitoring zones, such as speed or rotational speed, is possible. The module program is run locally on the expansion module. This reduces the load on the base unit.

Flexible and robust

Modules for safe monitoring of one axis or two axes are available. All common incremental encoders can be connected using drive-specific connection cables via the **industry-compatible Mini I/O interface**, characterized by particularly high durability.

SS1

SS2

SSR

SSM

SDI

SOS

PITsign

PSENcode

PNOZmulti Configurator

mIQ

PNOZmulti 2

PITestop

PMI
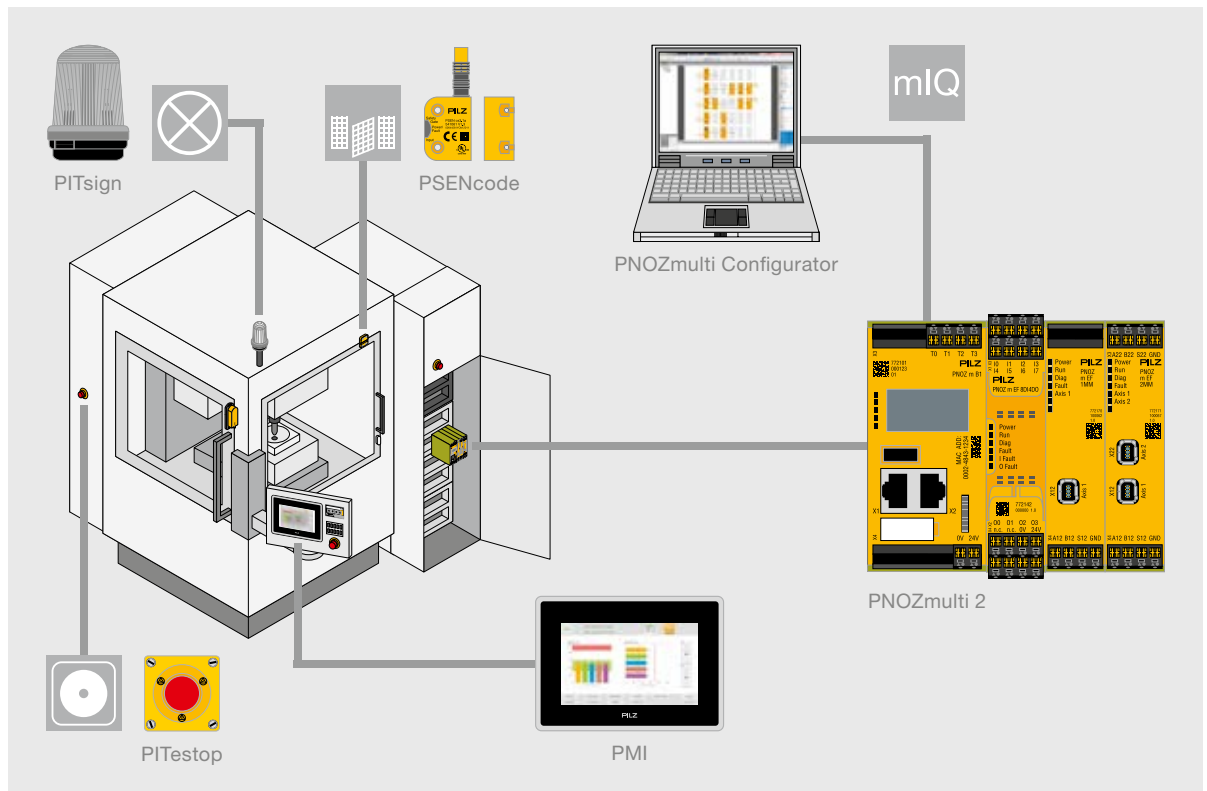
Configurable control systems PNOZmulti 2 with module program (mIQ) for configuring multiple monitoring zones.
The module program is run locally on the expansion module.

PNOZ m EF PDP Link +
PNOZ m EF Multi Link +
PNOZ m B0

PNOZ m EF Multi Link +
PNOZ m B0
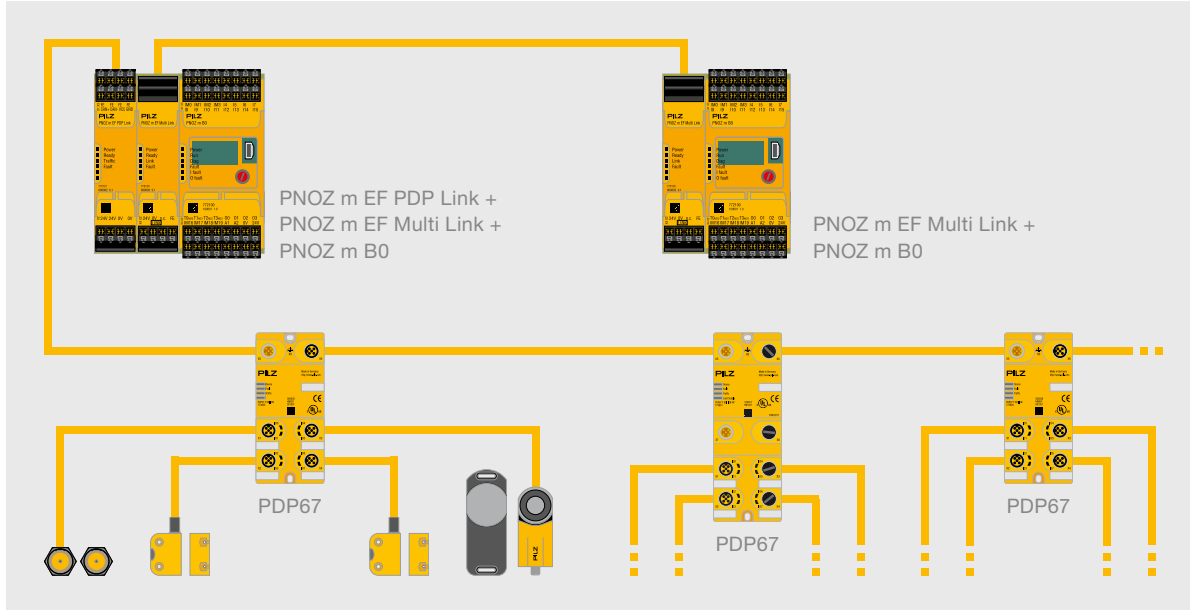
PDP67

PDP67

PDP67

The decentralized modules PDP67 can be connected to the PNOZmulti 2 via a link module –
for cost-effective, simple, decentralized expansion. A link module is also available for networking several base units.

PNOZmulti 2 – with decentralized expansion

The configurable control systems PNOZmulti 2 can be expanded using link modules for decentralization and for safe communication between multiple base units. Safety functions on more complex plant and machinery can thus be easily implemented.

Decentrally in the field

The PDP link module serves as the interface for the decentralized modules PDP67 (to protection type IP67) to the base unit. The signals from the connected sensors are directly forwarded to the PDP link module from the field for further processing. With up to 16 PDP67 modules on one base unit, the number of sensors that can be connected increases by 64. This is what an economical solution looks like!

Complex tasks – a team effort

The multi link module enables simple, safe data exchange between several base units. Thanks to the modular structure of the PNOZmulti 2, different topologies can be implemented on one base unit with up to four link modules. As a result, users can connect several PNOZmulti units to implement safety functions for complex plant and machinery.

Configurable small controllers

▶ Technical details PNOZmulti 2

PNOZmulti 2 – Base units

Common features
- Efficient in the case of 4 or more safety functions, modular and expandable
- Application area: for monitoring E-STOP pushbuttons, two-hand buttons, safety gate limit switches, light beam devices, scanners, enabling switches, safety gate switches PSEN, operating mode selector switches, pressure-sensitive mats, safe motion monitoring and many other applications
- Safety-related characteristic data: depending on the application, up to Performance Level PL e/Cat. 4 of EN ISO 13849-1 and Safety Integrity Level (SIL) CL 3 of IEC 62061
- Can be configured using the software tool PNOZmulti Configurator
- Exchangeable program memory
- Illuminated display for status and device information
- If the diagnostic solution PVIS is activated, it is possible to display customized texts
- Visualization software PASvisu: version 1.3 via OPC UA server connection, version 1.4 and higher with direct connection to PNOZmulti
- Supply voltage: 24 V DC
- LED status indicators
- Plug-in connection terminals: either spring-loaded terminals or screw terminals available as obligatory accessories

PNOZ m B1

PNOZ m B0

Type	Features
PNOZ m B1	▶ Automation project is transferred to the base unit using a USB stick (512 MB, included) or via the integrated ETH interface: - multiple projects can be stored - only one can be executed - managed via the project manager ▶ Larger programs in the PNOZmulti Configurator only with PNOZ m B1: - up to 1024 connection lines possible - macro programming not yet available - module programs supported (mIQ) ▶ Date and time for PNOZ m B1 can be set in the PNOZmulti Configurator
PNOZ m B0	▶ Automation project is transferred to the base unit using a chip card (not included, available as an accessory) or via the integrated USB interface ▶ 20 safe inputs, up to 8 of which can be configured as auxiliary outputs ▶ 4 safe semiconductor outputs – up to PL e and SIL CL 3, depending on the application

Configurable small controllers

	Approvals	Order number		
		Without terminals	Plug-in spring-loaded terminals	Plug-in screw terminals
▸ 4 test pulse outputs for detecting shorts across contacts between the inputs, otherwise no inputs and outputs on the base unit ▸ Right side: max. 12 safe expansion modules, 1 output module for standard applications ▸ Left side: up to 4 safe link modules, max. 1 fieldbus module ▸ Modbus TCP on board ▸ Display with backlighting for diagnostics, for activating the project, Ethernet settings, for setting the date and time of the system, for stopping and starting the device ▸ Multifunction switch for menu control ▸ 2 Ethernet interfaces with switch: transmission rate 10 MBit/s, 100 MBit/s; connector type RJ-45 ▸ Dimensions (H x W x D) in mm: 100 x 45 x 120.2	CE, cULus Listed, TÜV, BG	772 101 RJ-45 cable ▸ 1.5 m ⎯⎯ 314 094	751 016	750 016
▸ 4 test pulse outputs, up to 4 of which can be configured as standard outputs ▸ Right side: max. 6 safe expansion modules ▸ Left side: max. 4 safe link modules, max. 1 fieldbus module and max. 1 communication module ▸ Display with backlighting to indicate the status of the supply voltage and the inputs and outputs ▸ Rotary knob for menu control ▸ Dimensions (H x W x D) in mm: 101.4/98 [1] x 45 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 100 Mini USB cable ▸ 3 m ⎯⎯ 312 992 ▸ 5 m ⎯⎯ 312 993 ▸ Chip card 8 kByte 1 piece ⎯⎯ 779 201 ▸ Chip card 32 kByte 1 piece ⎯⎯ 779 211	751 008 (1 set)	750 008 (1 set)

[1] Height incl. plug-in spring-loaded terminals/screw terminals

Configurable small controllers

Keep up-to-date on PNOZmulti 2 base units:

Webcode:
web150382
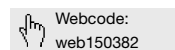
Online information at www.pilz.com

▶ Technical details PNOZmulti 2

PNOZmulti 2 – Expansion modules

PNOZ m EF 16DI

PNOZ m EF 8DI4DO

PNOZ m EF 4DI4DOR

PNOZ m EF 1MM

PNOZ m EF 2MM

PNOZ m EF Multi Link

PNOZ m EF PDP Link

PNOZ m ES 14DO

Type	Application area
PNOZ m EF 16DI	Safe input module
PNOZ m EF 8DI4DO	Safe input/semiconductor output module
PNOZ m EF 4DI4DOR	Safe input/relay output module
PNOZ m EF 1MM	Safe motion monitoring module for monitoring one axis
PNOZ m EF 2MM	Safe motion monitoring module for monitoring two axes
PNOZ m EF Multi Link	Safe link module for connecting two base units: optionally with PNOZmulti Mini and PNOZmulti; as many base units as necessary can be connected using link modules.
PNOZ m EF PDP Link	Safe link module for connecting a base unit to up to 4 decentralized modules PDP67
PNOZ m ES 14DO	Output module for standard applications
PDP67 F 8DI ION PDP67 F 8DI ION HP	Decentralized input modules

Common features
▶ Can be configured with the software tool PNOZmulti Configurator
▶ Status indicators via LEDs

Configurable small controllers

Features	Approvals	Order number		
		Without terminals	Plug-in spring-loaded terminals	Plug-in screw terminals
▸ 16 safe inputs ▸ Monitoring of shorts across contacts by means of test pulse outputs at the inputs ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 140	751 004 (1 set)	750 004 (1 set)
▸ 8 safe inputs ▸ 4 safe semiconductor outputs, depending on the application up to PL e, SIL CL 3 ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 142	751 004 (1 set)	750 004 (1 set)
▸ 4 safe inputs ▸ 4 safe relay outputs, depending on the application up to PL e and SIL CL 3 ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 143	751 004 (1 set)	750 004 (1 set)

▸ Safe monitoring functions in accordance with EN 61800-5-2 (electrical power drive systems with adjustable speed)
  - Stop 1 (SS1) and stop 2 (SS2)
  - Safe speed monitoring (SSM)
  - Safe speed range monitoring (SSR-M)
  - Safe direction monitoring (SDI-M)
  - Safe operating stop monitoring (SOS-M)
  - Analog voltage (track S)
▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 111
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 170	783 542 (1 set)	793 542 (1 set)

	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 171	783 544 (1 set)	793 544 (1 set)
▸ On the left side, max. 4 multi-link modules can be connected to the base unit ▸ Point-to-point connection via 4-core shielded, twisted-pair cable ▸ Transfer of 32 bit input data and 32 bit output data (virtual I/Os) ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 120	783 538 (1 set)	793 538 (1 set)

▸ Maximum number of devices which can be connected:
  - 4 PDP link modules on the left side of the base unit
  - 4 decentralized modules PDP67 F 8DI ION (VA) or PDP67 F 8DI ION HP (VA) to 1 PDP link module (maximum configuration: 16 PDP67 modules)
  - 4 sensors to 1 decentralized PDP67 module (maximum configuration: 64 sensors)
▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 121	783 540 (1 set)	793 540 (1 set)

▸ Expansion module with 14 semiconductor outputs for non-safety-related applications ▸ Max. 1 output module can be connected on the right side of the base unit PNOZ m B1 ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE	772 181	751 004 (1 set)	750 004 (1 set)
For further information, please refer to pages 110–111	-	-	-	-

Configurable small controllers

Keep up-to-date on PNOZmulti 2 I/O modules:

Webcode: web150385

Online information at www.pilz.com

▶ Technical details PNOZmulti 2

PNOZmulti 2 – Fieldbus modules/communication modules

PNOZ m ES PROFINET

PNOZ m ES PROFIBUS

PNOZ m ES EtherCAT

PNOZ m ES EtherNet/IP

PNOZ m ES POWERLINK

PNOZ m ES CANopen

PNOZ m ES CC-Link

Ethernet

PNOZ m ES ETH

RS232

PNOZ m ES RS232

Type	Application area
PNOZ m ES PROFINET	Fieldbus module PROFINET (I/O Device)
PNOZ m ES PROFIBUS	Fieldbus module PROFIBUS-DP (slave, DPV0)
PNOZ m ES EtherCAT	Fieldbus module EtherCAT (slave, CANopen over EtherCAT)
PNOZ m ES EtherNet IP	Fieldbus module EtherNet/IP (adapter)
PNOZ m ES POWERLINK	Fieldbus module Ethernet POWERLINK V2 (slave)
PNOZ m ES CANopen	Fieldbus module CANopen (slave, CiA 301 V 4.2.0)
PNOZ m ES CC-Link	Fieldbus module CC-Link
PNOZ m ES ETH	Communication module with Ethernet/Modbus TCP interface
PNOZ m ES RS232	Communication module with serial interface

Common features
▶ Can be configured using the PNOZmulti Configurator
▶ Fieldbus modules: 128 virtual outputs can be defined in the PNOZmulti Configurator for communication with the fieldbus

Features	Approvals	Order number		
		Without terminals	**Plug-in spring-loaded terminals**	**Plug-in screw terminals**
▸ Transmission rate 100 MBit/s (100BaseTX), full-duplex and half-duplex ▸ Two RJ-45 ports ▸ PROFINET I/O Device (V2.2) functions in accordance with conformance class C ▸ Supported functions: RT, IRT, MRP, LLDP ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 110.4	CE, cULus Listed, EAC (Eurasian), CCC	772 138	783 542 (1 set)	793 542 (1 set)
▸ Station addresses from 0 ... 99, selected via rotary switch ▸ Transmission rate: max. 12 MBit/s ▸ Connection to fieldbus via female 9-pin D-Sub connector ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 132	783 542 (1 set)	793 542 (1 set)
▸ Transmission rate: 100 MBit/s ▸ Max. 148 bytes TxPDO and 20 bytes RxPDO ▸ Connection to fieldbus via RJ-45 connector ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 136	783 542 (1 set)	793 542 (1 set)
▸ Transmission rate: 10 MBit/s, 100 MBit/s ▸ IP address is set at DIP switch on the front of the unit ▸ 2-port switch ▸ Connection to fieldbus via RJ-45 connector ▸ Integrated web server ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 110.4	CE, cULus Listed, EAC (Eurasian), CCC	772 137	783 542 (1 set)	793 542 (1 set)
▸ Station addresses from 1 ... 239, selected via rotary switch ▸ Transmission rate: 100 MBit/s ▸ Connection to fieldbus via RJ-45 connector ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 110.4	CE, cULus Listed, EAC (Eurasian), CCC	772 119	783 542 (1 set)	793 542 (1 set)
▸ Station addresses from 0 ... 99, selected via rotary switch ▸ Transmission rate: max. 1 MBit/s ▸ Transmission rate selected via rotary switch ▸ Connection to fieldbus via male 9-pin D-Sub connector ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 134	783 542 (1 set)	793 542 (1 set)
▸ Station addresses from 1 ... 63, selected via rotary switch ▸ Station type: remote device ▸ Occupied stations: 3 ▸ Transmission rate: max. 10 MBit/s ▸ Connection to fieldbus: via 5-pin Combicon plug-in connector ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 110.4	CE, EAC (Eurasian), CCC	772 135	783 542 (1 set)	793 542 (1 set)
▸ With 2 Ethernet interfaces ▸ Transmission rate 10 MBit/s or 100 MBit/s ▸ Connection to fieldbus via RJ-45 connector ▸ Can only be used with base unit PNOZ m B0 ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 111	CE, cULus Listed, EAC (Eurasian), CCC	772 130	-	-
▸ 1 serial interface RS232 ▸ Can only be used with base unit PNOZ m B0 ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), CCC	772 131	783 538 (1 set)	793 538 (1 set)

▸ Status indicators via LEDs
▸ Max. 1 fieldbus module can be connected
▸ Only with PNOZ m B0: max. 1 communication module can additionally be connected

Configurable small controllers

Keep up-to-date on PNOZmulti 2 communication modules:

Webcode: web150393

Online information at www.pilz.com

▶ Configurable compact controllers PNOZmulti Mini

You need to monitor more than three safety functions but have limited space? Then PNOZmulti Mini is the right solution for you! You can choose between four base units which can be used as stand-alone devices or modular and expanded. A stand-alone variant is intended for use under hostile industrial conditions with increased environmental requirements. The modular, expandable base units can be linked to each other or connected to decentralized PDP modules. Different communication and fieldbus modules are used for transmitting diagnostic and status information to the higher-level controller. If you need more relay contacts, then use the contact expansion modules from the product group PNOZsigma. You use the compact small controller as a standardized safety solution independently of the operation control system and simply adapt it to changing applications.

PNOZ mm0p

PNOZ mm0.1p

Compact device – stand-alone base unit
With a width of just 45 mm, the stand-alone base unit has 20 freely configurable safe inputs, 4 safe semiconductor outputs (PL e/SIL CL 3) and 4 test pulse outputs. The compact design saves space in the control cabinet. The integrated display offers simple diagnostics and the ability to display customized texts. Short commissioning times and simple wiring save costs. Also available as a version for an extended temperature range.

Genial device – modular, expandable base unit
The base unit PNOZ mm0.1p is ready to meet growing requirements. It has the same technical features as PNOZ mm0p. The difference: it is modular and expandable. By selecting the appropriate modules and thanks to the simple configuration, you can expand your application easily and economically. Expand to the left using safe link and communication modules. On the right-hand side, contact expansion modules from the product group PNOZsigma are available to multiply the relay contacts.

Communicative device – base unit with multi-link inside
In addition to the functionality of the PNOZ mm0.1p, the base unit PNOZ mm0.2p also provides an integrated multi-link interface. This removes the need for an additional module, saving you costs. As a result, it is easy to link and exchange data between several PNOZmulti Mini base units and between PNOZmulti Mini, PNOZmulti and PNOZmulti 2.

Configurable small controllers

PITestop

PSENmag

PMI

PSENopt

PNOZ mm0p

PNOZ mm0p-T

PNOZ mm0.1p

PNOZ mm0.2p
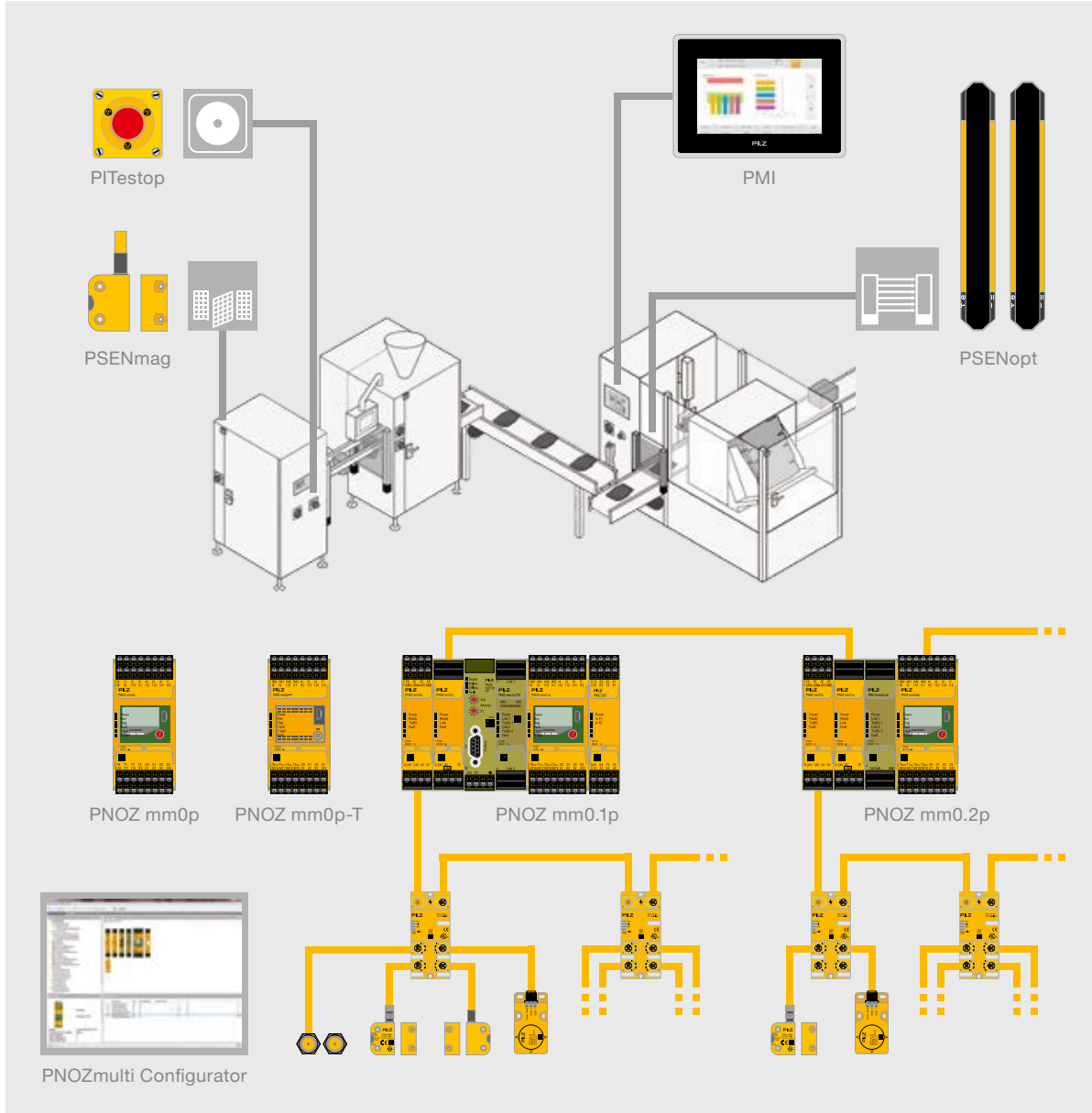
PNOZmulti Configurator

Your benefits at a glance

▸ Efficient from three safety functions onwards

▸ The software tool PNOZmulti Configurator saves you time and costs in all engineering phases

▸ Maximum flexibility: inputs and outputs are freely configurable

▸ Saves lots of space in the control cabinet due to the compact design

▸ Reduced downtimes thanks to PVIS support

▸ Customer texts can be displayed

▸ Worldwide safety standard for all machine types

Keep up-to-date on configurable compact controllers PNOZmulti Mini:

Webcode: web150501

Online information at www.pilz.com

▶ Technical details – PNOZmulti Mini

PNOZmulti Mini – Base units

Common features:

▸ Application area: for monitoring
E-STOP pushbuttons, two-hand buttons,
safety gate limit switches, light beam
devices, scanners, enabling switches,
safety gate switches PSEN,
operating mode selector switches
and pressure-sensitive mats

▸ Safety-related characteristic data:
depending on the application,
up to Performance Level PL e/Cat. 4
of EN ISO 13849-1 and Safety Integrity
Level (SIL) CL 3 of IEC 62061

▸ Configurable using
PNOZmulti Configurator via chip card
or USB interface

▸ Exchangeable program memory:
chip card

▸ 20 inputs, up to 8 of which
can be configured as outputs for
standard applications

▸ 4 safe semiconductor outputs,
depending on the application
up to PL e, SIL CL 3

▸ 4 test pulse outputs, up to 4 of
which can be configured as outputs
for standard applications

▸ Supply voltage (U_B): 24 V DC

▸ Voltage/current/rating:
24 V DC/2 A/48 W, outputs
using semiconductor technology

▸ With display for error messages,
state of the supply voltage, state of
the inputs and outputs, status and
device information; customized texts
can be displayed

▸ If the diagnostic solution PVIS is
activated, it is possible to display
customized texts

▸ Visualization software PASvisu:
version 1.3 via OPC UA server
connection, version 1.4 and higher
with direct connection to PNOZmulti

▸ Rotary knob for menu control

▸ Dimensions (H x W x D) in mm:
100/98 [1] x 45 x 120

PNOZ mm0p

PNOZ mm0p-T

PNOZ mm0.1p

PNOZ mm0.2p

Type	Application area
PNOZ mm0p	Base unit – non-modular and expandable, from 3 … 6 safety functions
PNOZ mm0p-T [3]	As for PNOZ mm0p for increased environmental requirements, without display
PNOZ mm0.1p	Base unit – modular and expandable, from 4 safety functions and for standard control functions
PNOZ mm0.2p	Base unit – as for PNOZ mm0.1p, with an additional integrated multi-link interface

Configurable small controllers

Features	Approvals	Order number		
		Without terminals	Push-in spring-loaded terminals	Plug-in screw terminals
Accessories [2] for all PNOZmulti Mini base units: ▸ Mini USB cable, 3 m: 312 992 ▸ Mini USB cable, 5 m: 312 993 ▸ Chip card 8 kByte, 1 piece: 779 201 ▸ Chip card 32 kByte, 1 piece: 779 211	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	772 000	751 008 (1 set)	750 008 (1 set)
▸ Ambient temperature in accordance with standard EN 60068-2-14 Temperature range –25 … + 60 °C ▸ Short-term condensation formation during operation (only with protective extra-low voltage)	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 010	751 008 (1 set)	750 008 (1 set)
▸ As PNOZ mm0p ▸ Expandable to the left using the link modules PNOZ mml1p Multi Link, PNOZ mml2p PDP and a communication module PNOZ mmc1p ETH or PNOZ mmc2p serial; a fieldbus module can be additionally connected ▸ Expandable to the right using a contact expansion module PNOZsigma: PNOZ s22 or s7, s7.1, s7.2, s10, s11 ▸ Decentralization: PDP67 modules for connecting sensor technology ▸ PVIS support	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	772 001	751 008 (1 set)	750 008 (1 set)
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	772 002	751 008 (1 set)	750 008 (1 set)

[1] Height incl. spring-loaded terminals/plug-in screw terminals

[2] For more accessories, see page 108

[3] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Configurable small controllers

Keep up-to-date on PNOZmulti Mini base units:

Webcode:
web150394
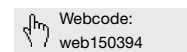
Online information at www.pilz.com

▶ Technical details – PNOZmulti Mini

PNOZmulti Mini – I/O modules

Common features:
▸ Can be configured using the
  PNOZmulti Configurator
▸ Max. 4 link modules can be connected
  to the left of the base unit
▸ 1 PNOZsigma expansion module
  (+ 1 contact expansion module)
  can be connected to the right
  of the base unit

PNOZ mml1p

PNOZ mml2p

Type	Application area
PNOZ mml1p Multi Link	Safe link module for connecting two base units: optionally with PNOZmulti 2 and PNOZmulti; as many base units as necessary can be connected using link modules
PNOZ mml2p PDP	Safe link module for connecting a base unit to up to 4 decentralized modules PDP67
PDP67 F 8DI ION **PDP67 F 8DI ION HP**	Decentralized input modules
PNOZsigma expansion modules	Contact expansion

Configurable small controllers

Features	Approvals	Order number		
		Without terminals	Push-in spring-loaded terminals	Plug-in screw terminals
▸ Max. 4 PNOZ mml1p units can be connected to the base unit ▸ Point-to-point connection via 4-core shielded, twisted-pair cable ▸ 32 virtual inputs and 32 virtual outputs ▸ Dimensions (H x W x D) in mm: 100 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 020	783 538 (1 set)	793 538 (1 set)
▸ Maximum number of devices which can be connected: - 4 PNOZ mml2p units on the left side of the base unit - 4 decentralized modules PDP67 F 8DI ION (VA) or PDP67 F 8DI ION HP (VA) to 1 PDP link module (maximum configuration: 16 PDP67 modules) - 4 sensors to 1 decentralized PDP67 module (maximum configuration: 64 sensors) ▸ Dimensions (H x W x D) in mm: 98/100 [1] x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	772 021	783 540 (1 set)	793 540 (1 set)
For further information, please refer to pages 110–111	-	-	-	
For further information, please refer to pages 34–35	-	-	-	-

[1] Height incl. spring-loaded terminals/plug-in screw terminals

Configurable small controllers

Keep up-to-date on PNOZmulti Mini I/O modules:

Webcode:
web150395

Online information at www.pilz.com

▶ Technical details – PNOZmulti Mini

PNOZmulti Mini – Fieldbus modules/communication modules

Configurable small controllers

Ethernet
Modbus

PNOZ mmc1p ETH

RS232

PNOZ mmc2p seriell

PNOZ mmc3p DP

DeviceNet

PNOZ mmc4p DN

CANopen

PNOZ mmc6p CAN

CC-Link

PNOZ mmc7p CC

EtherCAT

PNOZ mmc11p CAT

ETHERNET
POWERLINK

PNOZ mmc12p POWERLINK

Type	Application area
PNOZ mmc1p ETH	Communication module, subscriber on Ethernet TCP/IP and Modbus TCP (slave)
PNOZ mmc2p serial	Communication module with serial interface RS232
PNOZ mmc3p DP	Fieldbus module PROFIBUS-DP (Slave DPVO)
PNOZ mmc4p DN	Fieldbus module DeviceNet (slave)
PNOZ mmc6p CAN	Fieldbus module CANopen (slave)
PNOZ mmc7p CC	Fieldbus module CC-Link (slave V 1.10)
PNOZ mmc11p CAT	Fieldbus module EtherCAT CANopen over EtherCAT (conforms to DS301 V 4.02, slave)
PNOZ mmc12p PL	Fieldbus module POWERLINK (Ethernet POWERLINK V 2 protocol)

Common features:
▶ Can be configured using the PNOZmulti Configurator
▶ In the PNOZmulti Configurator, 24 virtual inputs and outputs can be defined for communication with the fieldbus; the number of inputs and outputs can be expanded to 128.
▶ Max. 1 fieldbus module and max. 1 communication module can be connected to the left of the base unit

Features	Approvals	Order number		
		Without terminals	Push-in spring-loaded terminals	Plug-in screw terminals
▶ 2 Ethernet interfaces ▶ Transmission rate 10 MBit/s ▶ Status indicators via LEDs ▶ Max. 1 communication module can be connected to the left of the base unit; a fieldbus module can also be connected ▶ Connected to base unit via a link on the back of the unit ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), CCC, KCC	772 030	-	-
▶ 1 serial interface RS232 ▶ Status indicators via LEDs ▶ Max. 1 communication module can be connected to the left of the base unit; a fieldbus module can also be connected ▶ Connected to base unit via a link on the back of the unit ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 120	CE, cULus Listed, EAC (Eurasian), CCC, KCC	772 031	783 538 (1 set)	793 538 (1 set)
▶ Station addresses from 0 ... 99, selected via rotary switch ▶ Transmission rate: max. 12 MBit/s ▶ Connection to fieldbus via female 9-pin D-Sub connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 032	783 542 (1 set)	793 542 (1 set)
▶ Station addresses from 0 … 63, selected via DIP switch ▶ Transmission rate: 500 kBit/s ▶ Connection to fieldbus via 5-pin Combicon plug-in connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 110	CE, cULus Listed, EAC (Eurasian), CCC	772 033	783 542 (1 set)	793 542 (1 set)
▶ Station addresses from 0 ... 99, selected via rotary switch ▶ Transmission rate: max. 1 MBit/s ▶ Transmission rate selected via rotary switch ▶ Connection to fieldbus via female 9-pin D-Sub connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 034	783 542 (1 set)	793 542 (1 set)
▶ Transmission rate: max. 10 MBit/s ▶ Connection to fieldbus via 5-pin Combicon plug-in connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 110	CE, cULus Listed, EAC (Eurasian), CCC	772 035	783 542 (1 set)	793 542 (1 set)
▶ Transmission rate: max. 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 115	CE, cULus Listed, EAC (Eurasian), CCC	772 036	783 542 (1 set)	793 542 (1 set)
▶ Station addresses from 1 ... 239, selected via rotary switch ▶ Transmission rate: 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector ▶ Dimensions (H x W x D) in mm: 100 x 22.5 x 110.4	CE, cULus Listed, EAC (Eurasian), CCC	772 019	783 542	793 542

Configurable small controllers

Keep up-to-date on PNOZmulti Mini fieldbus and communication modules:

Webcode: web150397
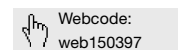
Online information at www.pilz.com

▶ Configurable safety systems PNOZmulti

PNOZ

The configurable safety system PNOZmulti is ideal when several safety functions are to be implemented on a machine. Instead of wiring, you can simply configure your safety circuit on a PC. PNOZmulti is multifunctional, freely configurable and tailor-made for use in many areas of mechanical engineering.
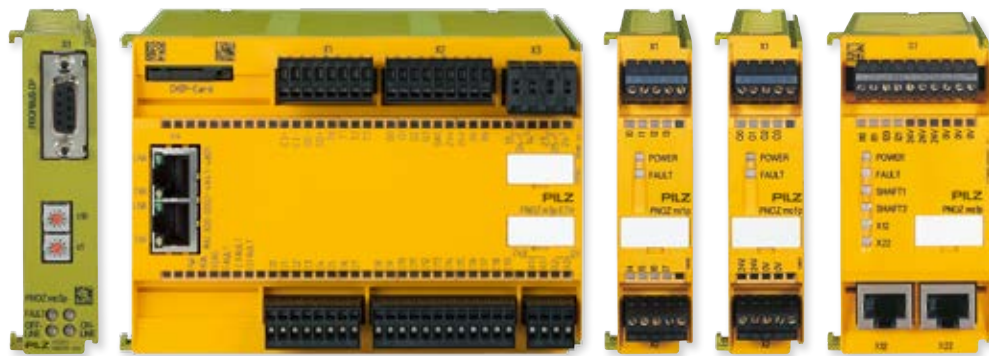
PNOZ m1p ETH

The safety system PNOZmulti monitors safety functions such as E-STOP, safety gates, light beam devices, two-hand controls and many more. All safety functions are created with the software tool PNOZmulti Configurator. Configuration of the hardware with selection of base unit and expansion modules can also be done easily via the PNOZmulti Configurator. This reduces your engineering times and the time-to-market. You can then save the completed configuration on to a chip card. From there it is transferred to the base unit.

The right module for every requirement …
If your plant expands, the PNOZmulti simply expands with it. Expansion modules are available to extend the modular system; these can be used in any combination to suit the requirement:

▶ Input and output modules,
  e.g. the safe analog input module
▶ Fieldbus modules

▶ Safe speed and standstill monitors
▶ Safe link modules for the safe connection
  of several PNOZmulti base units or for the
  safe connection of decentralized periphery

All PNOZmulti base units have 20 inputs, 4 safe semiconductor outputs and 2 relay outputs. Versions are available with serial or ETH interface.

Monitoring analog input signals safely
The safe analog input module PNOZ ma1p provides two independent, safe inputs. For each input, up to eight limit values can be defined in the PNOZmulti Configurator with just a few clicks of the mouse. The inputs are suitable for connecting transducers or encoders with standardized 10 V voltage signals or 20 mA current signals. As users you benefit from rapid commissioning and reduced wiring. With its analog input module, the PNOZmulti is particularly suitable for the process engineering sector as well as for cable car and chair lift design and for burner controls.

PNOZ ma1p

Configurable small controllers

PNOZ m2p ETH
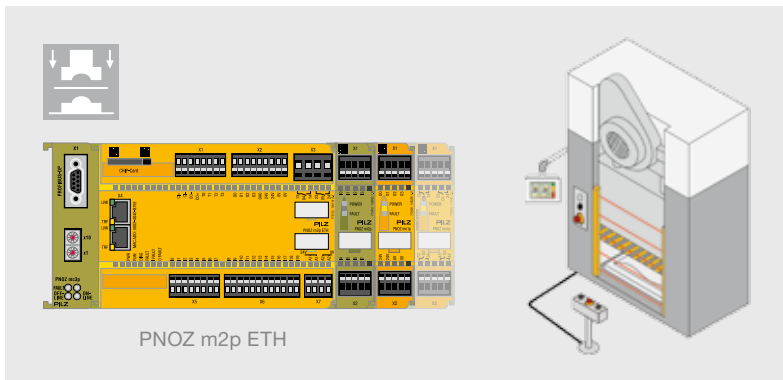
Specifically for press applications.

Use in presses

The base unit PNOZ m2p is specially designed for controlling and monitoring small and medium-sized eccentric and hydraulic presses. Approved software blocks are available for operating modes such as set-up mode, single-stroke mode and automatic mode, and for monitoring safety light curtains in single-break or double-break mode; these blocks make the system simple and economical to use.

In combination with the dual-pole semiconductor output module PNOZ mo3p, the PNOZ m2p can control press safety valves safely and efficiently.

Your benefits at a glance
▸ System which provides a solution for safety-related and automation tasks
▸ Potential savings of up to 40 % in all engineering phases thanks to a graphical configuration tool
▸ Wide variety of base units and modules for flexible, industry-wide use
▸ Simple and economical to expand by selecting compatible modules
▸ Simple, user-friendly diagnostics mean short downtimes and high plant availability
▸ Certified worldwide

PNOZ m3p ETH
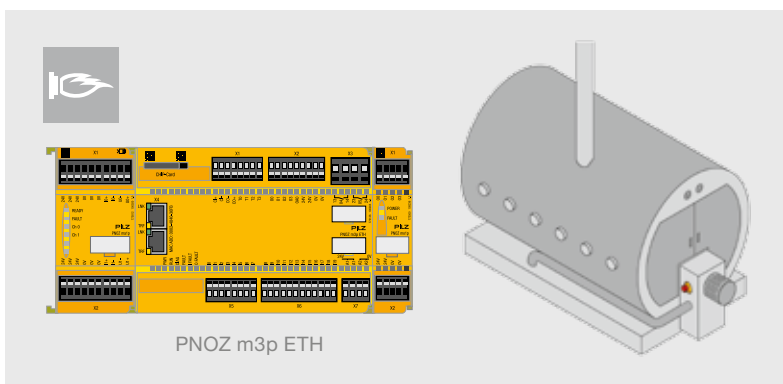
Specifically for burner management.

PNOZmulti in burner management

PNOZ m3p controls and monitors furnaces, e.g. safety sequences. The safe ignition of the fuel and the monitoring of a furnace during operation are safety-related criteria that prevent an explosion with serious damage. The base unit PNOZ m3p provides a safety-related solution that fulfils these requirements.

Configurable small controllers

Keep up-to-date on configurable safety systems PNOZmulti:

Webcode: web150497
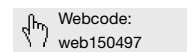
Online information at www.pilz.com

▶ Technical details – PNOZmulti

PNOZmulti – Base units

PNOZ m1p

PNOZ m1p ETH

Configurable small controllers

Type	Application area
PNOZ m0p	▶ Base unit – for 3 … 6 safety functions ▶ Only link modules and fieldbus modules can be connected, no other expansion modules can be used
PNOZ m0p ETH	
PNOZ m1p	Base unit – for 4 or more safety functions and for automation functions
PNOZ m1p ETH	
PNOZ m1p coated version [1]	
PNOZ m1p ETH coated version [1]	
PNOZ m2p	Base unit – specifically for press applications: Monitoring of operating modes such as set-up mode, single-stroke mode and automatic mode, safety light curtains in single-break and double-break mode, camshaft controllers with run monitoring, and press safety valves
PNOZ m2p ETH	
PNOZ m3p	Base unit – specifically for burner management: Control and monitoring of furnaces, e.g. monitoring of safety sequences, combustion air pressure, ignition, flame, external compound controller and leaktightness control; plus control of safety valves, ignition valves, exhaust valves, ignition, external compound controller and combustion air blower
PNOZ m3p ETH	

Features	Approvals	Order number		
		Without terminals	Spring-loaded terminals	Plug-in screw terminals

▶ Application area: for connecting E-STOP devices, two-hand buttons, safety gate limit switches, light beam devices, scanners, enabling switches, safety gate switches PSEN, operating mode selector switches, muting, pressure-sensitive mats and sensors
▶ Configurable using the PNOZmulti Configurator via a chip card or the RS232 interface/Ethernet interface
▶ Exchangeable program memory: chip card
▶ Diagnostic interface
▶ Max. 1 fieldbus module can be connected
▶ PNOZ m1p/PNOZ m2p/PNOZ m3p: max. 8 expansion modules can be connected
▶ Inputs/outputs:
  - 20 freely configurable inputs
  - Positive-guided relay outputs: 2 safety outputs – up to PL e and SIL CL 3, depending on the application
  - Semiconductor outputs: 4 safety outputs – up to PL e and SIL CL 3, depending on the application; 1 output for standard applications
  - 4 test pulse outputs
  - 1 cascading input and output, can also be used as a standard output
▶ Integrated interfaces:
  - PNOZ mxp: serial interface RS232
  - PNOZ mxp ETH: 2 Ethernet interfaces
▶ Supply voltage (U_B): 24 VDC
▶ Voltage/current/rating:
  - Outputs using semiconductor technology: 24 VDC/2 A/48 W
  - Relay outputs: DC1: 24 V/6 A/144 W
▶ Dimensions (H x W x D) in mm: 94 x 135 x 121
 	
Accessories for all PNOZmulti base units:
▶ Chip card 8 kByte, 1 piece: 779 201
▶ Chip card 32 kByte, 1 piece: 779 211
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC, KCC	773 110	783 100	793 100

	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 113	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC, KCC	773 100	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 103	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC, KCC	773 105	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 104	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC, KCC	773 120	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 123	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC, KCC	773 125	783 100	793 100
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 126	783 100	793 100

[1] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Configurable small controllers

Keep up-to-date on PNOZmulti base units:

Webcode: web150378

Online information at www.pilz.com

▶ Technical details – PNOZmulti

PNOZmulti – Input modules

PNOZ mi1p

PNOZ mi2p

Type	Application area	Inputs/outputs
PNOZ mi1p	Safe input module	8 safe inputs
PNOZ mi1p coated version [1]	Safe input module	8 safe inputs
PNOZ mi2p	Input module	8 inputs for non-safety-related functions

PNOZmulti – Safe analog input module

PNOZ ma1p

Type	Application area	Inputs/outputs
PNOZ ma1p PNOZ ma1p coated version [1]	▶ Safe analog input module ▶ Exact analog value can be forwarded to a fieldbus for diagnostic purposes	▶ 2 safe analog inputs for voltage or current measurement (configurable) ▶ Each input can be configured separately

Features	Approvals	Order number		
		Without terminals	**Spring-loaded terminals**	**Plug-in screw terminals**
▶ Max. 8 input modules can be connected to the base unit ▶ Connected to base unit via a link on the back of the unit	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 400	783 400 (1 set)	793 400 (1 set)
		773 405	783 400 (1 set)	793 400 (1 set)
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 410	783 400 (1 set)	793 400 (1 set)

Features	Approvals	Order number		
		Without terminals	**Spring-loaded terminals**	**Plug-in screw terminals**
▶ Range monitoring (4 range limits can be configured) ▶ Threshold value monitoring (8 limit values can be configured) ▶ Voltage range: –10.24 … +10.2375 V ▶ Current range: 0 … 25.59 mA ▶ Can be connected to the left of the base unit ▶ Max. 4 PNOZ ma1p units can be connected to the base unit ▶ Status indicators ▶ Dimensions (H x W x D) in mm: 94 x 45 x 121	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 812	783 700 (1 set)	793 700 (1 set)
		773 813	783 700 (1 set)	793 700 (1 set)

[1] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Keep up-to-date on PNOZmulti I/O modules:

Webcode: web150379

Online information at www.pilz.com

▶ Technical details – PNOZmulti

PNOZmulti – Output modules

PNOZ mo1p

PNOZ mc1p

Type	Application area	Outputs
PNOZ mo1p	Safe semiconductor output module: switching 24 V actuators	Outputs using semiconductor technology: 4 safety outputs
PNOZ mo1p coated version [1]		
PNOZ mo2p	Safe relay output module: volt-free switching of actuators	Relay outputs: 2 safety outputs
PNOZ mo2p coated version [1]		
PNOZ mo3p	Safe semiconductor output module, 2-pole	2-pole outputs using semiconductor technology: 2 safety outputs
PNOZ mo4p	Safe relay output module: volt-free switching of actuators	Relay outputs: 4 safety outputs
PNOZ mo4p coated version [1]		
PNOZ mo5p	Safe relay output module: to control the safety valves on a burner in accordance with EN 50156	Positive-guided relay outputs, diverse: 4 safety outputs
PNOZ mc1p	Output module: status message to PLC	16 auxiliary outputs using semiconductor technology
PNOZ mc1p coated version [1]		

Common features
▶ Safety outputs: up to PL e and SIL CL 3, depending on the application (except PNOZ mc1p)
▶ Connected to base unit via a link on the back of the unit
▶ Dimensions (H x W x D) in mm: 94 x 22.5 x 121,
  PNOZ mc1p: 94 x 45 x 121

Configurable small controllers

Outputs: Voltage/ current/rating	Features	Approvals	Order number		
			Without terminals	Spring-loaded terminals	Plug-in screw terminals
24 VDC/2 A/48 W	▸ Max. 6 output modules can be connected to the right of the base unit	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 500	783 400 (1 set)	793 400 (1 set)
			773 505	783 400 (1 set)	793 400 (1 set)
DC1: 24 V/6 A		CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 520	783 520 (1 set)	793 520 (1 set)
			773 525	783 520 (1 set)	793 520 (1 set)
24 V DC/2 A		CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 510	783 400 (1 set)	793 400 (1 set)
DC1: 24 V/6 A		CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 536	783 536 (1 set)	793 536 (1 set)
			773 537	783 536 (1 set)	793 536 (1 set)
DC1: 24 V/6 A/144 W		CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 534	783 536 (1 set)	793 536 (1 set)
-	▸ Max. 8 output modules can be connected to the right of the base unit	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 700	783 700 (1 set)	793 700 (1 set)
			773 705	783 700 (1 set)	793 700 (1 set)

[1] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Configurable small controllers

Keep up-to-date on PNOZmulti I/O modules:

Webcode: web150379

Online information at www.pilz.com

▶ Technical details – PNOZmulti

PNOZmulti – Safe speed and standstill monitors

Common features
- ▸ Application area: The expansion modules monitor drives for standstill, speed and direction of rotation in set-up and automatic mode up to PL e of EN ISO 13849-1 and up to SIL CL 3 of EN IEC 62061
- ▸ Monitoring of 2 independent axes (8 limit frequencies can be selected), PNOZ ms4p: 1 axis
- ▸ Connection technology on incremental encoder: RJ-45 female connector, 8-pin
- ▸ Connection technology on proximity switch: plug-in connection terminals
- ▸ Max. 4 speed monitors can be connected to the base unit
- ▸ Measured variables: standstill, speed, direction of rotation
- ▸ Axis types and start mode can be selected in the PNOZmulti Configurator
- ▸ Dimensions (H x W x D) in mm: 94 x 45 x 121

PNOZ ms1p

PNOZ ms4p

Type	Connectable encoders
PNOZ ms1p	Proximity switch, incremental encoder Sin/Cos, TTL (5 V)
PNOZ ms2p	Proximity switch, incremental encoder Sin/Cos, TTL (5 V), HTL (24 V)
PNOZ ms2p HTL	Proximity switch, incremental encoder HTL
PNOZ ms2p TTL	Proximity switch, incremental encoder Sin/Cos, TTL (RS422, 5 V)
PNOZ ms2p TTL coated version [1]	
PNOZ ms3p	Incremental encoder Sin/Cos, TTL (RS422, 5 V), HTL (24 V)
PNOZ ms3p HTL	Incremental encoder (12 V … 30 V)
PNOZ ms3p TTL	Incremental encoder Sin/Cos, TTL (5 V)
PNOZ ms4p	Incremental encoder Sin/Cos, TTL (5 V), HTL (24 V)

PNOZmulti – Link modules

Common features
- ▸ Can be configured using the PNOZmulti Configurator
- ▸ Dimensions (H x W x D) in mm: 94 x 22.5 x 121

PNOZ ml1p

Type	Application area
PNOZ ml1p	To safely connect two PNOZmulti base units; tree or ring structure possible
PNOZ ml1p coated version [1]	
PNOZ ml2p	To safely connect a base unit to up to 4 decentralized modules PDP

Configurable small controllers

Features	Approvals	Order number		
		Without terminals	Spring-loaded terminals	Plug-in screw terminals
▸ Connection per axis: 1 incremental encoder or 2 proximity switches or one of each ▸ Encoder types can be selected in the PNOZmulti Configurator ▸ Proximity detectors are connected directly to the terminals	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 800	783 800 (1 set)	793 800 (1 set)
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 810		
▸ Incremental encoder with differential output signals from 12 Vss ... 30 Vss, i.e. now also suitable for HTL encoders ▸ Independent of the supply voltage of the incremental encoder, i.e. also for e.g. encoders with 8 V supply voltage	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 815		
▸ Connection per axis: 1 incremental encoder or 2 proximity switches or 1 incremental encoder and 1 proximity switch	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773 816		
		773 811		
▸ Connection per axis: 1 incremental encoder	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 820		
▸ Connection per axis: 1 incremental encoder with differential output signals from 12 Vss ... 30 Vss	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 825		
▸ Connection per axis: 1 incremental encoder from 0.5 Vss ... 5 Vss	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 826		
▸ Monitoring of 1 axis (16 limit frequencies can be selected) ▸ Connection per axis: 1 incremental encoder from 0.5 Vss ... 30 Vss	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773 830		

Features	Approvals	Order number		
		Without terminals	Spring-loaded terminals	Plug-in screw terminals
▸ Point-to-point connection via 4-core shielded, twisted-pair cable ▸ Transfer of 32 bit input data and 32 bit output data (virtual I/Os) ▸ Max. 4 PNOZ ml1p units can be connected to the base unit	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 540	783 400 (1 set)	793 400 (1 set)
		773 545		
▸ Max. 4 PNOZ ml2p units can be connected to the base unit ▸ Max. 4 decentralized modules PDP67 F 8DI ION can be connected to the link module PNOZ ml2p	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773 602		

Keep up-to-date on PNOZmulti I/O modules:

Webcode: web150379
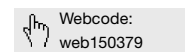
Online information at www.pilz.com

[1] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

▶ Technical details – PNOZmulti

PNOZmulti – Communication modules/fieldbus modules

PNOZ mc2.1p

PNOZ mc3p

PNOZ mc4p
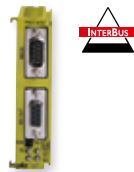
PNOZ mc5p

PNOZ mc5.1p

PNOZ mc6p

Type	Application area
PNOZ mc2.1p	Fieldbus module EtherCAT subscriber (slave), supports CANopen over EtherCAT
PNOZ mc3p	Fieldbus module PROFIBUS-DP subscriber (slave)
PNOZ mc4p	Fieldbus module DeviceNet subscriber (slave)
PNOZ mc4p coated version [1]	
PNOZ mc5p	Fieldbus module Interbus subscriber (slave)
PNOZ mc5.1p	Fieldbus module Interbus fiber-optic cable (FO) subscriber (slave)
PNOZ mc0p power supply	Power supply for Interbus fieldbus modules PNOZ mc5p/PNOZ mc5.1p
PNOZ mc6p	Fieldbus modules CANopen subscriber (slave)
PNOZ mc6p coated version [1]	
PNOZ mc6.1p	

Common features
- ▶ Can be configured using the PNOZmulti Configurator
- ▶ Data can be used for visualization/diagnostics or for control
- ▶ Status indicators via LEDs
- ▶ Max. 1 fieldbus module can be connected to the base unit
- ▶ Connection to the base unit using jumpers on the back of the unit

Dimensions (H x W x D) in mm	Features	Approvals	Order number
94 x 22.5 x 114	▶ Transmission rate: max. 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector	CE, cULus Listed, EAC (Eurasian), CCC	773 713
94 x 22.5 x 119	▶ Station addresses from 0 ... 99, selected via rotary switch ▶ Transmission rate: max. 12 MBit/s ▶ Connection: 9-pin D-Sub female connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 732
94 x 22.5 x 122	▶ Station addresses from 0 ... 63, selected via DIP switch ▶ Transmission rate: 125, 250, 500 kBit/s ▶ Connection to fieldbus via 5-pin Combicon plug-in connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 711 773 729
94 x 22.5 x 119	▶ Transmission rate: 500 kBit/s, 2 MBit/s, selected via jumper ▶ Connection to IBS IN via 9-pin D-Sub male connector, to IBS OUT via 9-pin D-Sub female connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 723
94 x 22.5 x 121	▶ Transmission rate: 500 kBit/s, 2 MBit/s, selected via jumper ▶ Status indicators for communication with Interbus and for errors ▶ Connection to fieldbus via F-SMA connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 728
94 x 22.5 x 121	▶ Interface for connecting the base unit and a fieldbus module ▶ Galvanic isolation ▶ Status indicators ▶ Plug-in terminals (either with spring-loaded terminals or screw connection)	CE, cULus Listed, EAC (Eurasian), CCC	▶ PNOZ mc0p power supply _____ 773 720 ▶ Spring-loaded terminals (1 set) _____ 783 400 ▶ Plug-in screw terminals (1 set) _____ 793 400
94 x 22.5 x 119	▶ Station addresses from 0 ... 99, selected via rotary switch ▶ Transmission rate: max. 1 MBit/s, selected via rotary switch ▶ Supported protocols: - PNOZ mc6p: CiA DS-301 V3.0 - PNOZ mc6.1p: CiA DS-301 V4.0.2 ▶ Connection to fieldbus via male 9-pin D-Sub connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 712 773 727
		CE, cULus Listed, EAC (Eurasian), CCC	773 733

[1] 🌡️💧☠️ For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Configurable small controllers

Keep up-to-date on PNOZmulti communication modules:

👆 Webcode: web150380

Online information at www.pilz.com

▶ Technical details – PNOZmulti

PNOZmulti – Communication modules/fieldbus modules

PNOZ mc7p

PNOZ mc8p
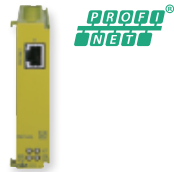
PNOZ mc9p

PNOZ mc10p
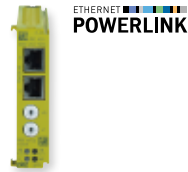
PNOZ mc12p

Type	Application area
PNOZ mc7p	Fieldbus module CC-Link subscriber (slave)
PNOZ mc7p coated version[1]	
PNOZ mc8p	Fieldbus module subscriber on EtherNet IP/ Modbus TCP (slave)
PNOZ mc8p coated version[1]	
PNOZ mc9p	Fieldbus module subscriber on PROFINET
PNOZ mc10p	Fieldbus module Sercos III subscriber (Slave)
PNOZ mc12p	Fieldbus module POWERLINK (Ethernet POWERLINK V 2 protocol), controlled node

Common features
▶ Can be configured using the PNOZmulti Configurator
▶ Data can be used for visualization/diagnostics or for control
▶ Status indicators via LEDs
▶ Max. 1 fieldbus module can be connected to the base unit
▶ Connection to the base unit using jumpers on the back of the unit

Configurable small controllers

Dimensions (H x W x D) in mm	Features	Approvals	Order number
94 x 22.5 x 122	▶ Station addresses from 0 ... 63, selected via rotary switch ▶ Occupied stations: 2 ▶ Transmission rate: max. 10 MBit/s, selected via rotary switch ▶ Connection: 5-pin Combicon plug-in connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 726
		CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	773 725
94 x 22.5 x 114	▶ Transmission rate: max. 10 MBit/s ▶ IP address is set using DIP switches on the front of the unit ▶ Connection to fieldbus via RJ-45 connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 730
		CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	773 734
94 x 22.5 x 114	▶ Device name can be configured in the PNOZmulti Configurator ▶ Diagnostics and alarm function are not supported ▶ Transmission rate: 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC, KCC	773 731
94 x 22.5 x 114	▶ Transmission rate: max. 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector	CE, cULus Listed, EAC (Eurasian), CCC	773 715
94 x 22.5 x 114	▶ Station addresses from 1 ... 239, selected via rotary switch ▶ Transmission rates 100 MBit/s ▶ Connection to fieldbus via RJ-45 connector	CE, cULus Listed, EAC (Eurasian), CCC	773 719

[1] For increased environmental requirements (e.g. extended temperature range, condensation tolerance, resistance against corrosive gases)

Configurable small controllers

Keep up-to-date on PNOZmulti communication modules:

Webcode: web150380
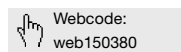
Online information at www.pilz.com

Software tools for small controllers

Software tool – PNOZmulti Configurator

PNOZ

Type	Features
PNOZmulti Configurator	▸ Graphical tool for configuring and programming the configurable small controllers PNOZmulti ▸ Project development, configuration generation, documentation and commissioning ▸ Data transmission varies depending on the used base unit: via serial interface, USB interface, ETH interface, chip card or USB stick ▸ User interface in German, English, French, Italian, Spanish, Japanese and Chinese (selectable) ▸ System requirements (version 10.0.0 or higher): - Operating system: Windows Server 2008/Vista - Standard-PC with min. 1 GHz processor - RAM: min. 1024 MB - Hard drive: 20 GB; min. 15 GB free memory space - Graphics card: supports Super VGA graphics - Browser: Internet Explorer version 9 or higher ▸ To be able to fully utilise the PNOZmulti Configurator, you will need a valid licence in addition to the software package because without a licence the PNOZmulti Configurator will only run in the demo version; various licences are available ▸ Each licence type is available as a full version or service version - Full version: The full version provides the whole functional range of a licence - Service version: The service version of a licence is intended for service and maintenance; it provides only limited editing options

Software tool – Diagnostic solution PVIS

PVIS®
Professional
diagnostic solution

Type	Features
PVIS	Diagnostic configurations can be created for all PVIS-capable control systems. This is done using the respective system software of the controller, e.g. using the PNOZmulti Configurator. The diagnostic configuration contains event notifications which can be displayed e.g. if errors occur in or at the control system, if the operating status of the control system changes or in the case of defined conditions.
PVIS OPC Server UA/ OPC Server	The OPC Server "PVIS OPC Server UA" from Pilz is used for displaying the event notifications in visualization software. The OPC Server is installed on a PC or a PMI operator terminal.
PVIS OPC Configurator	The PVIS OPC Configurator is used to create an OPC project which contains the diagnostic configurations and the OPC data for the individual control systems. The OPC Server connects to the control systems, reads in the data and makes it available in the namespace. In the namespace, not only the event notifications can be viewed but also status information and the process data of the control systems.
ActiveX Control UA/ ActiveX Control	In order to retrieve the event notifications of a control system from the OPC Server and to display them in visualization software, ActiveX control can use "PVIS ActiveX Control UA".

Configurable small controllers

Licence type	Order number		
	Type	Full version	Service version
▶ **Basic Licence:** Single user licence, issued to one owner (company name and location/project must be stated) ▶ **User Licence:** Discounted licence for an additional workstation, issued to the owner of a basic licence ▶ **Lite Licence:** Licence limited to the base units PNOZ m0p and the base units PNOZmulti Mini, for use on one workstation ▶ **Multi User Licence:** Multi-user licence, graduated according to the number of workstations (up to 25, 50, 100 and over 100) ▶ **Project Licence:** Licence to use the software within a contractually limited framework ▶ **Basic/User/Multi User/Project Upgrade Licence:** Discounted licence to allow existing licence owners to upgrade to a newer version of the software ▶ **Time Limited Licence:** Basic licence limited to 2, 3 or 4 months	Software can be downloaded from the Internet ▶ Basic Licence ▶ User Licence ▶ Lite Licence ▶ Multi User Licence ▶ Project Licence ▶ Time Limited Licence, 2 months ▶ Time Limited Licence, 3 months ▶ Time Limited Licence, 4 months **Upgrade** ▶ Basic Upgrade Licence ▶ User Upgrade Licence ▶ Multi User Upgrade Licence ▶ Project Upgrade Licence	 773 010B 773 010K 773 010L 773 010M 773 010G 773 010S 773 010R 773 010Q 773 010U 773 010V 773 010N 773 010W	 773 011B 773 011K 773 011L 773 011M 773 011G - - - 773 011U 773 011V 773 011N 773 011W

Keep up-to-date
on the software
tool PNOZmulti
Configurator:

🖐 Webcode:
web150399

Online information
at www.pilz.com

Configurable small controllers

Licence type	Order number		
	Type	Runtime licence	Project licence
▶ **Runtime licence:** OPC/OPC UA server application which is licensed for a target computer and can be used without time restriction ▶ **Project licence:** Licence to use the software within a contractually limited framework	PVIS OPC Server for PMI, point-to-point	261 905	261 905G
	PVIS OPC Server for PMI, 8 devices	261 906	261 906G
	PVIS OPC Server for PC, point-to-point	261 907	261 907G
	PVIS OPC Server for PC, unlimited	261 908	261 908G

Keep up-to-date
on the software
tool "Diagnostic
solution PVIS":

🖐 Webcode:
web150398

Online information
at www.pilz.com

▶ Accessories – PNOZmulti

Accessories – Configurable small controllers PNOZmulti

PNOZmulti Toolkit

Chipcard

PSEN ma adapter

Type	Application area/features	Order number
PNOZmulti Toolkit	The tool kit in transport case contains the accessories required for starting with PNOZ m B0, PNOZmulti Mini and PNOZmulti: Documentation folder with the PNOZmulti Configurator software and manual, chip card reader, chip card set with 10 chip cards incl. chip card adapter for rewriting broken-out chip cards, configuration cable (5 m), mounting bracket.	779 000
USB memory 512 MB	For base unit PNOZ m B1, for follow-up orders only	779 213
Chipcard	Chip card for the base units PNOZ m B0, PNOZmulti Mini, PNOZmulti (obligatory accessories)	▶ 8 kByte, 1 piece _____ 779 201 ▶ 8 kByte, 10 piece _____ 779 200 ▶ 32 kByte, 1 piece _____ 779 211 ▶ 32 kByte, 10 pieces __ 779 212
Chipcard Holder	Chip card holder	779 240
Chipcard Reader	Chip card reader, PNOZmulti Configurator version 9.6.0 or higher	779 230
PNOZmulti Seal	Adhesive label for chip card, 12 pieces	779 250
SafetyNET p Cable	Connection cable for all link modules of the small controllers PNOZmulti, available by the meter 1 … 500 m, signal yellow RAL1003	380 000
SafetyNET p connector RJ45s	Plug-in connector	380 400
PSSu A RJ45-CAB 1.5M	Patch cable with RJ-45 connector, light grey	▶ 1.5 m _____ 314 094
PSSu A USB-CAB03	Mini USB cable for the base units PNOZ m B0 and PNOZmulti Mini	▶ 3 m _____ 312 992 ▶ 5 m _____ 312 993
PNOZ mli1p	Cable for safe connection of 2 link modules PNOZ ml1p, preassembled in spring-loaded or screw terminal variant	▶ 5-pin shielded, push-in spring-loaded terminals - 1.5 m _____ 773 896 - 5 m _____ 773 893 - 10 m _____ 773 894 - 50 m _____ 773 895 ▶ Plug-in screw terminals - 1.5 m _____ 773 897 - 5 m _____ 773 890 - 10 m _____ 773 891 - 50 m _____ 773 892
PSEN ma adapter	Adapter for connection to PSENmag safety switches	380 300
PSEN cs adapter	Adapter for connection to PSENcode safety switches	380 301

Accessories – Configurable small controllers PNOZmulti

PNOZ msi1Ap

MM A MINI-IO-CAB

Type	Application area/features	Order number	
PNOZ msi1Ap Adapter Si/Ha 25/25	▸ Connection cable for the safe speed and standstill monitors PNOZ ms1p/PNOZ ms2p/PNOZ ms3p, used to connect incremental encoders ▸ Connection cable for all common makes of drive ▸ Connection to drive and incremental encoder via 25-pin or 15-pin D-Sub male and female connector, or wired with stranded cable ▸ For more information, please refer to the operating instructions	▸ 2.5 m	773 840
		▸ 5 m	773 844
PNOZ msi1Bp Adapter Si/Ha 25/25		▸ 2.5 m	773 841
		▸ 5 m	773 839
PNOZ msi3Ap Adapter Si/Ha 15/15		▸ 2.5 m	773 842
PNOZ msi3Bp Adapter Si/Ha 15/15		▸ 2.5 m	773 843
PNOZ msi5p Adapter Bos/Rex 15/15		▸ 2.5 m	773 857
		▸ 1.5 m	773 858
PNOZ msi6p Adapter Elau 9/9		▸ 7.5 m	773 859
		▸ 2.5 m	773 860
		▸ 1.5 m	773 861
PNOZ msi7p Adapter SEW 15/15		▸ 2.5 m	773 864
		▸ 1.5 m	773 865
PNOZ msi8p Adapter Lenze 9/9		▸ 2.5 m	773 862
		▸ 1.5 m	773 863
PNOZ msi9p adapter cable		▸ 5.0 m	773 856
		▸ 2.5 m	773 854
		▸ 1.5 m	773 855
PNOZ msi19p ADAPTER ELAU PACDrive3		▸ 2.5 m	773 847
		▸ 1.5 m	773 846
PNOZ msi b1 Box 9p	▸ Adapter box for PNOZ msxp speed monitoring modules PNOZmulti ▸ x-pin D-Sub male connector/female connector, 2 x female, 1 x male	▸ 9-pin	773 882
PNOZ msi b1 Box 15p		▸ 15-pin	773 880
PNOZ msi b1 Box 25p		▸ 25-pin	773 883
PNOZ msi S09	▸ Connector sets/adapters for connecting frequency converters to speed monitors PNOZ msxp, PNOZ s30, PNOZ m EF 1MM/2MM, adapter box PNOZ msi b1 Box ▸ Plug-in connector X1/X2: x-pin D-Sub male connector/female connector	▸ 9-pin	773 870
PNOZ msi S15		▸ 15-pin	773 871
PNOZ msi S25		▸ 25-pin	773 872
PNOZ msi9p	▸ Connection cable for adapter box PNOZ msi b1 Box ▸ Connection via RJ-45 connector, stranded wire cables with wire end ferrules	▸ 1.5 m	773 855
PNOZ msi10p		▸ 2.5 m	773 854
PNOZ msi11p		▸ 5 m	773 856
PNOZ msi b0 cable 15/RJ45	▸ For adapter box PNOZ msi b1 Box ▸ x-pin D-Sub male connector/ 8-pin RJ-45 connector	▸ 15-pin, 0.3 m	773 881
PNOZ msi b0 cable 25/RJ45		▸ 25-pin, 2.5 m	773 884
MM A MINI-IO-CAB	▸ Adapter cable for PNOZmulti 2, PNOZ m EF 1MM and PNOZ m EF 2MM ▸ Shielded ▸ Preassembled 8-pin Mini IO male connector at one end	▸ 1.5 m	772 200
		▸ 2.5 m	772 201
		▸ 5.0 m	772 202

Configurable small controllers

▶ Decentralized modules PDP67

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

PDP67 F 8DI ION

Decentralized and passive – decentralized 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 devices.

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 decentralized
modules optimize 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.

Configurable small controllers

Type code for decentralized modules PDP67

PDP67 F 8DI ION HP VA

Product area Control technology	Design	Function	Number of inputs	Technology type	Variant	Material
Product range **D**ecentralized **P**eriphery	**67** Acc. to protection class IP67	**F** Failsafe	**8DI** 8 digital inputs **4** 4 digital inputs	**ION** I/Onet p **code** PSENcode	**HP** High power	**VA** With stainless steel elements **PT** Overmoulded variant with plastic thread
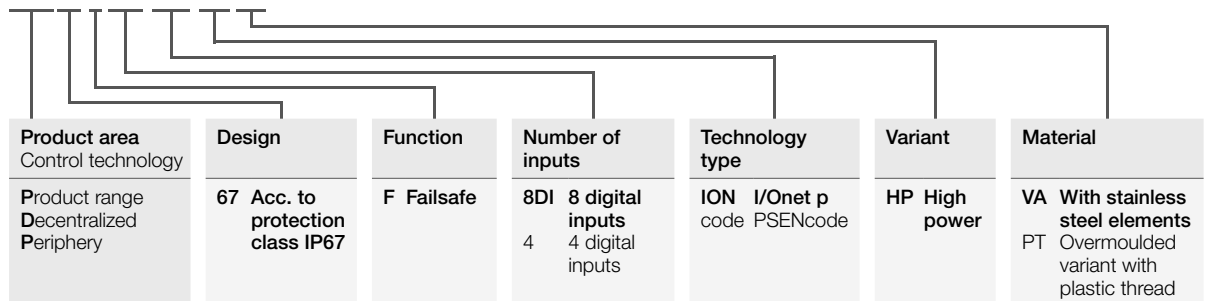
Keep up-to-date
on decentralized
modules PDP67:

Webcode:
web150510

Online information
at www.pilz.com

iF DESIGN AWARD 2017

PDP67 F 8DI ION PT

New decentralized input module PDP67 F 8DI ION PT

Thanks to an improved manufacturing process, the new decentralized input module is a cost-effective alternative to existing solutions on the market. This new addition to the range of Pilz decentralized field devices allows modular machine concepts to be planned and implemented with ease.

Your benefits at a glance

▸ Less planning and design work thanks to simple installation
▸ Simple implementation of a modular machine concept
▸ Saving of space in the control cabinet
▸ Integrated in dirt and water-repellent housings
▸ Can be used for applications with high demands on hygiene

Technical details – Modules for alternative connection options for sensors

PDP67 F 4 code

PDP67 Connector cs

Type	Features	Safety	Approvals	Order number
PDP67 F 8DI ION	Decentralized 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			CE, TÜV, [1]	773616
PDP67 F 8DI ION HP	Decentralized 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 Connector cs	Adapter for connection cable to the evaluation device	-	-	773610
PDP67 Connector cs VA			-	773612

[1] Product labelling for the North American market is currently in preparation

Configurable small controllers

▶ Cable navigator

The cable navigator helps in the creation of your application. It provides a fast, simple overview of which cable and which adapter can be used to connect to the respective evaluation device and on various sensors.
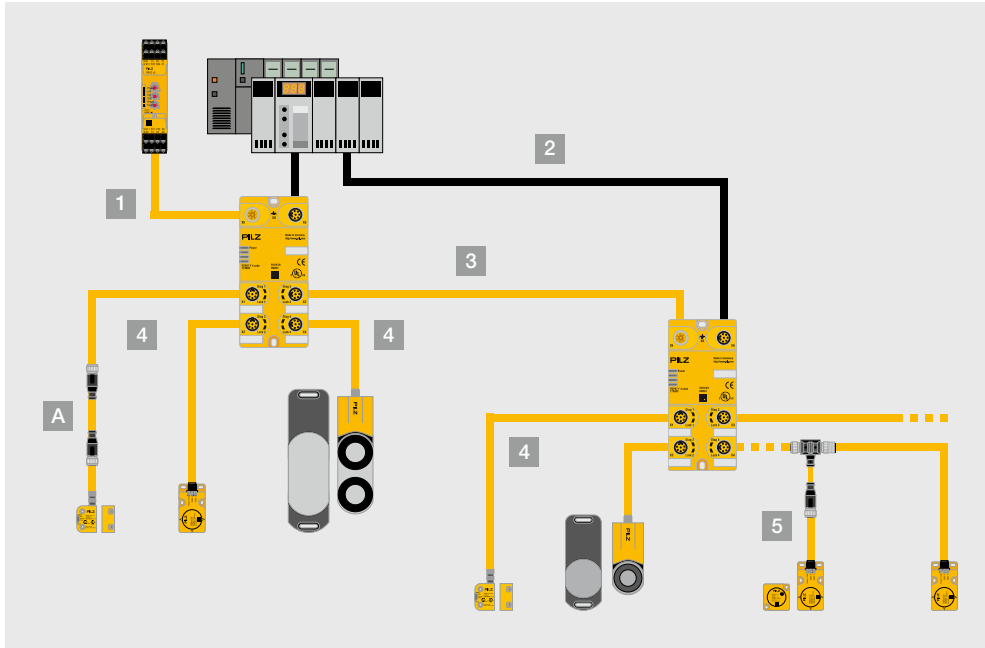
Use of cables for an application with PDP67 F 4 code.
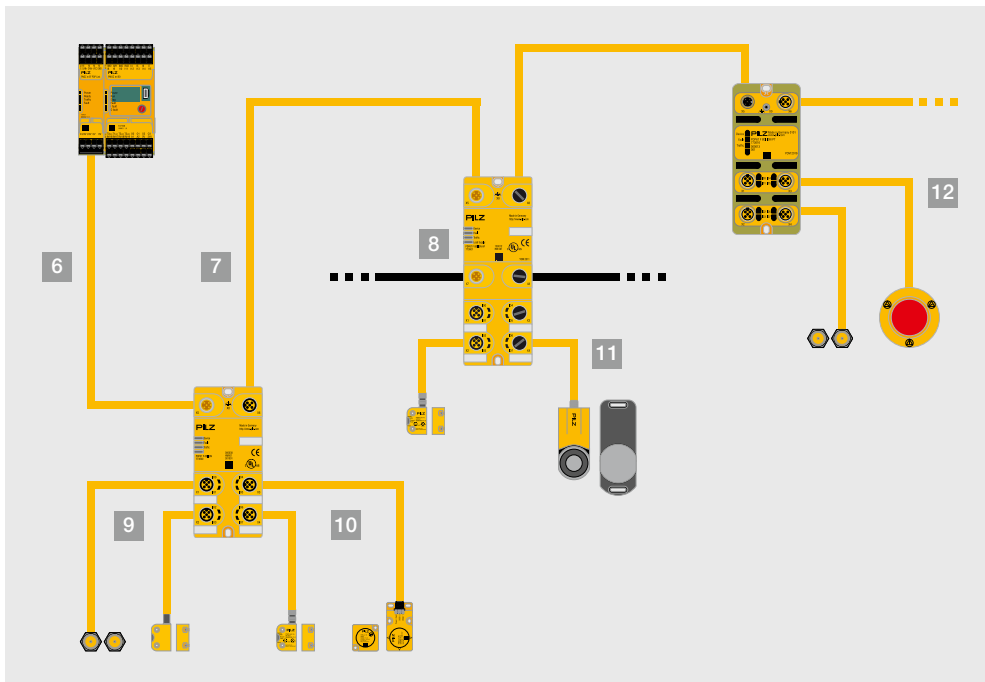
Use of cables for an application with PDP67 F 8DI ION.

Cable navigator	
Type	
A	Adapter for M8 connection, 8-pin sensors
1	Connection cable evaluation device – PDP67 (X5)
2	Connection cable standard evaluation device – PDP67 (X6)
3	Connection cable PDP67 (X1–X4) – PDP67 (X5)
4	Connection cable PSENcode, PSENslock, PSENini (X1–X4)
5	PSEN Y-junction/PSEN T-junction for series connection
6	Connection cable PNOZ m EF PDP Link/PNOZ ml2p/ PNOZ mml2p – PDP67 (X5)
7	Connection cable PDP67 (X6) – PDP67 (X5)
8	Supply cable PDP67 F 8DI ION HP (X7–X8)
9	Connection cable PSENmag (X1–X4)
10	Connection cable PSENcode (X1–X4)
11	Connection cable PSENslock (X1–X4)
12	Connection cable PIT, sensors without M12 connection (X1–X4)

Features	Approvals	Order number					
		2 m	3 m	5 m	10 m	20 m	30 m
PSENconverter, straight, M8, 8-pin, socket to M12, 8-pin, connector	UL	540329	-	-	-	-	-
PSENcable, straight, M12, 8-pin, open-ended socket	UL	-	-	540319	540320	540321	540333	540326
PDP67 cable, straight, M12, 8-pin, open-ended connector	UL	-	380700	-	380701	380702	380703	380704
PSENcable, straight, M12, 8-pin, plug/socket	UL	-	540340	-	540341	540342	540343	540344
PSENcable, straight, M12, 8-pin, plug/socket	UL	-	540340	-	540341	540342	540343	540344
PSEN Y-junction M8-M12/M12, pigtail, series connection with M8, 8-pin	-	540337	-	-	-	-	-	-
PSEN Y-junction M12-M12/M12, pigtail, series connection with M12, 8-pin	-	540338	-	-	-	-	-	-
PSEN T-junction, M12, diagnostic connector	-	540331	-	-	-	-	-	-
PSEN op cable, straight, M12, 5-pin, open-ended socket	UL	-	-	630310	630311	630312	630298	630297
PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
X7: PSS67 supply cable, straight, M12, 5-pin, open-ended socket, B-coded	UL	-	-	380256	380257	380258	-	-
X7–X8: PSS67 supply cable, straight, M12, 5-pin, plug/socket, B-coded	UL	-	-	380250	380251	380252	-	-
n-type: PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
p-type (M8, 4-pin): PSS67 cable, straight, M8, 4-pin, socket, M12, 4-pin, connector	UL	-	-	380200	380201	380202	-	380203
Adapter for p-type: PSENmag adapter	-	-	380300	-	-	-	-	-
n-type: PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
p-type (M12, 8-pin): PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
Adapter for p-type: PSEN cs adapter	-	-	380301	-	-	-	-	-
n-type: PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
p-type (M12, 8-pin): PSS67 cable, straight, M12, 5-pin, plug/socket	UL	-	-	380208	380209	380210	380220	380211
PSEN sl adapter	-	-	380325	-	-	-	-	-
PDP67 cable, straight, M12, 5-pin, open-ended connector	UL	-	-	380705	380709	380706	380707	380708

Configurable small controllers

▶ Controllers and I/O systems

You can use controllers and decentralized I/O systems from Pilz to easily and flexibly implement safety and automation applications of any size: machines with an elementary function range, machines with multiple axes, interlinked plant and machinery. High availability and productivity, as well as maximum safety, are guaranteed for your plant and machinery.

▶ Controllers and I/O systems PSSuniversal

The controllers and I/O systems PSSuniversal from Pilz can be used for the most diverse applications and offer maximum flexibility. Various hardware and software components for safety and automation enable different combinations for implementing your application. Openness and easy handling are key features of our systems.

Overview of product range PSSuniversal

Head modules

Head modules with control functions

PSSu PLC   PSSu multi

Head modules with I/O functions

PSSu I/O

Head modules with I/O functions

PSSu I/O

I/O modules

Input and output modules

Systems

Control and I/O systems of automation system PSS 4000

The automation system PSS 4000 is the ideal solution to ensure smooth production. The various controllers and I/O systems, combined with configuration and programming software, make the system scalable and allow it to be used in all branches of industry.

PSSuniversal decentralized I/O system

The decentralized I/O systems PSSuniversal can be tailored for use as remote I/Os at field level. Connection to a higher-level third-party controller is via common industrial communication protocols. They can be configured using the PSSuniversal Assistant.

Controllers and I/O systems

Head modules with I/O functions

PSS u2 I/O

Input and output modules

PSSuniversal 2 remote I/O system
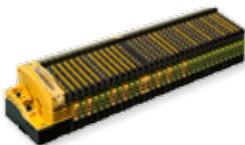
The remote I/O system PSS u2 is the new generation of universal systems. In the first stage the remote I/O system consists of the PROFINET communication module and a selection of I/O modules. Thanks to technical and mechanical improvements users benefit from time and cost savings.

Easy to configure!

PSSuniversal allows you to implement projects for safety and automation. Both worlds merge together intelligently. So that the safety of man and machine is guaranteed at all times, the system fulfils the requirements for absence of feedback and enables extremely short reaction times. This ensures that changes or expansions in the control section have no influence on safety. PSSuniversal therefore complies with EN/IEC 61508 up to SIL 3 and EN ISO 13849 up to PL e. The PSSu I/O decentralized I/O systems are connected to a higher-level controller PSSuniversal PLC or PSSuniversal multi via SafetyNET p.

Your benefits at a glance

▸ Processing of safety and automation functions
▸ Modular system structure for maximum flexibility
▸ Extensive selection of modules to meet your specific requirements
▸ Ready for use in a variety of applications
▸ Digital and analog value processing
▸ Fast installation, fast module change even during operation
▸ Greater energy efficiency thanks to intelligent system design
▸ Functions comply with the international standards for machine safety
▸ Simple handling thanks to easily understandable software

Keep up-to-date on PLC controllers and I/O systems:

Webcode:
web150509

Online information at www.pilz.com

Controllers and I/O systems

▶ # Automation system PSS 4000

Are you looking for a safe and easy way to automate your plant or machinery? The automation system PSS 4000 can be customized according to your specific needs. You can choose from controllers and head modules without control functions as well as a wide range of I/O modules. The appropriate engineering software and a visualization software package complete the system. In combination with network components, you can implement various automation architectures and increase network availability.

Part of
PSS 4000

Stand-alone

PSSu multi

PMIvisu

PSSuniversal multi
with decentralized I/Os

PSSu multi

PSSu I/O

PAS

PITestop

Consistently distributed
control functions

PSSu PLC

PSENopt

Centralized control

PSSu PLC

PSSu I/O   PSSu I/O

PITjog   PSENmlock   PSENcode   PSENsgate

PSSuniversal multi   PSSuniversal I/O   PSSuniversal PLC

PSS67 I/O
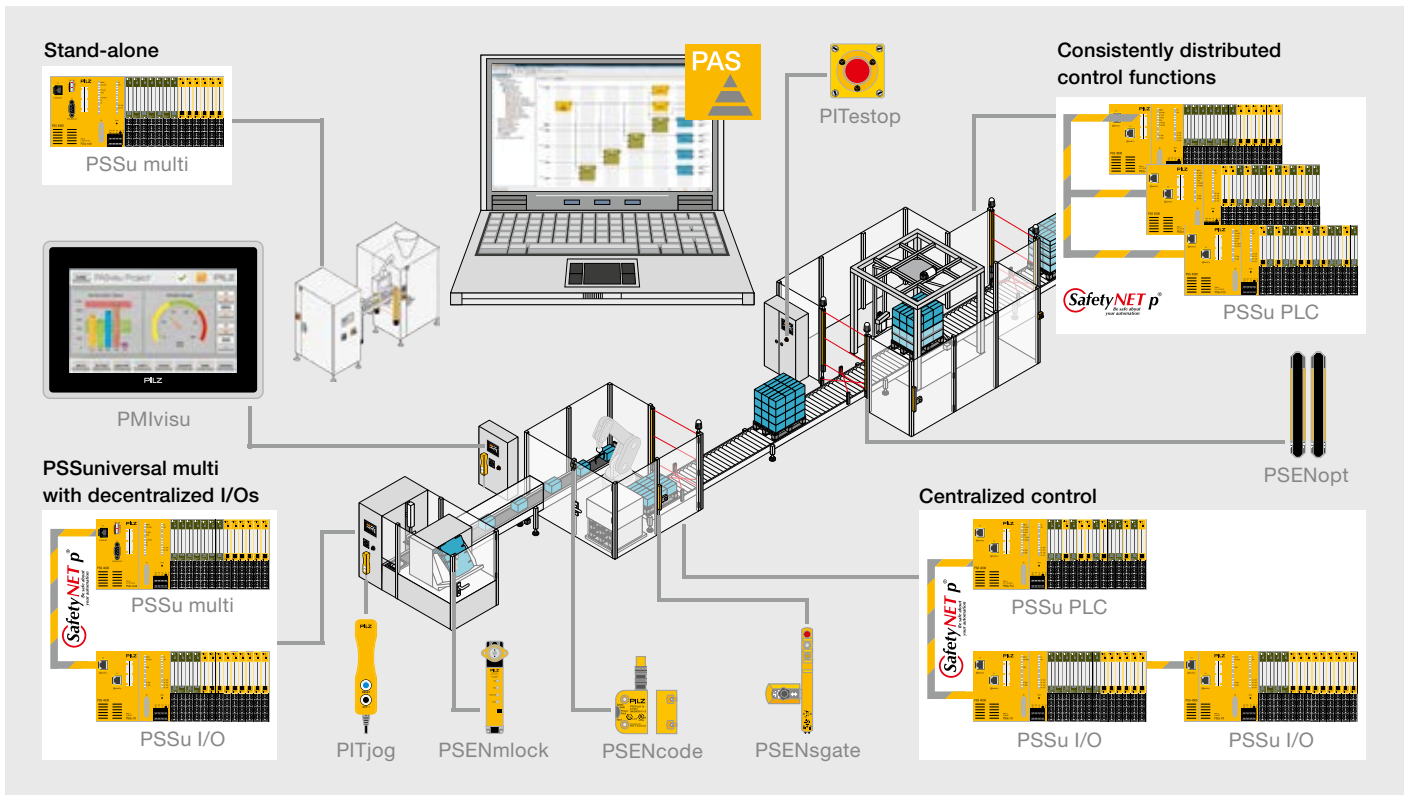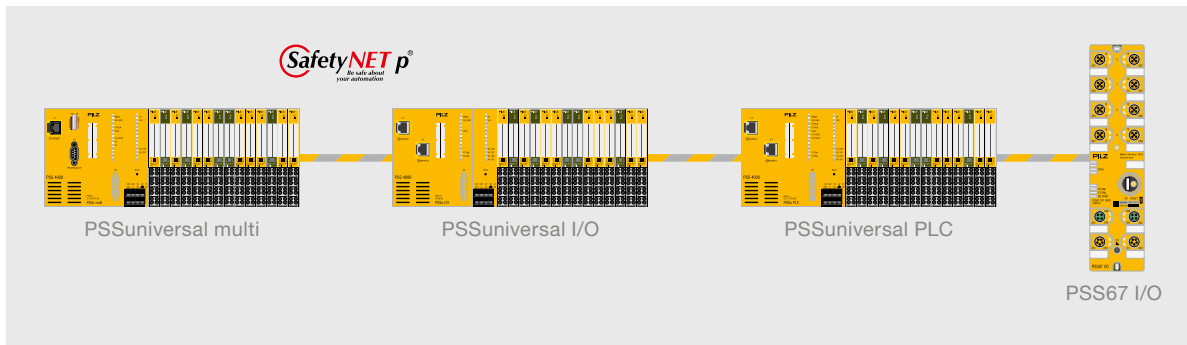
Controllers and I/O systems for every requirement

The controllers PSSuniversal PLC are the all-rounders in the automation system PSS 4000. They can be used as "classic" central PLCs for safety and automation, but can also be used as a distributed system. They can be configured and programmed in the main languages defined in EN/IEC 61131-3.

The controllers PSSuniversal multi can be used as small controllers within the system network – with PSSuniversal PLC and the I/O systems PSSuniversal I/O and PSS67 I/O – or as stand-alone devices. The controllers PSSuniversal multi are suitable for individual machines or small, interlinked plants. They are configured and programmed using the graphics program editor PASmulti.

The modules PSSuniversal I/O and PSS67 I/O are used for decentralized networking and transfer of safety-related and non-safety-related signals at field level. PSSuniversal I/O enables a wide range of applications to be implemented by connecting up to 64 I/O modules. The I/O block PSS67 with its protection type IP67 is ideal for installation without control cabinet!

Your benefits at a glance

▸ One system for the entire automation technology
▸ Merging safety and automation
▸ Optimum solution for Industrie 4.0
▸ Distribution of control functions according to the multi-master principle
▸ Easy programming and configuration with the PAS4000 software
▸ Web-based visualization with the PASvisu software
▸ Safe communication via real-time Ethernet SafetyNET p
▸ High level of flexibility thanks to modular system structure
▸ Can be used in all branches
▸ Special approvals for use for railway, lift/escalator and fire protection applications
▸ Can be integrated into existing automation structures

Real-time Ethernet SafetyNET p – communication in its purest form

In addition to the connection to communication networks such as EtherNet/IP, EtherCAT, Modbus TCP, PROFINET and PROFIBUS-DP, the controllers PSSuniversal PLC also have the communication interface SafetyNET p. SafetyNET p is the backbone of the whole system. Various infrastructure components such as switches allow the network to be adapted to the plant structure. Gateways are also available to connect to various third-party controllers.

Keep up-to-date on the automation system PSS 4000:
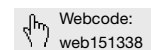
Webcode:
web151338

Online information at www.pilz.com

Controllers and I/O systems

Software PAS4000 – easy handling of complex functions

With PAS4000 you can create programs for safety and automation quickly and intuitively using just one interface. You use the graphical program editor PASmulti to configure the controllers PSSuniversal PLC and PSSuniversal multi. Inputs and outputs can be freely configured in the tool. Combination with the programming languages PAS STL (structured text), PAS LD (ladder diagram) and PAS IL (instruction list) in accordance with EN/IEC 61131-3 is possible. You can use these languages to program the controllers PSSuniversal PLC. The comprehensive library of safety-related and non-safety-related software blocks make creating automation programs easy.
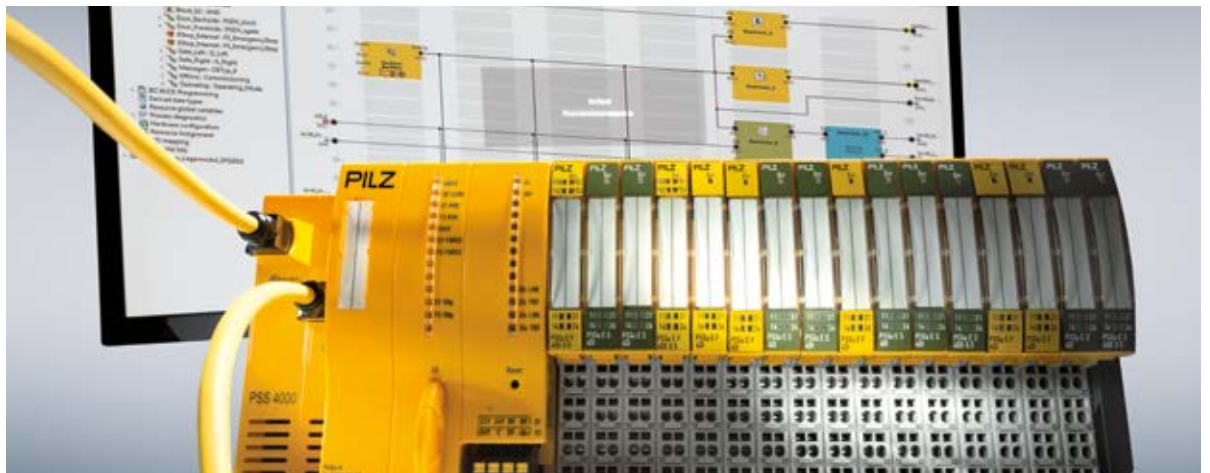
Safe motion monitoring

The I/O module PSSu K F EI with local fast shutdown allows you to implement extended motion monitoring functions with the controllers PSSuniversal PLC and PSSuniversal multi. This makes your plant even more efficient and productive. The compact module monitors safe speed, direction and stop functions. You benefit from reduced reaction times, higher productivity and simpler maintenance and repair of your plants and machinery. Appropriate software blocks can be found in the library of the PAS4000 software.
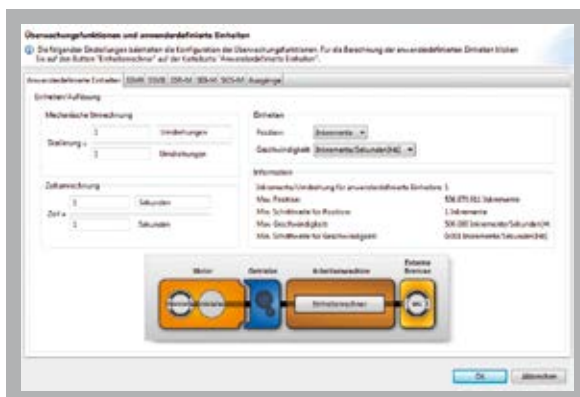
Configuration of PSSu K F EI

Configuration of SSM0

Controllers and I/O systems

Solution for Industrie 4.0

▸ One system for the entire automation technology
▸ Merging safety and automation
▸ Solution for Industrie 4.0
▸ Distribution of control functions according to the multi-master principle
▸ Easy programming and configuration with the PAS4000 software
▸ Web-based visualization with the PASvisu software
▸ Safe communications via real-time Ethernet SafetyNET p
▸ High level of flexibility thanks to modular system structure
▸ Can be integrated into existing automation structures
▸ Querying and utilization of extensive diagnostic data from safety devices using Safety Device Diagnostics

One system for all automation requirements

Automation of the future requires solutions that can distribute control intelligence and are still easy to use. The automation system PSS 4000 makes this possible. Multiple controllers with identical authorization rights are connected simply via the real-time Ethernet SafetyNET p. SafetyNET p exchanges data and state information between the controllers and synchronizes it.

In PAS4000, you program and configure all network subscribers centrally. This simplifies the networking of multiple controllers. The PASvisu web-based visualization software allows you to keep a close eye on the project. That makes handling your project really simple, however large it is! And you can react to customer requests quickly and flexibly at any time!

Temperature-resistant modules

Rugged environments demand components that will operate reliably where there are high temperature fluctuations. Modules identified by a "-T" in the type designation are used where cabinet heating would be very costly or uneconomical, or where high temperatures prevail. The specified operating temperature range is from –40 °C to +70 °C. In addition, the modules are protected against condensation in compliance with pollution degree 2. The T-modules are suitable for applications such as wind turbines and cable cars. In many cases, using these modules means there is no need for additional climate control measures, reducing costs considerably.

Controllers and I/O systems

▶ Keeping a close eye on the automation system

The PASvisu web-based visualization software allows you to keep a close eye on the automation system PSS 4000: both locally and by remote access. You can link the web-based visualization software PASvisu directly to the control project from the software PAS4000. That automatically gives you full access to all process variables created in the project as well as to the entire namespace of the automation system. This means that information such as the check sum of the project or the firmware version of the controller PSSuniversal PLC can also be called up. In this way, you benefit from shorter project runtimes, faster engineering and reduced potential for error.

Keep up-to-date on the visualization software PASvisu:

Webcode:
web150430

Online information at www.pilz.com

Optimum link: Control project and visualization.

Control diagnostics

The (safety) blocks configured in the controller are shown grouped as predefined tiles in the visualization. In this case the selection is made via the instance name rather than the individual variables. All the safety blocks used in the control project (from the software PAS4000) are automatically available in the PASvisu Builder and can be used directly for graphical block diagnostics. All relevant variables are already linked to these Pilz hardware tiles. The diagnostic list (alarms and remedial measures) and the history can also be shown. In addition, a tile is available with the LED status of the PSS 4000 hardware.

Your benefits at a glance
- ▶ Fast, safe automation
- ▶ Future-proof and platform-independent
- ▶ Accelerated projects: from engineering and runtime to maintenance
- ▶ Link between PAS4000 and PASvisu projects enables shorter project times
- ▶ Faster engineering, as variables do not need to be entered and assigned manually
- ▶ Flexible use on a multitude of end devices – thanks to platform independence
- ▶ Language switching: create, export and import languages
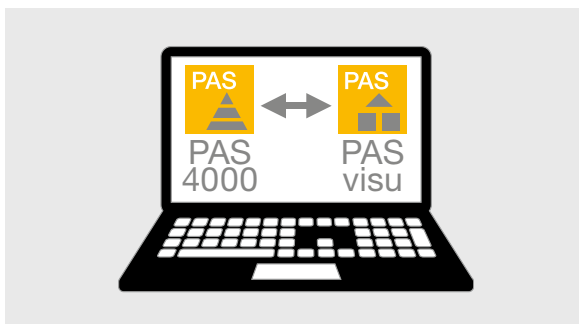
Linking of control projects and visualization.

PASvisu Builder

Controllers and I/O systems

▶ PMIvisu – Visualization terminal for PASvisu

PMIvisu from Pilz is a preinstalled and licensed solution package – consisting of the operator terminals PMI with the web-based visualization software PASvisu. This provides professional visualization of plant and machinery at a glance.

PMI v512

The capacitive displays are available in two sizes: Choose between 7" and 12" and benefit from superior functionality. The PMI Assistant is available for simple panel commissioning and management.

Your benefits at a glance
▶ Professional visualization of plant and machinery
▶ PASvisu visualization software is preinstalled and licensed
▶ Up to 500 variables are included for data exchange with the controller
▶ Efficient project planning thanks to coordinated and preconfigured HMI functions
▶ Unicode-enabled language management
▶ Access rights are assigned through the integrated user manager
▶ External 4 GB SD memory card with PMI v5 Assistant for simple panel commissioning and management

Operator terminals PMI with web-based visualization software PASvisu

Type	Display size	Resolution (in pixels)	Power consumption	Operation	Interfaces	Order number
PMI v507	7" (18 cm)	800 x 480	6.5 W (24 V DC)	Capacitive glass touch-screen	▶ 1 x RS232 ▶ 1 x RJ45 ETH ▶ 1 x SD card ▶ 2 x USB 2.0	265 507
PMI v512	12" (31 cm)	1280 x 800	8.9 W (24 V DC)	Capacitive glass touch-screen	▶ 1 x RS232 ▶ 1 x RJ45 ETH ▶ 1 x SD card ▶ 2 x USB 2.0	265 512

Type	Features
PASvisu	▶ Consists of the configuration tool PASvisu Builder and PASvisu Runtime. ▶ Wide range of predefined GUI elements (tiles) available. ▶ Sophisticated visualization thanks to the most diverse style sheets. ▶ Optimum link between control project (PAS4000) and visualization (PASvisu).

Controllers and I/O systems

Keep up-to-date on the visualization panels:

Webcode: web160789

Online information at www.pilz.com

▶ Decentralized I/O system PSSuniversal

The decentralized I/O system PSSuniversal allows you to perform safety-related and automation functions at field level. Communication with the control level takes place via common fieldbus protocols. Here all sensor and actuator signals are connected to one module. This ensures clear cabling and avoids errors during installation.

Your benefits at a glance
▶ Processing of safety-related and automation functions decentrally at field level
▶ Reduction of switching times
▶ Optimum availability thanks to safe block switching
▶ Fast commissioning and easy configuration thanks to the independent periphery test

The decentralized I/O systems can be connected to different higher-level controllers as a cost-effective variant of a remote I/O system. The PSSuniversal system is therefore a solution for connecting periphery and safety-related functions to a central controller.

Safe block switching of individual plant sections
Safe block switching is used to shut down the supply voltage to a group of standard outputs (e.g. several motors) if a hazardous event occurs. When a hazardous event does occur (e.g. an E-STOP pushbutton is pressed), safe block switching ensures safe shutdown of a complete plant section while other sections can continue to operate.

Controllers and I/O systems

Simple configuration, fast commissioning

The decentralized I/O systems are configured using the PSSuniversal Assistant. Thanks to the PSSuniversal Startup Tool, the system can be commissioned quickly. You can already perform the first cable and function tests before the plant or machine is set up. That way all of the periphery is already tested and functional when you come to commission the plant. Commissioning operations can be carried out independently and simultaneously – reducing dependencies and saving time!
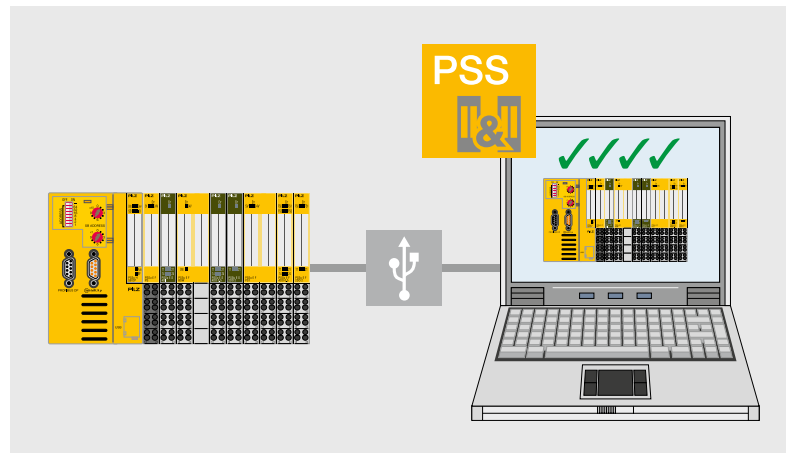
Cable and function tests performed easily via the USB port on the notebook.

PSSuniversal – also for PROFINET users

Optimized address management on the PROFINET versions of the decentralized I/O system is particularly convincing. The PROFINET/PROFIsafe address is only required once per decentralized station. This means, for example, that safety settings for each device only need to be made at a single point, i.e. in the head module. There is no need for address setting and management on each individual I/O module. As a result, the failsafe addresses are optimally utilized. This saves planning and management costs.
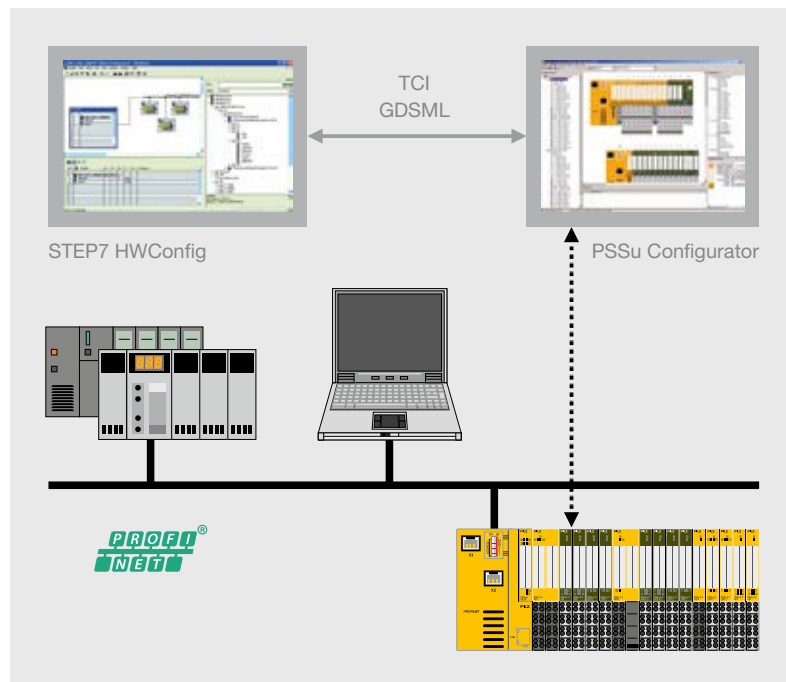
Comprehensive tool support for configuration, commissioning and diagnostics.

PSSu Configurator

▸ Called up via TCI
▸ Configures the system
▸ Generates station-specific GSDML files
▸ Manages all safety-related CRC sums

▶ Technical details – Controllers and I/O systems

Decentralized I/O system PSSuniversal – Head modules

PSSu H F PN

Type	Application area		Communication interfaces
	Failsafe functions	Automation functions	
PSSu H F PN	◆	◆	▶ 1 x PROFINET ▶ 1 x PROFIsafe
PSSu H F PN o	◆	◆	▶ 1 x PROFINET ▶ 1 x PROFIsafe ▶ Fibre-optic
PSSu H S PN		◆	2 x PROFINET

Automation system PSS 4000 – Head modules with control and I/O function

PSSuniversal PLC

PSSuniversal multi

PSSuniversal I/O

Type	Application area		Communication interfaces
	Failsafe functions	Automation functions	
▶ **PSSuniversal PLC**			
PSSu H PLC1 FS SN SD	◆	◆	2 x SafetyNET p
PSSu H PLC1 FS DP SN SD	◆	◆	▶ SafetyNET p ▶ PROFIBUS-DP (slave, DPV0)
▶ **PSSuniversal multi**			
PSSu H m F DP SN SD	◆	◆	▶ SafetyNET p ▶ PROFIBUS-DP (slave, DPV0)
PSSu H m F DP ETH SD	◆	◆	▶ Ethernet ▶ PROFIBUS-DP (slave, DPV0)
PSSu H m F DPsafe SN SD	◆	◆	▶ SafetyNET p ▶ PROFIBUS/PROFIsafe (PROFIsafe V2.4)
▶ **PSSuniversal I/O**			
PSSu H FS SN SD	◆	◆	2 x SafetyNET p
PSS67 IO1 16FDI	◆	◆	2 x SafetyNET p

Common features
- ▶ PSSuniversal module bus for connection of up to 64 I/O modules for safety-related and non-safety-related functions
- ▶ Integral power supply
- ▶ Integrated switch function for SafetyNET p linear topology
- ▶ SD card to store the device project and configuration data
- ▶ International safety standards (up to SIL CL 3 of EN/IEC 61508, up to PL e of EN ISO 13849), lifts standard EN 81/2 and EN 50129
- ▶ Dimensions (H x W x D) in mm: 125.6 x 130 x 83.7

Part of PSS 4000

Controllers and I/O systems

PSSuniversal

Features	Approvals	Order number		
		Regular version	T-type [1]	R-type [2]
▶ PSSuniversal module bus for connection of up to 64 I/O modules for safety-related and non-safety-related functions ▶ Dimensions (H x W x D) in mm: 128.4 x 75.2 x 79.4	BG, CE, EAC, TÜV, cULus Listed	312 043	-	-
	CE, EAC, TÜV, cULus Listed	312 042	-	-
	CE, cULus Listed	312 041	-	-

Features	Approvals	Order number		
		Regular version	T-type [1]	R-type [2]
▶ Can be configured using the graphics program editor PASmulti ▶ Programming in PAS IL (instruction list), PAS LD (ladder diagram) and PAS STL (structured text) in accordance with EN/IEC 61131-3 ▶ Programming via Ethernet TCP/IP ▶ Max. number of failsafe tasks: 9 ▶ Max. number of standard tasks: 9	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312 070	314 070	315 070
	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312 071	-	-
▶ Local safety functions ▶ Can be configured using the graphics program editor PASmulti ▶ Max. number of failsafe tasks: 1 ▶ Devices with SafetyNET p interface: Max. number of SafetyNET p connections: 5	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312 065	-	-
	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312 060	-	-
	BG, CE, EAC (Eurasian), TÜV, cULus Listed	312 066	-	-
▶ Communication with other SafetyNET p devices (RTFN) ▶ Standard module bus for standard I/O modules	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312 085	314 085	315 085
▶ Communication with other SafetyNET p devices (RTFN) ▶ With IP67 protection – suitable for use in the extended temperature range (–30 °C to +60 °C)	in preparation	316 010	-	-

[1] The modules are also available as T-type for increased environmental requirements. The order numbers of the T-type modules are 314 … instead of 312 …

[2] The modules are also available as R-type for railway applications. The order numbers of the R-type modules are 315 … instead of 312 …

Keep up-to-date on controllers PSSuniversal and I/O systems:

Webcode: web150509

Online information at www.pilz.com

Controllers and I/O systems

▶ Technical details – PSSuniversal

Supply modules, junction modules and safe block switching module

Type	Suitable for		Function	Application area		Electrical data	
	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000		Failsafe functions	Automation functions	Supply voltage	Current load capacity Module supply
PSSu E F PS	◆	◆	Power supply	◆	◆	24 V DC	Max. 1.5 A
PSSu E F PS1	◆	◆	Power supply, buffered	◆	◆	24 V DC	Max. 2.0 A
PSSu E F PS2		◆	Power supply, buffered	◆	◆	24 V DC	Max. 1.0 A
PSSu E F PS-P	◆	◆	Power supply, periphery	◆	◆	24 V DC	-
PSSu E PD	◆	◆	Voltage distribution	◆	-	-
PSSu E PD1	◆	◆	Voltage distribution	◆	-	-
PSSu E S PD-D	◆	◆	Voltage distribution	◆	-	-
PSSu E F BSW	◆		Block switching function	◆	◆	24 V DC	-
PSSu E PS-P 5 V	◆	◆	Voltage distribution		◆	24 V DC	-
PSSu E PS-P +/– 10 V	◆	◆	Voltage distribution		◆	24 V DC	-
PSSu E PS-P +/– 15 V	◆	◆	Voltage distribution		◆	24 V DC	-

PSSu E F PS

PSSu E PD

Type code for PSSuniversal electronic module/supply modules

PSSu E F 4DI

Product range	Design	Application area	Functions
PSSuniversal	E Electronic module K Compact module	F Failsafe S Standard (automation)	4 DI 4 digital inputs AI U Analog input, voltage INC Incremental encoder PS Power supply … Further functions

Controllers and I/O systems

Current load capacity / Periphery supply	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed	Order number	312600 PSSu BP 1/8 S [3]	312610 PSSu BP-C 1/8 S [4]	312618 PSSu BP 1/12 S	312620 PSSu BP-C 1/12 S	312622 PSSu BP-C1 1/12 S	312628 PSSu BP 2/16 S	312630 PSSu BP-C 2/16 S	312650 PSSu BS 1/8 S	312652 PSSu BS-R 1/8 S	312654 PSSu BS-R 2/8 S	312656 PSSu BS 2/8 S	312601 PSSu BP 1/8 C [3]	312611 PSSu BP-C 1/8 C [4]	312619 PSSu BP 1/12 C	312621 PSSu BP-C 1/12 C	312623 PSSu BP-C1 1/12 C	312629 PSSu BP 2/16 C	312631 PSSu BP-C 2/16 C	312651 PSSu BS 1/8 C	312653 PSSu BS-R 1/8 C	312655 PSSu BS-R 2/8 C	312657 PSSu BS 2/8 C
Max. 10 A	◆	◆	◆	◆	◆	◆	312 190 [1]								◆	◆										◆	◆		
Max. 10 A	◆	◆	◆	◆	◆	◆	312 191 [1]										◆	◆										◆	◆
Max. 10 A	◆	◆	◆	◆	◆	◆	312 192 [1], [2]										◆											◆	
Max. 10 A	◆	◆	◆	◆	◆	◆	312 185 [1], [2]								◆											◆			
-		◆				◆	312 195 [1]	◆	◆	◆		◆							◆	◆	◆	◆							
-		◆				◆	312 196 [1]						◆	◆										◆	◆				
-		◆				◆	312 197	◆	◆	◆		◆							◆	◆	◆		◆						
Max. 8 A		◆	◆	◆	◆	◆	312 230 [1]											◆											◆
-	◆	◆			◆	◆	312 590	◆		◆		◆							◆		◆	◆							
-	◆	◆			◆	◆	312 591	◆		◆		◆							◆		◆	◆							
-	◆	◆			◆	◆	312 592	◆		◆		◆							◆		◆	◆							

1) The modules are also available as T-type for increased environmental requirements. The order numbers of the T-type modules are 314 … instead of 312 …

2) The modules are also available as R-type for railway applications. The order numbers of the R-type modules are 315 … instead of 312 ...

3) Without C-rail
4) With C-rail
5) Shield terminal available (312 963)
6) Shield terminal available (312 964)

Controllers and I/O systems

▶ Technical details – PSSuniversal

Digital inputs and outputs

PSSu E F 4DI

PSSu E S 4DI

Type	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000	Function	Failsafe functions	Automation functions
PSSu E F 4DI	◆	◆	4 digital inputs	◆	
PSSu E F 4DO 0.5	◆	◆	4 digital outputs	◆	
PSSu E F 2DO 2	◆	◆	2 digital outputs	◆	
PSSu E F DI OZ 2	◆	◆	1 digital input, 1 digital output	◆	
PSSu E F 2DOR 8	◆	◆	2 relay outputs	◆	
PSSu K F FCU		◆	12 digital inputs, 2 digital outputs (1-pole), 2 digital outputs (2-pole), Fast Control Unit	◆	
PSSu K F FAU P		◆	4 digital inputs, 2 digital outputs	◆	
PSSu K F FAU B		◆	4 digital inputs, 2 digital outputs	◆	
PSSu E S 4DI	◆	◆	4 digital inputs		◆
PSSu E S 4DO 0.5	◆	◆	4 digital outputs		◆
PSSu E S 2DO 2	◆	◆	2 digital outputs		◆
PSSu E S 2DOR 10	◆	◆	2 relay outputs		◆
PSSu E S 2DOR 2	◆	◆	2 relay outputs		◆
PSSu K S 8DI 8DO 0.5	◆	◆	8 digital inputs, 8 digital outputs		◆
PSSu K S 16DI	◆	◆	16 digital inputs		◆
PSSu K S 16DO 0.5	◆	◆	16 digital outputs		◆

Common features
- ▶ Supply voltage from module supply: 5 V DC
- ▶ Potential isolation

Keep up-to-date on PSSuniversal I/O modules:

Webcode: web150421

Online information at www.pilz.com

Electrical data (Feature / Inputs / Outputs)	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed	Regular version	Diagnostic modules (-D)	312600 PSSu BP 1/8 S [3]	312610 PSSu BP-C 1/8 S [4]	312618 PSSu BP 1/12 S	312620 PSSu BP-C1 1/12 S	312622 PSSu BP-C1 1/12 S	312628 PSSu BP 2/16 S	312630 PSSu BP-C 2/16 S	312601 PSSu BP 1/8 C [3]	312611 PSSu BP-C 1/8 C [4]	312619 PSSu BP 1/12 C	312621 PSSu BP-C1 1/12 C	312623 PSSu BP-C1 1/12 C	312629 PSSu BP 2/16 C	312631 PSSu BP-C 2/16 C
									Screw terminals [5]							Cage clamp terminals [6]						
-	◆	◆	◆	◆	◆	◆	312 200 [1]	-	◆		◆		◆			◆		◆		◆		
0.5 A	◆	◆	◆	◆	◆	◆	312 210 [1],[2]	-	◆	◆	◆		◆			◆	◆	◆		◆		
2 A	◆	◆	◆	◆	◆	◆	312 215 [1],[2]	-	◆	◆	◆		◆			◆	◆	◆		◆		
1 (2 A), 2-pin / 1 test pulse output	◆	◆	◆	◆	◆	◆	312 220 [1],[2]	-	◆	◆	◆		◆			◆	◆	◆		◆		
2 N/O AC1: 250 V/8 A; 2000 V DC1: 24 V/8 A	◆	◆	◆	◆	◆	◆	312 225 [1],[2]	-						◆	◆						◆	◆
- / 2 (2 A) 1-pin / 2 (2 A) 2-pin		◆	◆	◆	◆	◆	312 435	-														
2 (3 A) 2-pin		◆	◆		◆	◆	312 421	-														
2 (1.75 A) 1-pin		◆	◆		◆	◆	312 420	-														
-	◆	◆			◆	◆	312 400 [1],[2]	312 401	◆	◆	◆		◆			◆	◆	◆		◆		
0.5 A	◆	◆			◆	◆	312 405 [1]	312 406 [1]	◆	◆	◆		◆			◆	◆	◆		◆		
2 A	◆	◆			◆	◆	312 410 [1]	312 411 [1]	◆	◆	◆		◆			◆	◆	◆		◆		
2 N/O	◆	◆			◆	◆	312 510 [1]	-				◆	◆						◆	◆		
2 N/O		◆				◆	312 511 [1]	-	◆	◆	◆		◆			◆	◆	◆		◆		
0.5 A		◆	◆		◆	◆	312 431 [1]	-														
-		◆	◆		◆	◆	312 430	-														
0.5 A		◆	◆		◆	◆	312 432	-														

1) The modules are also available as T-type for increased environmental requirements. The order numbers of the T-type modules are 314 … instead of 312 …

2) The modules are also available as R-type for railway applications. The order numbers of the R-type modules are 315 … instead of 312 …

3) Without C-rail
4) With C-rail
5) Shield terminal available (312 963)
6) Shield terminal available (312 964)

Controllers and I/O systems

▶ Technical details – PSSuniversal

Analog inputs and outputs

Type	Suitable for		Function	Application area	
	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000		Failsafe functions	Automation functions
PSSu E S 2AI U	◆	◆	2 analog inputs		◆
PSSu E S 4AI U	◆	◆	4 analog inputs		◆
PSSu E S 2AI I s.e.	◆	◆	2 analog inputs		◆
PSSu E S 2AO U	◆	◆	2 analog outputs		◆
PSSu E S 4AO U	◆	◆	4 analog outputs		◆
PSSu E S 2AO I	◆	◆	2 analog outputs		◆
PSSu E S 2AI RTD	◆	◆	2 analog inputs		◆
PSSu E S 2AI TC	◆	◆	2 analog inputs		◆
PSSu E F AI I		◆	1 analog input	◆	
PSSu E F AI U		◆	1 analog input	◆	
PSSu E AI SHT1	◆	◆	1 analog input, 2 analog outputs	◆	◆
PSSu E AI SHT2	◆	◆	1 analog input, 2 analog outputs	◆	◆

PSSu E S 4AO U

Keep up-to-date on PSSuniversal I/O modules:

Webcode: web150421

Online information at www.pilz.com

Electrical data — Feature / Inputs / Outputs	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed	Order number	312600 PSSu BP 1/8 S [3]	312610 PSSu BP-C 1/8 S [4]	312602 PSSu BP 1/8 S-J	312612 PSSu BP-C 1/8 S-J	312618 PSSu BP 1/12 S	312620 PSSu BP-C 1/12 S	312622 PSSu BP-C1 1/12 S	312628 PSSu BP 2/16 S	312630 PSSu BP-C 2/16 S	312601 PSSu BP 1/8 C [3]	312611 PSSu BP-C 1/8 C [4]	312603 PSSu BP 1/8 C-J	312613 PSSu BP-C 1/8 C-J	312619 PSSu BP 1/12 C	312621 PSSu BP-C 1/12 C	312623 PSSu BP-C1 1/12 C	312629 PSSu BP 2/16 C	312631 PSSu BP-C 2/16 C
Screw terminals [5]								✦	✦	✦	✦	✦	✦	✦	✦	✦									
Cage clamp terminals [6]																	✦	✦	✦	✦	✦	✦	✦	✦	✦
0 … 10 V s.e.; diff; –10 … +10 V		◆			◆	◆	312440 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 10 V s.e.		◆				◆	312445 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 20 mA; 4 … 20 mA		◆			◆	◆	312450 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 10 V; -10 … +10 V		◆			◆	◆	312460 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 10 V		◆				◆	312465 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 20 mA; 4 … 20 mA		◆				◆	312470 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
-		◆			◆	◆	312490 [1]					◆	◆								◆	◆			
Thermocouples		◆			◆	◆	312500 [1]			◆	◆								◆	◆					
0 … 25 mA		◆					312260 [1], [2]	◆	◆			◆	◆				◆	◆			◆	◆			
-10 … +10 V		◆					312265 [1], [2]	◆	◆			◆	◆				◆	◆			◆	◆			
0 … 0.6 A; 0 … 20 mA	◆	◆			◆	◆	312261 [1]	◆	◆												◆	◆			
0 … 0.2 A; 0 … 20 mA		◆				◆	312262	◆	◆			◆	◆				◆	◆			◆	◆			

[1] The modules are also available as T-type for increased environmental requirements. The order numbers of the T-type modules are 314 … instead of 312 …

[2] The modules are also available as R-type for railway applications. The order numbers of the R-type modules are 315 … instead of 312 …

[3] Without C-rail
[4] With C-rail
[5] Shield terminal available (312 963)
[6] Shield terminal available (312 964)

▶ Technical details – PSSuniversal

Counter modules

Type	Suitable for		Function	Application area	
	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000		Failsafe functions	Automation functions
PSSu E S ABS SSI	◆	◆	Absolute encoder SSI		◆
PSSu E S INC	◆	◆	Incremental encoder		◆
PSSu E S INC 24V se	◆	◆	Incremental encoder		◆
PSSu E F ABS SSI		◆	Absolute encoder SSI	◆	
PSSu E F INC		◆	Incremental encoder	◆	
PSSu K F INC		◆	Incremental encoder	◆	
PSSu K F EI		◆	Encoder interface	◆	
PSSu K F EI CV		◆	Encoder interface	◆	

PSSu E S INC

Electronic modules with serial interface

Type	Suitable for		Function	Application area	
PSSu E S RS232	◆	◆	RS232 interface		◆
PSSu K S RS232		◆	RS232 interface		◆
PSSu K S RS232 Modbus ASCII		◆	RS232 interface		◆
PSSu E S RS485	◆	◆	RS485 interface		◆

PSSu E S RS232

Controllers and I/O systems

Electrical data — Feature / Inputs / Outputs	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed	Order number	312600 PSSu BP 1/8 S [3]	312610 PSSu BP-C 1/8 S [4]	312602 PSSu BP 1/8 S-J	312612 PSSu BP-C 1/8 S-J	312618 PSSu BP 1/12 S	312620 PSSu BP-C 1/12 S	312622 PSSu BP-C1 1/12 S	312628 PSSu BP 2/16 S	312630 PSSu BP-C 2/16 S	312601 PSSu BP 1/8 C [3]	312611 PSSu BP-C 1/8 C [4]	312603 PSSu BP 1/8 C-J	312613 PSSu BP-C 1/8 C-J	312619 PSSu BP 1/12 C	312621 PSSu BP-C 1/12 C	312623 PSSu BP-C1 1/12 C	312629 PSSu BP 2/16 C	312631 PSSu BP-C 2/16 C
SSI		◆				◆	312 480 [1]	◆	◆			◆		◆			◆	◆			◆		◆		
INC		◆				◆	312 485 [1]								◆	◆								◆	◆
INC		◆			◆	◆	312 486 [1]								◆	◆								◆	◆
SSI	◆	◆	◆	◆	◆	◆	312 275 [1]	◆	◆			◆		◆			◆	◆			◆		◆		
INC	◆	◆	◆	◆	◆	◆	312 280 [1]								◆	◆								◆	◆
INC	◆	◆	◆	◆	◆	◆	312 437 [1]																		
Sin/Cos, TTL, HTL, initiators 24 V		◆			◆	◆	312 433																		
Sin/Cos, TTL, HTL, initiators 24 V		◆			◆	◆	312 434 [1]																		
-		◆				◆	312 515 [1]	◆	◆			◆	◆				◆	◆			◆	◆			
-		◆				◆	312 439 [1]																		
-		◆				◆	312 438 [1]																		
-		◆				◆	312 516 [1]	◆	◆			◆	◆				◆	◆			◆	◆			

[1] The modules are also available as T-type for increased environmental requirements. The order numbers of the T-type modules are 314 … instead of 312 …

[2] The modules are also available as R-type for railway applications. The order numbers of the R-type modules are 315 … instead of 312 ...

[3] Without C-rail
[4] With C-rail
[5] Shield terminal available (312 963)
[6] Shield terminal available (312 964)

▶ Accessories – PSSuniversal

Accessories – PSSuniversal

PSSu XB F-T

PSSu XR F-T

SD Memory Card
512MB

Type	Function
PSSu XB F-T	Base station used to extend the PSSu module bus by 0.5 m or 1 m, inside the control cabinet
PSSu XR F-T	Remote station used to extend the PSSu module bus by 0.5 m or 1 m, inside the control cabinet
PSSu A ET	End bracket for top-hat rail
PSSu A ETM	End bracket for top-hat rail, metal version, for high mechanical stresses
PSSu A EC	Terminating plate with integrated terminating resistor
PSSu A ET PE	Earthing terminal for top-hat rail, PE connection, GN/YE
PSSu A USB-CAB03	PSSu USB cable, length 3 m
PSSu A USB-CAB05	PSSu USB cable, length 5 m
SD Memory Card 512MB	512 MB SD memory card for PSSu head modules
PSSu A Con 1/4 S	Connector set for power supply, 1-row, 4-pin, screw connection
PSSu A Con 2/8 C	Connector set for power supply, 2-row, 8-pin, spring-loaded connection
PSSu A Con 1/10 C	Connector set for compact modules, 1-row, 10-pin, spring-loaded connection
PSSu A Con 3/30 C	Connector set for compact modules, 3-row, 30-pin, spring-loaded connection
PSSu A Con 4 S	Connector for compact modules, 4-pin, screw connection (for INC module)
PSSu A Con 4 C	Connector for compact modules, 4-pin, spring-loaded connection (for INC module)
PSSu A Con Set1 C	Connector set for compact modules, set consisting of 1-row, 5-pin and 10-pin, spring-loaded connection (for K-F-EI module)

Controllers and I/O systems

Approvals	Order number	Suitable for
BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	314 092 [1]	▶ PSSu BP 2/16 S ⎯⎯⎯⎯⎯⎯⎯ 312 628 ▶ PSSu BP 2/16 C ⎯⎯⎯⎯⎯⎯⎯ 312 629 ▶ PSSu BP-C 2/16 S ⎯⎯⎯⎯⎯⎯ 312 630 ▶ PSSu BP-C 2/16 C ⎯⎯⎯⎯⎯⎯ 312 631
BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	314 093 [1]	Connection cable PSSu A RJ45-CAB 1.5M ⎯⎯⎯⎯⎯ 314 094 [1]
-	312 900	-
-	312 901	-
cULus Listed	312 902	-
CE, cULus Listed	314 902 [1]	-
-	312 949	-
-	312 992	-
-	312 993	-
-	313 100	-
BG, CE, TÜV, cULus Listed	313 110	Head modules in automation system PSS 4000 (page 126)
BG, CE, TÜV, cULus Listed	313 111	Head modules in automation system PSS 4000 (page 126)
BG, CE, TÜV, cULus Listed	313 115	-
BG, CE, TÜV, cULus Listed	313 116	-
-	313 117	-
CE, cULus Listed	313 118	-
CE, cULus Listed	313 114	-

[1] The modules are available as T-type for increased environmental requirements.

Controllers and I/O systems

Keep up-to-date on PSSuniversal accessories:

Webcode:
web84867

Online information at www.pilz.com

▶ Technical details – Infrastructure components

Unmanaged switches PSSnet SLL

PSSnet SLL 5T

Type	Technical features	Approvals	Order number
PSSnet SLL 5T	5 electrical ports	CE, cULus Listed	380 600
PSSnet SLL 4T 1FMMSC	▶ 4 electrical ports ▶ 1 fiber-optic port ▶ Multimode connection	CE, cULus Listed	380 604

Common features
▶ Plug and play (no configuration necessary)
▶ Diagnostic LEDs

Managed switches PSSnet SHL

PSSnet SHL 6T
2FSMSC MRP

Type	Technical features	Approvals	Order number
PSSnet SHL 8T MRP	8 electrical ports	CE, cULus Listed	380 601
PSSnet SHL 6T 2FMMSC MRP	▶ 6 electrical ports ▶ 2 fiber-optic ports ▶ Multimode connection	CE, cULus Listed	380 602
PSSnet SHL 6T 2FSMSC MRP	▶ 6 electrical ports ▶ 2 fiber-optic ports ▶ Single-mode connection	CE, cULus Listed	380 650

Common features
▶ Extensive management functions for configuration and diagnostics
▶ Web-based management for access via web browser
▶ Ring redundancy MRP
▶ Redundant voltage supply

Controllers and I/O systems

SafetyNET p connector, cable and stripping tool

SafetyNET p
Connector RJ45s

SafetyNET p
Cable

Type	Technical features	Approvals	Order number
SafetyNET p connector RJ45s	▸ Standard connector for IP20 installation ▸ Quick connection ▸ RJ45 mating face ▸ Housing form compatible with PSSuniversal stabilising collar ▸ Ambient temperature: −40 °C … +70 °C	-	380 400
SafetyNET p cable	▸ Cable (by the meter) ▸ Cable cross section AWG 22 ▸ CAT 5e, 4-wire	-	380 000
SN CAB RJ45s RJ45s, 0.5 m	0.5 m cable with 2 x RJ45 connector	-	380 001
SN CAB RJ45s RJ45s, 1 m	1 m cable with 2 x RJ45 connector	-	380 003
SN CAB RJ45s RJ45s, 2 m	2 m cable with 2 x RJ45 connector	-	380 005
SN CAB RJ45s RJ45s, 5 m	5 m cable with 2 x RJ45 connector	-	380 007
SN CAB RJ45s RJ45s, 10 m	10 m cable with 2 x RJ45 connector	-	380 009
Stripping tool	Installation tool for SafetyNET p cable and connector	-	380 070

Gateways

PSSnet GW1
MOD-EtherCAT

Type	Technical features	Approvals	Order number
PSSnet GW1 MOD-CAN	Protocol converter from Modbus/TCP Slave to CANopen Slave	CE, cULus Listed	311 602
PSSnet GW1 MOD-EtherCAT	Protocol converter from Modbus/TCP slave to EtherCAT slave	CE, cULus Listed	311 601

Keep up-to-date on:
▸ Infrastructure components SafetyNET p

Webcode: web150453

▸ Gateways

Webcode: web150452

Online information at www.pilz.com

Controllers and I/O systems

▶ Selection guide – Software

Configuration tools for decentralized I/O system PSSuniversal

Type	Features
PSSuniversal Startup Software incl. PSSuniversal Assistant Configuration of and independent periphery test on decentralized I/O system PSSuniversal	▶ Function test performed on a PSSuniversal system via the USB interface, without controller connected ▶ FS and ST outputs are switched on/off ▶ Input status display (supports e.g. the cabinet manufacturer during the wiring test) ▶ Online help

[1] Startup Software PSSuniversal Assistant is licence-free

Software in the automation system PSS 4000

Type	Features
PAS4000 Software platform in the automation system PSS 4000	▶ PAS STL, PAS IL, PAS LD editors in accordance with EN/IEC 61131-3 ▶ Graphics program editor PASmulti ▶ Online help ▶ Special licence model

Visualization software PASvisu

Type	Features
PASvisu Web-based visualization software	▶ Consists of the configuration tool PASvisu Builder and PASvisu Runtime ▶ Wide range of predefined GUI elements (tiles) ▶ Sophisticated visualization thanks to a wide variety of different style sheets ▶ Optimum link between the control project (PAS4000) and visualization (PASvisu) ▶ Convenient overview, locally and via remote access

Controllers and I/O systems

Order number

Software can be downloaded from the Internet: www.pilz.com/pssuniversal_tools

▶ Single user licence (basic) [1] _____ 312 890B
▶ Additional licence (user) [1] for an additional workstation _____ 312 890K

Order number

Software can be downloaded from the Internet: www.pilz.com/pas4000

PASunits: Once enabled for production operation, the project is licensed in PAS4000,
PASunits for the used functions are calculated and then credited to the project from the software's points account.

▶ PASunits 500 _____ 317 910
▶ PASunits 1000 _____ 317 920
▶ PASunits 5000 _____ 317 930
▶ PASunits 10000 _____ 317 940
▶ PASkey: USB crypto memory for secure storage and transfer of PASunits _____ 317 999

Order number

Software can be downloaded from the Internet at www.pilz.com/pasvisu

Keep up-to-date on:
▶ PSSuniversal tools

Webcode:
web150426

▶ PSS 4000 tools

Webcode:
web150424

Online information at www.pilz.com

Controllers and I/O systems

▶ Selection guide – Software blocks PAS4000®

Part of
PSS 4000

FS_EmergencyStop

FS_TwoHandControl

Type	Function
General failsafe control blocks	
FS_EmergencyStop	Configures and monitors operation of E-STOP pushbuttons with one or two N/C contacts.
FS_LightCurtain	Monitors the function of light grids with 2 N/C contacts.
FS_SafetyGate	Monitors the function of safety gate switches with up to 3 contacts.
FS_Operating ModeSelectorSwitch	Monitors up to 8 positions on an operating mode selector switch. Unneeded inputs may remain unassigned. Once the switchover time has elapsed, only one contact at a time may be closed.
FS_SafetyValve	Monitors the operation of safety valves of the single, double and directional type.
FS_TwoHandControl	Monitors whether the two buttons on the two-hand control are operated simultaneously (within 0.5 s). In accordance with EN 574, two-hand pushbuttons of type IIIA (2 N/O contacts) or type IIIC (combination of 2 N/O and 2 N/C contacts) can be used.
FS_Muting	Used to temporarily suspend safety functions (ESPE/AOPD) without interrupting the process (muting), in accordance with EN 61496-1.
FS_CounterDual	Used in conjunction with the blocks FS_AbsoluteEncoder and/or FS_IncrementalEncoder to calculate the following safe values: Position, speed and standstill.

The PAS4000 software blocks can be found directly within the tool in the software library.
Tool download: www.pilz.com/PAS4000

Controllers and I/O systems

Hardware-related blocks

FS_Incremental
Encoder

FS_EI_SOSM

FS_EI_SSMO

Type	Function
FS_Absolute Encoder	Calculates a counter status (in increments) from the measured value from the absolute encoder and monitors the module status.
FS_Incremental Encoder	Initializes the counter, calculates the current counter status (in increments) and transmits status information.
FS_AnalogInput Dual	Monitors redundant, analog input values for upward violation of a value range, downward violation of a value range and upward violation of a difference between the analog input value 0 and analog input value 1 over a defined period of time (plausibility check).
FS_Scaling	Scales an analog input value and sends it to an O-variable.
FS_EI_Basic	Block for compact module PSSu K F EI
FS_EI_SSM0	Block for compact module PSSu K F EI for safe speed monitoring (SSM)
FS_EI_SOSM	Block for compact module PSSu K F EI for safe operating stop monitoring (SOS-M)
FS_EI_SDIM	Block for compact module PSSu K F EI for safe direction monitoring (SDI-M)
FS_EI_SSM1_SSRM	Block for compact module PSSu K F EI for safe speed range monitoring (SSR-M)

Press control blocks

FS_CamController

Type	Function
FS_PressOperating Modes	Controls and monitors the setup, single stroke and automatic operating modes of a mechanical press.
FS_CamEvaluation	Monitors the mechanical rotary cam arrangement of a press for: plausibility of the signals from the overrun cam and run-up cam, failure of the dynamic cam and overrun cam, upward violation of the overrun at top dead centre.
FS_CycleMode LightCurtain	Enables the cycle mode (control) for triggering the press stroke when using a light curtain in the standard and Sweden operating modes.
FS_CamController	Provides the position signals for a press control. It uses the angle values, e.g. from the block FS_PositionToAngle, to determine the signal for achieving the top dead centre and so enables shutdown of the press. It is used in the safe, electronic rotary cam arrangement.

Controllers and I/O systems

Keep up-to-date
on PAS4000:

Webcode:
web150424

Online information
at www.pilz.com

The PAS4000 software blocks can be found directly within the tool in the software library.
Tool download: www.pilz.com/PAS4000

▶ Remote I/O system PSSuniversal 2

The PSSuniversal 2 remote I/O system is the new generation of universal systems from Pilz. PSSuniversal 2 offers flexibility, openness and granularity in a single system for safety and automation. In the first stage the remote I/O system consists of the PROFINET communication module and a selection of I/O modules. A communication module with EtherNet/IP interface and further I/O modules will be available in the next step. Thanks to technical and mechanical improvements users benefit from time and cost savings. The most striking new development is the three-part system structure, which makes the remote I/O system PSSuniversal 2 extremely easy to install and service.

Your benefits at a glance
▶ Easy, flexible and granular:
  - Optimized handling during commissioning and service
  - Three-part system structure reduces servicing work
▶ Compact:
  - Minimized dimensions thanks to maximum packing density, with up to 16 channels on 12.5 mm
▶ Functional safety as a basic function:
  - Design of safety and standard functions that can be combined at will
▶ Precise diagnostics:
  - Concordant display of the faulty module slot and the terminal affected
  - Rapid fault localization and troubleshooting
▶ Openness:
  - Ability to adapt to PROFINET, EtherNet/IP and other protocols by exchanging the head module
  - Safe I/O modules universally usable in an identical manner for a wide variety of safety protocols

Controllers and I/O systems

Simple configuration

The remote I/O system PSSuniversal 2 is configured using the new software PASconfig. This software allows you to put the system into operation quickly and simply. PASconfig can be called up directly from the Tool Calling Interface of the TIA portal.
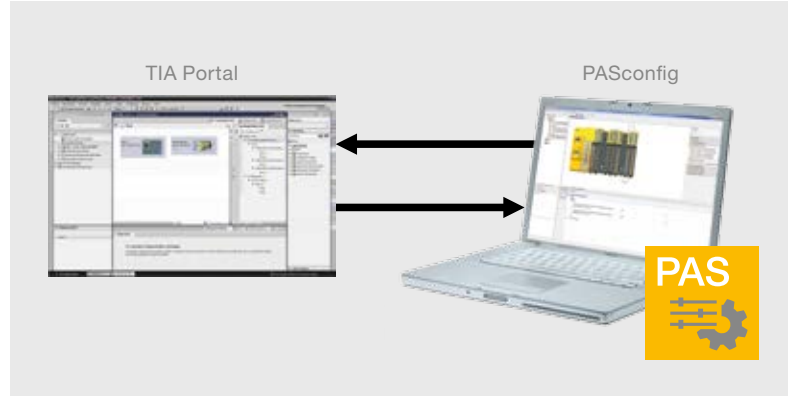
Software tool PASconfig for advanced configuration from the TIA Portal.

Improved mechanical design

The new three-part system design significantly reduces the work involved in service and maintenance. Diagnostics can be performed with great precision in the remote I/O system. Modules can be hot-swapped. As a result the head module can be swapped without having to reconfigure. It is no longer necessary to completely dismantle the system to swap the backplane. PSSuniversal 2 offers a high level of operating safety thanks to individual coding.
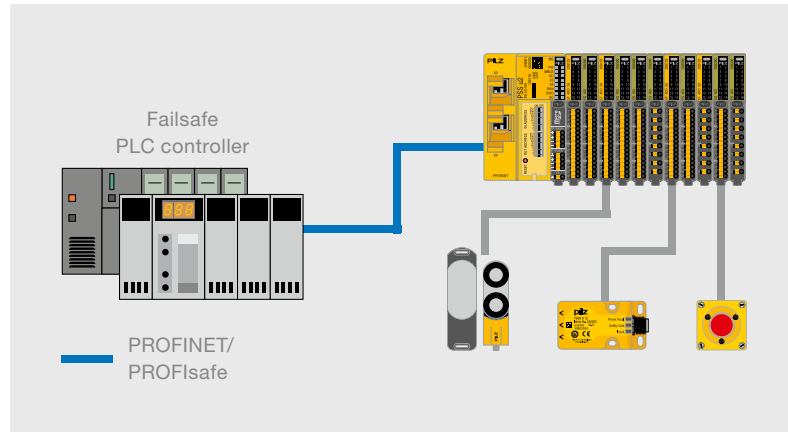
Standard and safety-related connection via PROFINET/PROFIsafe.

Controllers and I/O systems

Keep up-to-date on the remote I/O system PSSuniversal 2:

Webcode:
web150509

Online information at www.pilz.com

▶ Technical details – PSSuniversal 2

Remote I/O system PSSuniversal 2 – Head module

PSS u2 P0 F/S PN

Type	Communication interfaces	Application area	
		Failsafe functions	Automation functions
PSS u2 P0 F/S PN	2 x PROFINET/PROFIsafe	◆	◆

Backplanes/module racks

PSS u2 B 4

Type	Function	Application area	
		Failsafe functions	Automation functions
PSS u2 B 4	Module rack with 4 slots	◆	◆
PSS u2 B 1	Module rack with 1 slot	◆	◆

Supply modules/junction modules

PSS u2 ES 16PT 0V

Type	Function
PSS u2 ES 16PT 0V	Standard routing module, 0 V supply, 16-fold
PSS u2 ES 16PT FE	Standard routing module, functional earth, shield connection, 16-fold
PSS u2 ES 8PTD 24V 0V	Standard routing module, 24 V supply, 0 V supply, diagnosable, 16-fold
PSS u2 ES PSP	Voltage supply module, 24 V/8 A periphery supply

Controllers and I/O systems

Features	Approvals	Order number	Suitable terminal block
▶ Head module PROFINET Client/PROFIsafe Device ▶ Integrated Ethernet switch (two Ethernet ports) ▶ Can be configured using the PASconfig tool ▶ PSS u2 backplane bus for connecting up to 64 I/O modules ▶ Dimensions (H x W x D) in mm: 110.1 x 64.1 x 94.7	CE, TÜV, [1]	328 061	328 831

Features	Approvals	Order number
▶ Backplane and module supply ▶ Dimensions (H x W x D) in mm: 107.0 x 53.9 x 32.9	CE, TÜV, [1]	328 810
▶ Backplane and module supply ▶ Dimensions (H x W x D) in mm: 107.0 x 16.4 x 32.9	CE, TÜV, [1]	328 811

Features	Approvals	Order number	Suitable terminal block
16 terminal connections, 0 V potential	CE, TÜV, [1]	328 090	328 850
16 terminal connections, functional earth	CE, TÜV, [1]	328 091	328 850
▶ 8 terminal connections, 0 V ▶ 8 terminal connections, 24 V DC/0.5 A	CE, TÜV, [1]	328 092	328 850
Infeed of periphery voltage 24 V DC, max. 8 A	CE, TÜV, [1]	328 080	328 840

[1] Product labelling for the North American market is currently in preparation

Controllers and I/O systems

Keep up-to-date on the remote I/O system PSSuniversal 2:

Webcode: web150509

Online information at www.pilz.com

▶ Technical details – PSSuniversal 2

Digital inputs and outputs

PSS u2
EF 2DO R 8A

PSS u2 ES 4DI

Type	Function	Application area	
		Failsafe functions	Automation functions
PSS u2 EF 8DI	8 digital inputs	◆	
PSS u2 EF 8DO 0.5A	8 digital outputs	◆	
PSS u2 EF 4DO 2A	4 digital outputs	◆	
PSS u2 EF 2DO TP 2A	2 digital outputs	◆	
PSS u2 EF 2DO R 8A	2 relay outputs	◆	
PSS u2 ES 4DID	4 digital inputs		◆
PSS u2 ES 8DID	8 digital inputs		◆
PSS u2 ES 4DI	4 digital inputs		◆
PSS u2 ES 8DI	8 digital inputs		◆
PSS u2 ES 4DOD 0.5A	4 digital outputs		◆
PSS u2 ES 8DOD 0.5A	8 digital outputs		◆
PSS u2 ES 16DOD 0.5A	16 digital outputs		◆
PSS u2 ES 4DOD 2A	4 digital outputs		◆

Accessories

PSS u2 A LA E1

Type	Function
PSS u2 A LC E1 (10 pcs.)	Label holder 23.5 x 10.5 mm, 10 pcs.
PSS u2 A LC E2 (10 pcs.)	Label holder 103 x 10.5 mm, 10 pcs.
PSS u2 A LC T3 (10 pcs.)	Label holder for terminal block, 61 x 11.5 mm, 10 pcs.
PSS u2 A CE E (10 pcs.)	Coding element, 10 pcs.
PSS u2 A CE T (10 pcs.)	Coding strip, 10 pcs.
PSS u2 A SH 4 (10 pcs.)	Shield connection element for backplane/module rack with 4 slots (pack of 10)
PSS u2 A LA E1 (10 pcs.)	Label strip 23.5 x 10.5 mm (10 DIN A4 sheets)
PSS u2 A LA E2 (10 pcs.)	Label strips 103 x 10.5 mm (10 DIN A4 sheets)

Controllers and I/O systems

Features	Approvals	Order number	Suitable terminal block
8 digital inputs (24 V), 8/4 test pulse outputs	CE, TÜV, [1]	328 101	328 850
8 semiconductor outputs, positive-switching, max. 0.5 A	CE, TÜV, [1]	328 131	328 850
4 semiconductor outputs, positive-switching, max. 2 A	CE, TÜV, [1]	328 133	328 840
2 semiconductor outputs, 2-pole, max. 2 A	CE, TÜV, [1]	328 140	328 840
2 N/O contacts, 250 V AC/10 A, 24 V/10 A	CE, TÜV, [1]	328 150	328 840
4 digital inputs (24 V), extended diagnostics	CE, TÜV, [1]	328 310	328 840
8 digital inputs (24 V), extended diagnostics	CE, TÜV, [1]	328 311	328 850
4 digital inputs (24 V)	CE, TÜV, [1]	328 300	328 840
8 digital inputs (24 V)	CE, TÜV, [1]	328 301	328 840
4 semiconductor outputs, positive-switching, max. 0.5 A, extended diagnostics	CE, TÜV, [1]	328 400	328 840
8 semiconductor outputs, positive-switching, max. 0.5 A, extended diagnostics	CE, TÜV, [1]	328 401	328 850
16 semiconductor outputs, positive-switching, max. 0.5 A, extended diagnostics	CE, TÜV, [1]	328 402	328 850
4 semiconductor outputs, positive-switching, max. 2 A, extended diagnostics	CE, TÜV, [1]	328 410	328 840

	Approvals	Order number
	CE, TÜV, [1]	328 910
	CE, TÜV, [1]	328 911
	CE, TÜV, [1]	328 912
	CE, TÜV, [1]	328 860
	CE, TÜV, [1]	328 861
	CE, TÜV, [1]	328 820
	CE, TÜV, [1]	328 913
	CE, TÜV, [1]	328 914

[1] Product labelling for the North American market is currently in preparation

Controllers and I/O systems

Keep up-to-date on the remote I/O system PSSuniversal 2:

Webcode: web150509

Online information at www.pilz.com

▶ Consulting, engineering and training

As a solution supplier, Pilz can help you to apply optimum safety strategies worldwide. Services encompass the whole machine lifecycle. Our training package with practical, up-to-date course content completes the offering.

We are your reliable service provider for plant and machinery safety
Your projects belong in our safe hands!

Risk assessment
We inspect your machinery in accordance with the applicable national and/or international 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 organizational measures.

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

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

Our management system
was certified in the field of system integration
to EN/IEC 61508.

tuev-sued.de/ps-zert

Safety validation
In the safety validation, the risk assessment and safety concept are mirrored and inspected by competent, specialist staff.

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

International compliance services

We conduct the evaluation process and develop the necessary strategies in order to enable compliance with the relevant ISO, IEC, ANSI, EN or other national or international standards.

Machinery Safety Audit

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 optimizing your safeguards.

Inspection of safeguards

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

Pilz GmbH & Co. KG, Ostfildern, operates an independent inspection body in accordance with DIN EN ISO/IEC 17020:2012 for the plant and machinery sectory, accredited by the German Accreditation Body (DAkkS).

LOTO System

Our customized Lockout Tagout (LOTO) measures guarantee that staff can safely control potentially hazardous energies during maintenance and repair.

Training

Pilz offers two types of courses: Product-neutral seminars on machinery safety and product-specific courses

And to progress to the expert level in machinery safety we offer the qualification of CMSE® – Certified Machinery Safety Expert.

Services related to machinery safety:

Webcode: web7792

Online information at www.pilz.com

▶ Index

▶ Contact

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