What's NEW

New in 2018

PILZ

THE SPIRIT OF SAFETY

For your automation solutions

▶ What's new in 2018
for your automation solutions

Pilz provides automation solutions for plant and machinery: complete and simple. From sensor technology to control and drive technology – with safety and automation included. Various software tools enable simple operation and make commissioning easier. Benefit from short downtimes and high plant availability due to extensive diagnostic options. Here we present our product innovations for 2018 for your safe automation. Further information is available on our homepage at www.pilz.com. Simply enter the webcode listed on the following pages.

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▶ Magnetic safety switch PSENmag – Stainless steel versions

NEW

The non-contact magnetic safety switches PSENmag are now also available with a stainless steel housing. They hereby offer a high level of safety and maximum robustness for safety gate and position monitoring – even under extreme conditions. 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 also characterised by their vibration and impact resistance. The high B10D value ensures a long service life. You can enjoy user-friendly diagnostics thanks to the additional signal contacts and integrated LEDs.

Use the PSENmag stainless steel sensors in combination with PNOZmulti or PNOZsigma and achieve a safe and economical complete solution.

Your benefits at a glance
▶ Stainless steel housing ensures high level of safety and maximum robustness for extreme conditions
▶ Heat and cold-resistant for temperature ranges from -25 to 80 °C, connector version even up to 120 °C
▶ Can be used in areas with heavy soiling and strict cleaning regulations IP67/IP69k
▶ High level of safety, even in potentially explosive areas
▶ Vibration and impact-resistant
▶ Long service life thanks to high B10D value
▶ Compact design for space-saving installation
▶ User-friendly diagnostics using LEDs on the cable version

Magnetic safety switch PSENmag – Stainless steel versions

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

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

Technical features	▸ Approved for applications up to PL e in accordance with EN ISO 13849-1 and SIL CL 3 in accordance with EN/IEC 62061 in conjunction with safety relays PNOZ s3, PNOZ s4, PNOZ s5, PNOZ e1p, PNOZ e1.1p, PNOZ e1vp, PNOZ e5.11p ▸ 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	
Order number	▸ PSEN ma1.3b-21/PSEN ma1.3-08/VA/1U Cable: 10 m, LED	506 242
	▸ PSEN ma1.3b-21/VA/1switch Cable: 10 m, LED	526 242
	▸ PSEN ma1.3b-27/PSEN ma1.3-08/IX/VA/1U: Cable: 10 m, LED, series connection: PSEN ix1	506 243
	▸ PSEN ma1.3b-27/IX/VA/1switch Cable: 10 m, LED, series connection: PSEN ix1	526 243
	▸ PSEN ma1.3a-21/PSEN ma1.3-08/VA/1U Cable: 5 m, LED	506 240
	▸ PSEN ma1.3a-21/VA/1switch Cable: 5 m, LED	526 240
	▸ PSEN ma1.3a-27/PSEN ma1.3-08/IX/VA/1U: Cable: 5 m, LED, series connection: PSEN ix1	506 241
	▸ PSEN ma1.3a-27/IX/VA/1switch Cable: 5 m, LED, series connection: PSEN ix1	526 241
	▸ PSEN ma1.3b-24/PSEN ma1.3-08/EX/VA/1U: Cable: 10 m, LED, ATEX	506 254
	▸ PSEN ma1.3b-24/EX/VA/1switch Cable: 10 m, LED, ATEX	526 254
	▸ PSEN ma1.3b-28/PSEN ma1.3-08/IX/EX/VA/1U: Cable: 10 m, LED, ATEX, series connection: PSEN ix1	506 255
	▸ PSEN ma1.3b-28/IX/EX/VA/1switch Cable: 10 m, LED, ATEX, series connection: PSEN ix1	526 255
	▸ PSEN ma1.3n-20/PSEN ma1.3-08/VA/1U Connector, M12, 5-pin	506 246
	▸ PSEN ma1.3n-20/VA/1switch Connector, M12, 5-pin	526 246
	▸ PSEN ma1.3-20 M12/8/PSEN ma1.3-08/VA/1U Connector, M12, 8-pin	506 249
	▸ PSEN ma1.3-20 M12/8/VA/1switch Connector, M12, 8-pin	526 249
	▸ PSEN ma1.3-22 M12/8/PSEN ma1.3-08/IX/VA/1U Connector, M12, 8-pin, series connection: PSEN ix1	506 247
	▸ PSEN ma1.3-22 M12/8/IX//VA/1switch Connector, M12, 8-pin, series connection: PSEN ix1	526 247
	▸ PSEN ma1.3-08/VA/1actuator LED	516 140
	▸ PSEN ma1.3-08/EX/VA/1actuator LED, ATEX	516 145

Webcode:
web150413

Online information
at www.pilz.com

▶ Modular safety gate system –
Your gate. Our system. Your safety.

NEW

With our modular safety gate system, we offer you an individual safety gate solution that is ideally tailored to your application. That means you can combine the individual components flexibly to suit your own particular requirements. Benefit from an economical series connection, rapid diagnostics, additional control and pushbutton elements and an optional escape release.

The following components are available for forming your modular safety gate system:

▶ Safety gate sensor PSENslock
  for safe position monitoring
  with process guarding
▶ Safety gate sensor PSENmlock
  for safe interlock and guard locking
  in one product
▶ Escape release and suitable
  handles for the safety gate system
  PSENmlock
▶ Safety Device Diagnostics (SDD)
  for comprehensive diagnostics
  and economical series connection
  of the safety gate sensors
  PSENmlock
▶ Pushbutton unit PITgatebox
  for simple operation of the
  safety gate system

Your benefits at a glance

▶ Individual solution tailored to the application
▶ Comprehensive modular portfolio
▶ Many different combination options
▶ High quality thanks to certification to common safety standards
▶ Quickly integrated into your plant
▶ Simple operation and maintenance
▶ A complete one-stop solution that's safe and economical
▶ Ideal for use in combination with safe control technology from Pilz

Modular safety gate system

	PSENslock		PSENmlock		
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 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 safety category and in series connection.

The safety gate sensor PSENmlock offers safe interlock and guard locking to PL e. The latter is enabled by the dual-channel control of the guard locking. Connect PSENmlock in series and benefit from a low-cost installation. Together with the 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 PSENml escape release directly to the base unit, while the remote escape release PSENml escape release cordset is mounted on the PSENmlock via a pull-push wire. Whether it's for a swing gate or sliding gate: we can offer you the right handle (see page 8).

**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. The PITgatebox gives you a modular safety gate solution tailored to your particular needs, especially when combined with the secure safety gate systems PSENmlock and PSENslock (see page 10).

Webcode:
web194460

Online information
at www.pilz.com

▶ Safety gate system PSENmlock – Series connection and escape release

NEW

The safety gate system PSENmlock offers a safe interlock and safe guard locking device in a single product. The latter is enabled by the dual-channel control of the guard locking. The switch is therefore particularly suitable for machines with dangerous overrun in which safe guard locking up to PL d or PL e is necessary.

PSENmlock with series connection
In addition to the base version of the PSENmlock, we now also offer a version for series connection. This makes cost-effective installation possible thanks to reduced wiring work and series connection of the safe input and output signals. Together with the Safety Device Diagnostics (SDD), the 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.

Your benefits at a glance
▶ Cost-effective installation thanks to reduced wiring work and series connection of the safe input and output signals
▶ In combination with Safety Device Diagnostics:
  - Targeted activation of individual sensors in the chain
  - Simple and comprehensive diagnostics to reduce downtimes
▶ Guaranteed safety even in the event of danger thanks to the escape release
▶ Remote escape release for simple installation and a low-maintenance solution

PSENmlock with escape release
Two versions with escape release are available to you as optional accessories. A bar is used to connect the PSENml escape release directly to the base unit, while the PSENml 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.

Safety gate system PSENmlock – Series connection and escape release

PSEN ml be 1.1 unit

PSEN ml escape release

PSEN ml escape release cordset 2,0m

Order number	PSENmlock with series connection		
	PSEN ml s 1.1 unit	Coded	570 406
	PSEN ml s 1.1 switch	Coded	570 407
	PSEN ml s 2.1 unit	Fully coded	570 408
	PSEN ml s 2.1 switch	Fully coded	570 409
	PSEN ml s 2.2 unit	Unique, fully coded	570 410
	PSEN ml s 2.2 switch	Unique, fully coded	570 411
	Escape release accessories		
	PSEN ml escape release	Suitable for PSEN ml b, PSEN ml s	570 460
	PSEN ml escape release extension	Suitable for PSEN ml b, PSEN ml s	570 462
	PSEN ml escape release cordset 1.5m	Suitable for PSEN ml b, PSEN ml s, length: 1.5 m	570 470
	PSEN ml escape release cordset 2.0m	Suitable for PSEN ml b, PSEN ml s, length: 2.0 m	570 471
	PSEN ml escape release cordset 2.5m	Suitable for PSEN ml b, PSEN ml s, length: 2.5 m	570 472
	PSEN ml escape release cordset 3.0m	Suitable for PSEN ml b, PSEN ml s, length: 3.0 m	570 473
	PSEN ml escape release cordset 3.5m	Suitable for PSEN ml b, PSEN ml s, length: 3.5 m	570 474
	PSEN ml escape release cordset 4.0m	Suitable for PSEN ml b, PSEN ml s, length: 4.0 m	570 475
	Handle accessories		
	PSEN ml door handle sliding gates	For sliding gate	570 495
	PSEN ml door handle swing gate 70	For swing gate	570 496
	PSEN ml door handle swing gate 80	For swing gate, when using mounting plate 570 490	570 497

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
▶ Type of coding: coded, fully coded, uniquely fully coded
▶ Holding force: 7 500 N
▶ Connection type: M12, 8-pin, pigtail
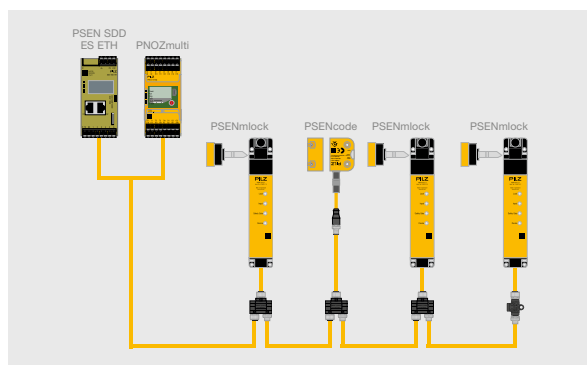
Targeted activation of individual sensors with series connection with the SDD.
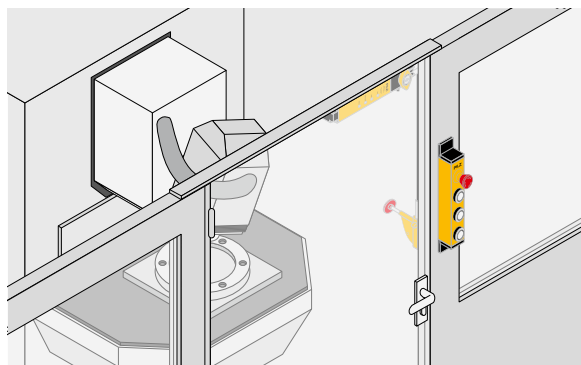
Additional operator and pushbutton elements with pushbutton unit PITgatebox.

Webcode: web150409

Online information at www.pilz.com

▶ The pushbutton unit PITgatebox –
Easy operation of your safety gate system

NEW

With the pushbutton unit PITgatebox you can easily and flexibly control safety gate switches and systems. It also allows you to control commands that activate, stop or acknowledge your machine or system.
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. The PITgatebox gives you a modular safety gate solution tailored to your particular needs, especially when combined with the secure safety gate systems PSENmlock and PSENslock.

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

Pushbutton unit PITgatebox
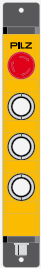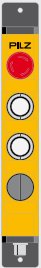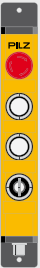
	Technical features	▶ M12, 12-pin connection ▶ Robust die cast zinc housing ▶ Protection type IP65 ▶ Slimline design: 40 mm profile ▶ Rotatable end caps (-90°, +90°,+180°)

PIT gb LLLE

Selection guide – pushbutton unit PITgatebox

	G1000001 PIT gb LLLE	G1000002 PIT gb CLLE y	G1000003 PIT gb BLLE y	G1000004 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)
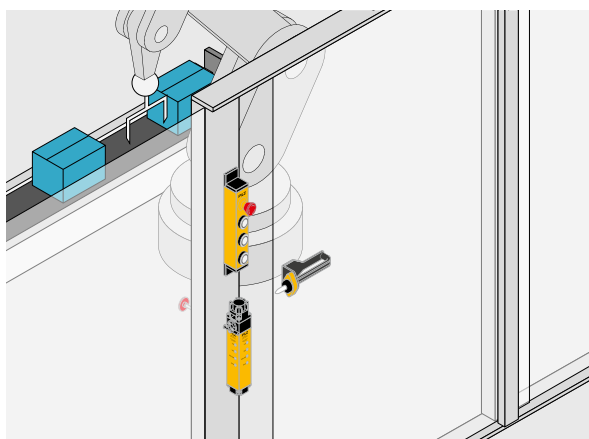
Modular safety gate system
including PITgatebox.

▶ Light curtain PSENopt II – Coding and mirror columns

NEW

Light curtains PSENopt II provide safe access to the production process and provide finger and hand protection, depending on the requirement. They are suitable for applications up to PL e in accordance with EN/IEC 61496. With a shock resistance of 50 g, PSENopt II are extremely robust with regard to shocks, vibrations and collisions. The availability of your machine is thus guaranteed at all times. This is supported by the user-friendly diagnostics through LEDs.

Mirror columns

In order to secure several sides of a hazardous area, 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.

Your benefits at a glance
▶ Coding for greater flexibility in the physical arrangement of the light curtains
▶ Securing several sides of a danger zone with PSENopt II mirror columns
▶ Mirror columns can be used with all PSENopt and PSENopt II light curtains
▶ Adjustable base unit offers additional protection against strong mechanical impact and enables an adjustment of the mirror column in uneven conditions

It also enables the mirror column to be adapted to uneven conditions.

Light curtains PSENopt II – Mirror column

Technical features	▶ Mirror column consisting of a post protector and an integrated mirror ▶ Mirror lengths of 600 to 1,950 mm ▶ Can be used with light curtains PSENopt and PSENopt II ▶ Optional accessories: PSENopt II adjustable base unit	
Order number	▶ PSEN opII mirror column-060 mirror column, 600 mm	632 032
	▶ PSEN opII mirror column-090 mirror column, 900 mm	632 033
	▶ PSEN opII mirror column-120 mirror column, 1,200 mm	632 034
	▶ PSEN opII mirror column-165 mirror column, 1,650 mm	632 035
	▶ PSEN opII mirror column-195 mirror column, 1,950 mm	632 036
	▶ PSEN opII adjustable base unit adjustable base plate for PSENopt II mirror column	632 037

PSEN opII mirror column-060

PSEN opII adjustable base unit

Coding

Starting now the physical arrangement of your light curtains knows no limits. That's because the coding of the light curtains means that they do not interfere with each other, even in close proximity. This is particularly important when the transmitter of the first light curtain pair sends beams in the direction of the receiver of the second light curtain pair. In this case, the light curtain pairs can be configured with different beam codes. "Code A", "Code B" and "not coded" are available. The coding is integrated into all PSENopt II light curtains.

Light curtain PSENopt II with integrated coding for a flexible arrangement with close proximity.
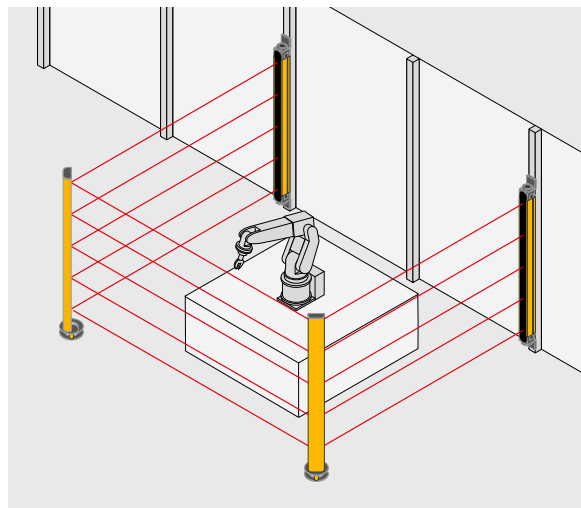
Securing several sides of a hazardous area with PSENopt II mirror columns.

Webcode: web150418

Online information at www.pilz.com

▶ Camera-based protection system PSENvip 2 – Long-range version

NEW

The new long-range version PSENvip LR is the first and only protective device for press brakes with a protection range of up to 18 metres. That makes it ideal for monitoring special presses such as tandem presses. The transmitter remains the same; only the receiver (PSENvip R LR) need be changed. Monitor your tandem press with just one protection system and avoid the need for a combination of mobile protective device and light curtains. With the long-range version you also have a hot-pluggable protection system: if two press brakes are set up side by side, the transmitter and receiver in the middle can simply be folded away. The transmitter from machine 1 then works with the receiver from machine 2 – without having to restart. That means you avoid unnecessary downtimes. Furthermore, the long-range version of the PSENvip impresses with its customary high robustness. In conjunction with the automation system PSS 4000, you obtain a safe and productive one-stop solution.

Your benefits at a glance
▶ Highest level of safety for press brakes in accordance with the most current safety standards and EN 12622
▶ Suitable for special presses thanks to protection range of up to 18 metres
▶ Hot-pluggable to avoid downtimes
▶ Maximum productivity in combination with the automation system PSS 4000
▶ Highly robust thanks to non-sensitive technology
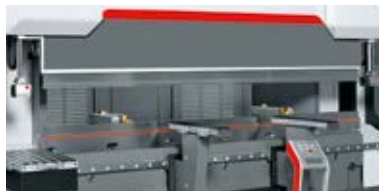
Camera-based protection system PSENvip 2

PSENvip R LR

PSENvip E

Technical features

▶ 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
▶ Operating range: 18 m
▶ Detection zone:
  - Length: 0.1 … 18 m
  - Height: max. 20 mm
  - Width: 44 mm
▶ Reaction time: 4.65 ms (sensor + FAU)

Type	Features	Certification	Order number
▶ PSENvip R LR	PSENvip 2, receiver	TÜV, UL, EAC	584 101
▶ PSENvip E	PSENvip 2, transmitter	TÜV, UL, EAC	584 200
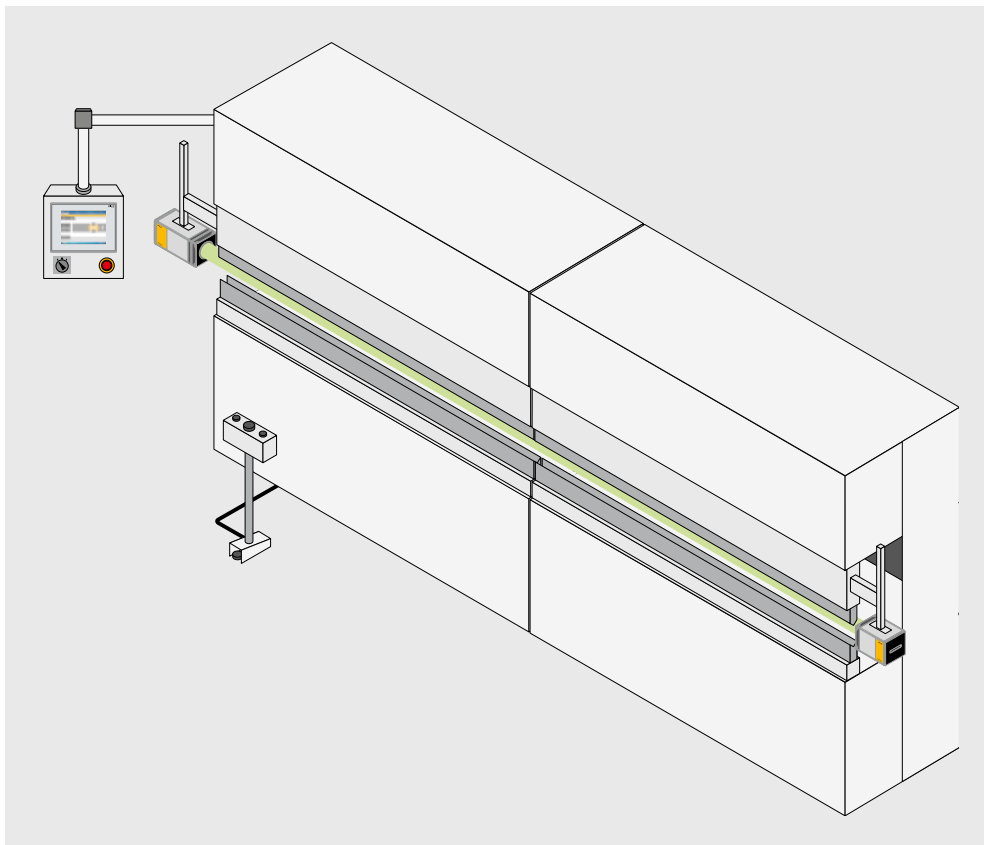
Safe monitoring of tandem presses with the camera-based protection system PSENvip 2 Long Range and the automation system PSS 4000.

Webcode:
web150415

Online information
at www.pilz.com

Available from June 2018

▶ Pressure-sensitive safety mat PSENmat – Individual operation and safe monitoring

NEW

The world-first PSENmat is a pressure-sensitive safety mat (failsafe) with integrated switch functionality (standard). This means you can now benefit from safe area monitoring and an operating function based on integrated virtual switches. PSENmat slows or stops the machine when personnel enter the hazardous area (access protection) and/or step behind. The reaction time is an extremely fast ≤ 25 ms. PSENmat also features position detection, thus enabling new machine operating concepts. The worker can use the integrated switch functionality via the defined mat zones, keeping both hands free for working. The uses of PSENmat are wide-ranging: operating processes for machinery, quality control, plus obscured and obstructed applications. The integrated OSSD outputs provide for high flexibility because they can be linked to any evaluation unit and considerably reduce the cabling requirements thanks to series connection capability. Up to 22 pressure-sensitive safety mats can be linked.
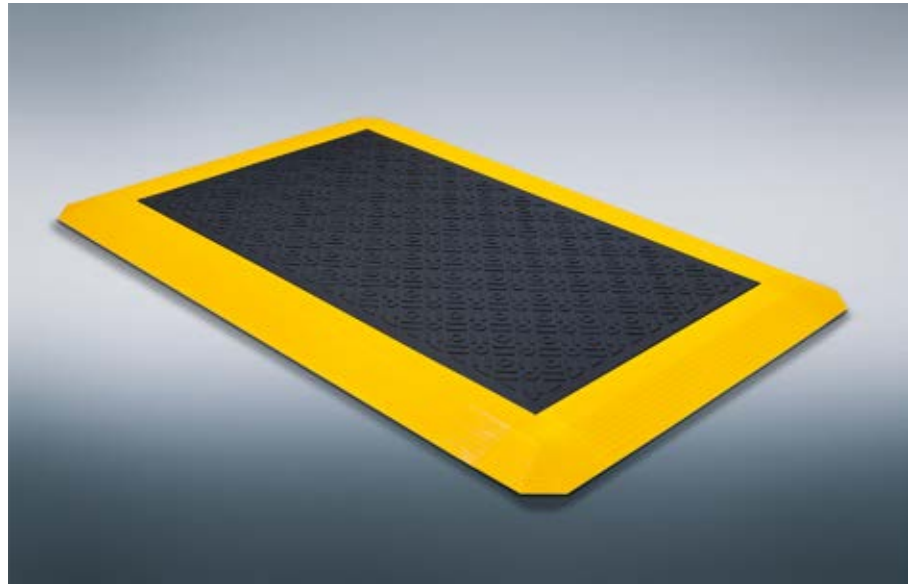
Your benefits at a glance

▶ Pressure-sensitive safety mat (failsafe) and position detection (standard) in a single product; the first ever combination of area monitoring and virtual switch function

▶ Thanks to the integrated switch functionality, PSENmat supports new machine concepts, hands-free working and an obstruction-free workspace

▶ Compliant with standard EN ISO 13856-1

▶ Integrated OSSD outputs for high flexibility and reduced cabling

▶ Possible to connect up to 22 mats in series

▶ Extremely fast reaction time: ≤ 25 ms

▶ Robust safety mat designed for large mechanical loads: protection type IP67

▶ SIL 2 in accordance with EN ISO 61508, safety level PL d in accordance with EN 13849

▶ Can be used at ambient temperatures from 0 to +50 °C

Pressure-sensitive safety mat PSENmat 1000 600 32 PUR

PSENmat

Technical features		
	▸ Dimensions in mm (L x W x H)	1,000 x 600 x 32 mm
	▸ Approval	BG, CE, cULus listed
	▸ Supply voltage	24 VDC (SELV/PELV)
	▸ Power consumption	Max. 2.5 W (per signal encoder)
	▸ Reaction time	≤ 25 ms
	▸ Protection type	IP67
	▸ Static load	max. 800 N/cm^2
	▸ Environmental data	
	- Temperature	0 … +50 °C
	- Humidity	Max. 95 %
	- EMC	Level/Class 3 in accordance with EN ISO 13856-1, Table 4
	- Vibration	f = 10 … 55 Hz, A = 0.15 mm, 10 cycles (EN 60060-2-6)
	▸ Signal encoder	
	- Surface material	PUR
	- Chemical resistance	Resistant to the usual influences at an exposure time of 24 h
	- Fire behaviour	B2 in accordance with EN 13501-1

Order number		
	Pressure-sensitive safety mat, black	
	▸ PSENmat 1000 600 32 PUR bk	6U000001
	Pressure-sensitive safety mat, light grey	
	▸ PSENmat 1000 600 32 PUR gr	6U000002
	Ramps	
	▸ PSENmat ramp ec PUR	6U000003
	▸ PSENmat ramp ic PUR	6U000004
	▸ PSENmat ramp PUR 1000	6U000005
	▸ PSENmat ramp PUR 862	6U000006
	▸ PSENmat ramp PUR 724	6U000007
	▸ PSENmat ramp PUR 600	6U000008
	▸ PSENmat ramp PUR 462	6U000009
	▸ PSENmat ramp PUR 324	6U000010
	Terminator	
	▸ PSENmat Terminator	560 100
	▸ SDD ES ETH mat	540 140

Planned introduction: June 2018
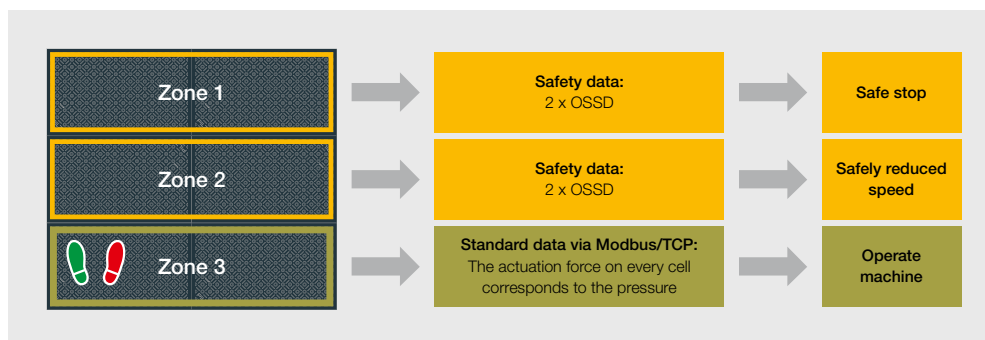
Pressure-sensitive safety mat PSENmat with individually definable "virtual switches".

▶ PNOZsigma Configurator – For simple configuration of the PNOZ s30

NEW

With the PNOZsigma Configurator it is possible to configure the standalone speed monitor PNOZ s30 quickly, easily and individually using a PC.

Configuration is possible for all device versions from V2.2. Using the software, new configurations can be created and stored digitally, and existing configurations can be read, copied and edited. When exchanging equipment or changing the configuration, the software allows previously used and saved configurations to be called up. Configurations can be written onto a SIM card using the PNOZ Chip Card Reader and thus transferred to the PNOZ s30.

Your benefits at a glance
- ▶ Quick and easy configuration via a PC
- ▶ Considerable improvement of user friendliness and time savings during configuration
- ▶ Creation and digital storage of individual configurations
- ▶ Reading, copying and editing existing configurations
- ▶ In the event that devices are exchanged, the software can be used to access previously used and stored configurations without any problems
- ▶ Can be used for all device versions from V2.2

Safety relay PNOZsigma – Speed monitoring with PNOZ s30

PNOZ s30

Order number	▸ PNOZ s30 C with push-in spring-loaded terminals	751 330
	▸ PNOZ s30 with plug-in screw terminals	750 330
	▸ PNOZsigma Configurator s30 Licence unlimited – licence for the PNOZsigma Configurator for configuration of the PNOZ s30 with no time limitation	750 700
	▸ PNOZsigma Configurator s30 Licence 1 year – licence for the PNOZsigma Configurator for configuration of the PNOZ s30 limited to 1 year	750 701
	▸ PNOZ Chip Card Reader – chip card reader for PNOZ s30	779 230

▸ Safety relay PNOZsigma – Speed monitor PNOZ s30 with new functionality

With the safe speed monitor PNOZ s30 you can monitor standstill, speed, speed range, position, direction of rotation and shear pin breakage up to PL e/SIL CL 3. From version 3.0, PNOZ s30 has a configurable analogue output.

The analogue output passes on the safely measured speed to the controller as a proportional signal of 0 … 20 or 4 … 20 mA, making it possible to use the speed directly for process monitoring. Thanks to the analogue output you do not need to use additional sensors for speed detection.

You can interlink up to three functions by AND/OR logic; AND and OR can also be combined.

Your benefits at a glance
▸ Productivity is increased by avoiding unnecessary shutdown processes: PNOZ s30 indicates overshooting and undershooting of defined warning thresholds by means of a safe output signal
▸ Implementation of safety functions that are laid down in the standard EN 61800-5-2 for adjustable speed electrical power drive systems
▸ Direct use of the safely measured speed by means of handover to higher level PLC controller for process monitoring via analogue output
▸ Reduced cabling work; fewer wiring errors thanks to AND/OR logic
▸ Easy to configure with PNOZsigma Configurator
▸ Illuminated display

Webcode:
web150619

Online information
at www.pilz.com

▶ Safe small controllers PNOZmulti 2 – New motion monitoring functions

NEW

The motion monitoring modules for the configurable small controllers PNOZmulti 2 ensure safe monitoring of your drives. Existing safety functions have now been supplemented with monitoring of safely limited acceleration SLA-M and safe acceleration range SAR-M. This makes your plant and machinery even safer and more productive. The SLA-M function safely monitors the maximum acceleration of the drive, if necessary preventing the motor from exceeding the defined acceleration limit. The SAR-M function ensures that the safely limited acceleration remains within defined limit values.

Configuration of the safety functions is performed using the software tool PNOZmulti Configurator. This makes it easy to define limit values and ranges. A separate module program mIQ that is then run locally is configured for the motion monitoring modules. Fine-granular configuration of several monitoring areas is possible. The module program mIQ guarantees safe delayed shutdown of the drive.

Your benefits at a glance

▶ Realise safety functions in accordance with IEC 61800-5
▶ Comprehensive motion monitoring safety functions for high availability of your application. New: SLA-M and SAR-M. In addition to SS1/SS2/SSR/SSM/SDI/SOS
▶ Simple configuration of the functions via certified software blocks in the PNOZmulti Configurator
▶ Maximum flexibility due to the module program mIQ
▶ Fast response times – load on base unit is reduced
▶ Productive plant and machinery – reduce your costs with the highest safety
▶ Play it safe and use PNOZmulti 2 – the worldwide safety standard for all machine types

Safe small controllers PNOZmulti 2 – new motion monitoring safety functions

PNOZ m EF 1MM

PNOZ m EF 2MM

SS1
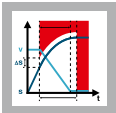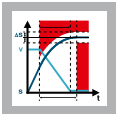
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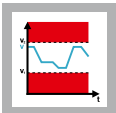
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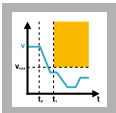
SSM
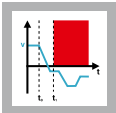
SDI
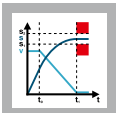
SOS
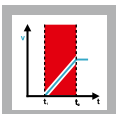
SLA
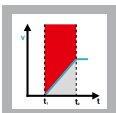
SAR

Technical features	**PNOZ m EF 1MM** ▸ For monitoring of one axis **PNOZ m EF 2MM** ▸ Monitoring of two independent axes (8 limit frequencies can be selected) **Common features** ▸ Configuration of special module programs (mIQ). The user program consists of a main program and one or more module programs. Each module is configured in a separate module program. The module program is structured and configured in the same way as the main program; however the only elements available are those that are actually needed by the module to be configured. ▸ Safety functions in accordance with IEC 61800-5-2: 2016-04 for adjustable speed electrical power drive systems, Part 5-2: Safety requirements – Functional - New: monitoring of safely limited acceleration: SLA-M - New: monitoring of the safe acceleration range: SAR-M - Safe stop 1: SS1 - Safe stop 2: SS2 - Safe speed range: SSR - Safe speed monitor: SSM - Safe direction: SDI - Safe operating stop: SOS ▸ Can be used with the base units PNOZ m B0 or PNOZ m B1 ▸ Approvals: CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC

Order number	▸ PNOZ m EF 1MM	772 170
	▸ 1 set of spring-loaded terminals	783 542
	▸ 1 set of plug-in screw terminals	793 542
	▸ PNOZ m EF 2MM	772 171
	▸ 1 set of spring-loaded terminals	783 544
	▸ 1 set of plug-in screw terminals	793 544
	Connection to all common incremental encoders via industry-compatible interface MINI-IO, using drive-specific connection cable. Available versions at www.pilz.com, webcode: web87010 e.g.	
	▸ MM A MINI-IO CAB99 1.50 m	772 200
	▸ PNOZmulti Configurator, Version 10.6 Demo software can be downloaded from the Internet (for registered users), information at www.pilz.com, webcode: web8633, Download tab	773 010B i.a.

mIQ

PNOZmulti 2

Safe small controllers PNOZmulti 2 with module program (mIQ) for configuration of several monitoring areas, such as velocity or rotational speed, which are then executed locally on the expansion module.

▶ Safe small controllers PNOZmulti 2 – For safe press applications

NEW

You can configure the safe small controllers PNOZmulti 2 simply and with software protection. For safe monitoring of mechanical presses, you can now rely on the new dual-pole semiconductor output module PNOZ m EF 8DI2DOT. Two safety outputs serve the actuation of press safety valves or other actuators that require dual-pole switching. The eight inputs can be configured with an individual filter time to enable correct operation with a variety of input signals. Certified press blocks in the software tool PNOZmulti Configurator, e.g. for operating modes or monitoring functions, render use easy and economical. A special advantage is the option of configuring a separate module program (mIQ) which is then run locally on the module with very short cycle times of approx. 3 ms. The output actuation is also very fast. You thus benefit from very short reaction times of < 8 ms.

Your benefits at a glance
▶ Maximum safety: simple configuration of press functions using certified software blocks with module program technology (mIQ) for each module
▶ Rapid reaction times (< 8 ms) and short cycle times of approx. 3 ms: press application is processed directly in the module
▶ Fine module-specific adjustment
▶ Particularly well suited for retrofit thanks to narrow width
▶ Depending on the application up to PL e, SIL CL 3
▶ Play it safe and use PNOZmulti 2 – the worldwide safety standard for all machine types

Configurable safe small controllers PNOZmulti 2 – PNOZ m EF 8DI2DOT

PNOZ m EF 8DI2DOT

PNOZ

PNOZmulti Configurator

Technical features	▶ Expansion module for connection to the right of a base unit PNOZmulti 2 (PNOZ m B0 or PNOZ m B1)
	▶ 8 digital inputs, configurable filter time can be parametrised for each input
	▶ 2 safety outputs: Dual-pole outputs using semiconductor technology
	▶ 2 test pulse outputs for detection of shorts across contacts
	▶ Max. 12 expansion modules can be connected to PNOZ m B1, max. 6 to PNOZ m B0
	▶ Safety-related characteristic data: Depending on the application, up to PL e in accordance with EN ISO 13849-1 and up to SIL CL 3 in accordance with EN IEC 62061
	▶ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120
	Software tools
	▶ Can be configured using the software tool PNOZmulti Configurator, Version 10.7
	▶ Certified press blocks: Operating modes such as setup, single-stroke, automatic. Monitoring a mechanical rotary cam arrangement; run monitoring to monitor the mechanical transmission for shear pin breakage; monitoring of electrosensitive protective equipment in detection and/or cycle mode; monitoring and control of the press safety valve plus cycle initiation via a two-hand control device
	▶ One separate module program (mIQ) with 256 connection lines can be configured for each expansion module. The user program consists of a main program and one or more module programs. The module program is set up like the main program. The configuration of the press module elements occurs directly in the module program. The processing is decentralised and occurs in the module
	▶ Demo software can be downloaded from the Internet (for registered users), information at www.pilz.com, webcode: 150399, download
	▶ Purchasing a licence converts the demo software to a full version.

Order number	▶ PNOZ m EF 8DI2DOT	772 144
	▶ 1 set of push-in spring-loaded terminals	751 004
	▶ 1 set of plug-in screw terminals	750 004

mIQ
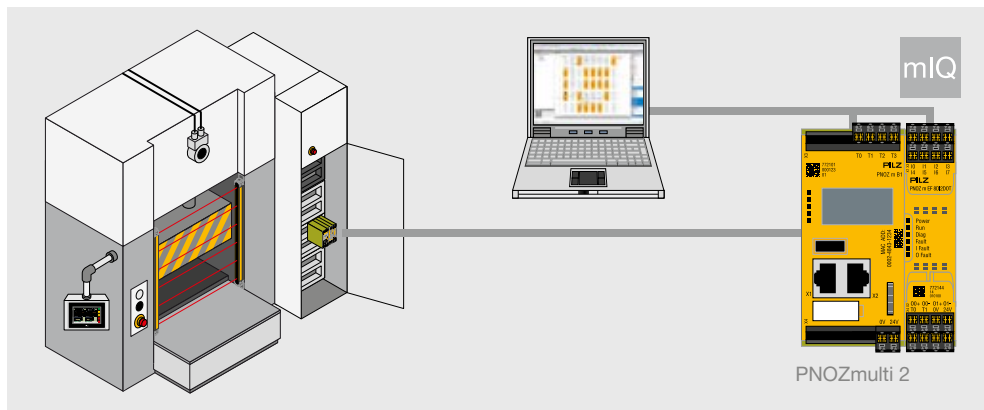
PNOZmulti 2

Configurable safe small controllers PNOZmulti 2: Base unit PNOZ m B1 with the dual-pole semiconductor output module PNOZ m EF 8DI2DOT for configuring safe press functions. The module program technology mIQ enables particularly fast reaction times (< 8 ms) and short cycle times of approx. 3 ms.

Webcode: web150500

Online information at www.pilz.com

▶ # Safe small controllers PNOZmulti 2 – Safely monitor analogue input signals

NEW

The product family for the configurable safe small controllers PNOZmulti 2 has been expanded to include an analogue input module PNOZ m EF 4AI. It provides four independent safe analogue current inputs. The inputs are suitable for connecting transducers or encoders with standardised current signals. Any measured variables such as pressure, temperature, fill level, distance etc. can be safely recorded. Modules are available in the software tool PNOZmulti Configurator: Limit value and range monitoring can be parametrised with just a few clicks of the mouse. In addition, the analogue measurement values in numerical quantities can already be scaled with any unit during the configuration. Arithmetic functions such as averaging, differential pressure calculation and similar facilitate the use for special applications. In combination with the visualisation software PASvisu, analogue values can be displayed and evaluated. The analogue input module is suitable for many varied possible applications, in particular for the industries of process engineering and cable car and chair lift design.

Your benefits at a glance

▶ Safe and precise monitoring of process values: to PL e, SIL CL 3
▶ Fast, simple project planning: new software blocks for input, feasibility, scaling and arithmetic functions
▶ Limit value and range monitoring can be parametrised
▶ Fast reaction times: Module program technology mIQ with decentralised processing in the module
▶ User-friendly diagnostics: Up to 6 analogue values can be transferred to the fieldbus for each module
▶ Play it safe and use PNOZmulti 2 – the worldwide safety standard for all machine types

Configurable safe small controllers PNOZmulti 2 – Analogue input module PNOZ m EF 4AI

PNOZ m EF 4AI

PNOZ

PNOZmulti
Configurator

Technical features	
	▸ Expansion module for connection to the right of a base unit PNOZmulti 2 (PNOZ m B0 or PNOZ m B1)
	▸ 4 independent safe analogue current inputs, each input can be configured separately
	▸ Current range: 4 … 20 mA, measuring range: 0 … 25 mA
	▸ Resolution: 15 bit + sign bit
	▸ Workspace monitoring in accordance with Namur NE 43 (range limits are freely configurable)
	▸ Limit value/range monitoring (limit values freely configurable)
	▸ Max. 12 expansion modules can be connected to PNOZ m B1, max. 6 to PNOZ m B0
	▸ Safety-related characteristic data: Depending on the application, up to PL e in accordance with EN ISO 13849-1 and up to SIL CL 3 in accordance with EN IEC 62061
	▸ Exact analogue values can be passed on via fieldbus to a higher-level controller for diagnostic purposes. Visualisation via the web-based software PASvisu.
	▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120
	Software tools
	▸ Can be configured using the software tool PNOZmulti Configurator, Version 10.8
	▸ One separate module program (mIQ) with 256 connection lines can be configured for each expansion module. The user program consists of a main program and one or more module programs. The module program is set up like the main program and is configured in the same manner. The configuration of the analogue module elements occurs directly in the module program. Processing is decentralised and occurs in the module.
	▸ Demo software can be downloaded from the Internet (for registered users), information at www.pilz.com, webcode: 150399, download
	▸ Purchasing a licence converts the demo software to a full version.
Order number	▸ PNOZ m EF 4AI 772 160
	▸ 1 set of push-in spring-loaded terminals 751 004
	▸ 1 set of plug-in screw terminals 750 004
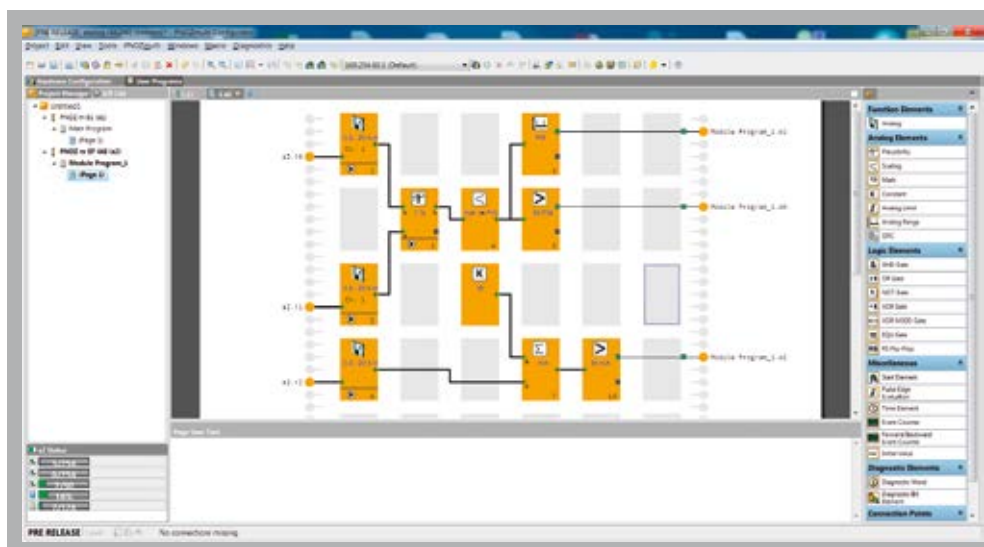
Configurable safe small controllers PNOZmulti 2: Simple configuration of analogue functions in the software tool PNOZmulti Configurator in a separate module program. Advantage: Fast project planning thanks to new software blocks for input, feasibility, scaling and arithmetic functions with fine adjustment of the values. Quick and easy commissioning is possible thanks to the dynamic program display.

Webcode: web150500

Online information at www.pilz.com

▶ First safe PLC controller with protection type IP67

NEW

The automation system PSS 4000 now offers you PLC controllers with protection type IP67 for safe cabinet-free automation. Thanks to the fully encapsulated module electronics they are mechanically particularly robust. They can be installed directly on the machine and need minimal space, so that the cabling work is considerably reduced compared with cabinet-based systems.
You can program PSS67 PLC with the engineering software PAS4000 in the programming languages according to IEC 61131-3 and with PASmulti Editor. You can save the whole device configuration on a securely integrated microSD card. This makes it easier to exchange devices, as you only need to switch the microSD card. There is no need to reconfigure.

Part of
PSS 4000

Your benefits at a glance
▶ Protected against dust and splashwater, can be used at temperatures ranging from 0 °C to +60 °C
▶ Compatible with all previous components of the automation system PSS 4000 and programmable via the engineering software PAS4000
▶ Safety and automation in one system
▶ Can be combined with the compact module PSS67 IO1 16FDI
▶ Web-based visualisation with the PASvisu software
▶ Low space requirement thanks to cabinet-free installation directly on the machine
▶ Less cabling work means reduced costs
▶ Greater flexibility thanks to new options available on modular plants

Controller PSS67 PLC1 16FDI

PSS67 PLC1
16FDI

Technical features	▸ 1 FS resource and 1 ST resource ▸ SafetyNET p connection ▸ External connections: Modbus/TCP, Raw UDP, Raw TCP, EtherNet/IP, PROFINET ▸ 16 safe digital inputs ▸ microSD card to store the device project and naming data ▸ Protection type: IP67 ▸ Can be used for applications up to PL e ▸ Dimensions: 61.5 x 260 x 45 mm

Order number		
	▸ PSS67 PLC1 16FDI	316020
	Compact module PSS67 IO1 16FDI	
	▸ PSS67 IO1 16FDI	316010
	Accessories:	
	▸ Cap for the microSD card and the reset pushbutton	316011
	▸ microSD card 512 MB	328835
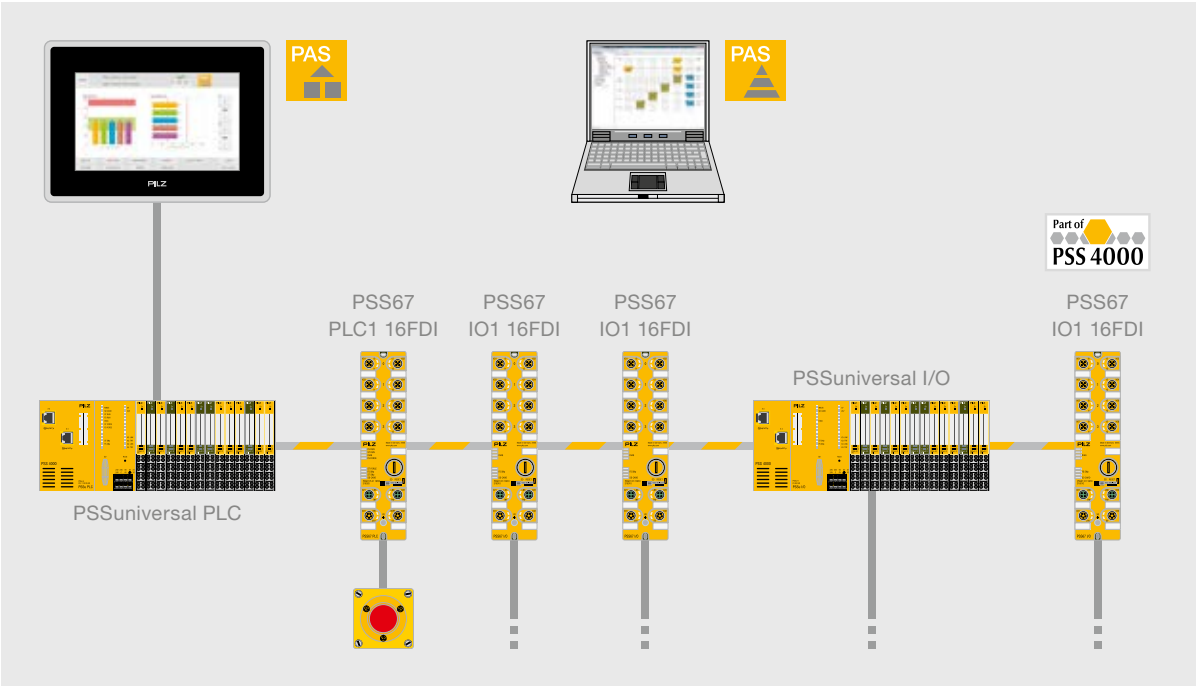
PSS67 PLC1 16FDI can easily be integrated into the system architecture of the automation system PSS 4000.

Online information
at www.pilz.com

▶ Energy store PMCenergy SD –
Save energy with drive technology

NEW

Discover a new option for processing brake energy and benefit from more energy-efficient drive technology! The new energy stores PMCenergy SD save energy, used in conjunction with the servo amplifiers PMCprotego D and PMCtendo DD5!

The available braking energy is simply absorbed – without mains feedback, as the energy store has no direct contact with the input-side power supply.

The level of the operating voltage in the intermediate circuit is determined independently by PMCenergy SD. PMCenergy SD absorbs any energy that exceeds the voltage in the intermediate circuit. If the level falls short, PMCenergy SD pumps energy back. That is the point at which energy is saved. The servo amplifiers' intermediate circuits can simply be connected together, so that only one energy store is needed per axis group. The result is a very economical solution, particularly on larger-scale plant and machinery. Additional modules are available for the energy store PMCenergy SD, which can simply increase the storage capacity – depending on the requirement.

Your benefits at a glance

▶ Save energy by buffering the brake energy within the overall system, comprising PMCprotego D or PMCtendo DD5
▶ Low heat generation ensures a longer service life for the devices
▶ Cost and space reduction due to use of smaller cooling devices
▶ Servo amplifier with lower power dissipation
▶ Without mains feedback: the energy store absorbs brake energy; this is not fed back into the mains. Even the mains feedback from the servo amplifier is minimised.
▶ Economical solution: the servo amplifiers' intermediate circuits can be connected, so that only one energy store is needed per axis group
▶ Open, flexible solution: the energy stores can be operated with both servo amplifiers PMCprotego D and PMCtendo DD5

Energy store PMCenergy SD

PMCenergy SD.B2

Technical features

▸ Usable storage volume:
  - PMCenergy SD.B2: 1 600 Ws
  - PMCenergy SD.E1: 3 200 Ws
▸ Output: max. 18 kW
▸ Built-in PTC brake resistor
▸ Dimensions: 300 x 100 x 201 mm
▸ Protection type: IP20
▸ Maximum voltage of 800 V DC for the DC intermediate circuit of the servo amplifiers

Type	Features	Suitable for	Order number
▸ PMCenergy SD.B2	Energy store	PMCprotego D PMCtendo DD5	8176860
▸ PMCenergy SD.E1	Expansion module for energy store	PMCprotego D PMCtendo DD5	8176862
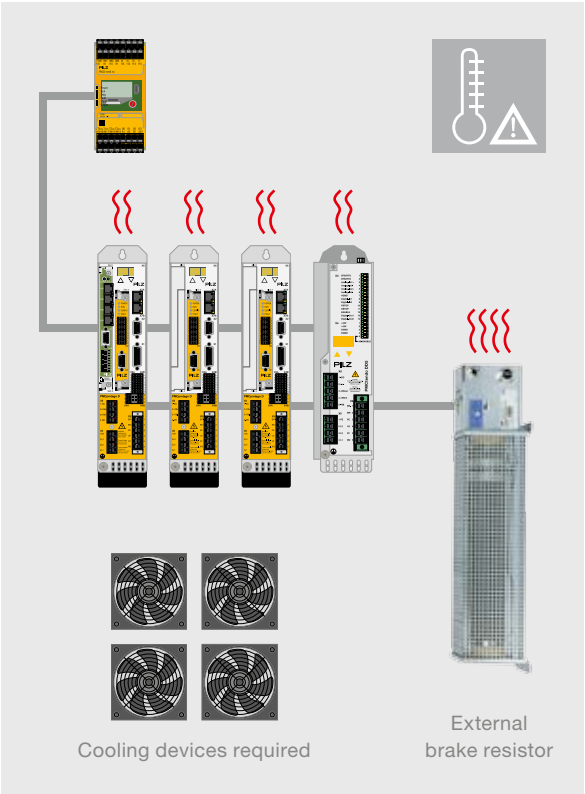
Solution with external brake resistor.
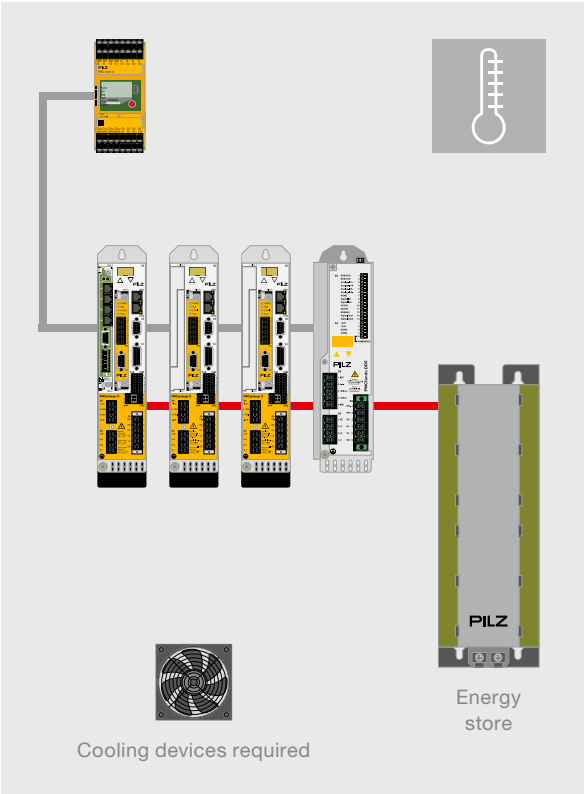
Solution with energy store.

Online information at www.pilz.com

▶ Servo amplifier PMCprotego D now with Hiperface DSL®

NEW

The purely digital motor feedback protocol Hiperface DSL is now available for the servo amplifier PMCprotego D. It uses a minimum of connection cables between the frequency converter and motor feedback system, so supporting a single-cable technique within the drive technology. Not only does this save costs, it also occupies less space and involves less installation work. As an open interface, Hiperface DSL combines the benefits of a digital real-time interface.

The servo amplifiers PMCprotego D are available for a rated current range of 1.5 to 72 A. They have the "Safe Torque Off" (STO) function in SIL 3 of EN/IEC 62061 and PL e of EN ISO 13849-1.

The safe motion, stop and brake functions in accordance with the IEC standard 61800-5-2 can be supplemented by the safety card PMCprotego S.

Pilz drive technology provides overall solutions for the safe, energy-efficient automation of drives. These range from controller operation through to movement of highly dynamic drives, including all safety aspects. Our competent advisers can provide full information and are happy to help with your individual application – from planning through to implementation.

Your benefits at a glance

▶ Up to 50 percent lower connection charges and cable diversity
▶ Drive-integrated safety functions up to PL e with any feedback irrespective of the encoder type
▶ Supports numerous fieldbuses, feedback devices and motor types
▶ Modular system with two slots for use with the safety card and I/O expansion or motion control card
▶ Better performance thanks to extremely fast process data transfer (high resolution and precision)
▶ Low investment costs, because the device can be integrated in the existing automation environment
▶ Safe brake control with vertical axis in combination with the PMCprotego S safety card
▶ Reduce costs by using types with low supply voltage (1 x 110 VAC to 3 x 230 VAC, size 01-24)

Servo amplifier PMCprotego D now with Hiperface DSL

PMCprotego D

Technical features	Dimensions in mm (W x H x D):	70 x 345 x 243 mm
	Number of analogue inputs:	2
	Number of CANopen interfaces:	1
	Number of STO-Enables:	2
	Number of digital inputs:	4
	Supply voltage type:	DC 24 V
	Ambient temperature:	0 – 40 °C
	Output stage clock frequency:	8 kH

Order number		
	PMCprotego D.01/000/0/0/2/208-480VAC	8176100
	PMCprotego D.03/000/0/0/2/208-480VAC	8176101
	PMCprotego D.06/000/0/0/2/208-480VAC	8176102
	PMCprotego D.12/000/0/0/2/208-480VAC	8176103
	PMCprotego D.24/000/0/0/2/208-480VAC	8176104
	PMCprotego D.12/000/0/P/2/208-480VAC	8176423
	PMCprotego D.72/000/0/0/2/208-480VAC	8176426
	PMCprotego D.24/000/0/P/2/208-480VAC	8176424
	PMCprotego D.48/000/0/0/2/208-480VAC	8176425
	PMCprotego D.01/200/0/0/2/208-480VAC	8176513
	PMCprotego D.01/100/0/0/2/208-480VAC	8176514
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	PMCprotego D.03/100/0/0/2/208-480VAC	8176524
	PMCprotego D.12/010/0/0/2/208-480VAC	8176540
	PMCprotego D.24/200/0/P/2/208-480VAC	8176573
	PMCprotego D.12/200/0/0/2/208-480VAC	8176543
	PMCprotego D.12/100/0/0/2/208-480VAC	8176544
	PMCprotego D.12/010/0/P/2/208-480VAC	8176550
	PMCprotego D.12/200/0/P/2/208-480VAC	8176553
	PMCprotego D.24/100/0/P/2/208-480VAC	8176574

Type code PMCprotego D

Type/Order number	Mains voltage
PMCprotego D. _ _ / _ _ _ / 0 / _ / _ /	208 … 480 VAC

Hardware option			000	100	200	A00	101	201	A01	102	202	A02	10C	20C	A0C	10D	20D	A0D	001	002	00C	00D	00E	00F	010	01C	01D	020	02C	02D
Slot 1	0	Without																												
	1	I/O expansion																												
	2	PROFIBUS																												
	A	PROFINET																												
Slot 2	0	Without																												
	1	PosI/O [2]																												
	2	PosI/O-AIO [3]																												
Slot 3	0	Without																												
	1	PosI/O [2]																												
	2	PosI/O-AIO [3]																												
	C	PMCprotego S1-2																												
	D	PMCprotego S2-2																												
	E	PMCprotego S1-2-C [4]																												
	F	PMCprotego S2-2 C [4]																												

Current A	Size
1.5	01
3	03
6	06
12	12 [1]
24	24 [1]
48	48
72	72

Fieldbus standard: CANopen/EtherCat

[1] Devices with increased peak output current;
see optional supplement
[2] Expansion card without analogue inputs/outputs
[3] Expansion card with analogue inputs/outputs
[4] Coated PCBs
[5] SafetyNET p RTFL in preparation

Options	0	P	C
Standard			
$I_{peak} = 3x$ [1]			
coated [4]			

Firmware option	1	2
SafetyNET p [5]		
EtherCAT		

▶ Motion control systems PMCprimo now with EtherCAT Master and Version 3.5 of the PLC

NEW

The motion control system PMCprimo MC (stand-alone) and motion control card PMCprimo C (drive-based) offer high performance and pave the way for high productivity and process quality. Benefit from fast commissioning thanks to programming by soft PLC in accordance with IEC 61131.

The upgrade to version 3.5 of PLC means you now have access to all the benefits of object-oriented programming.

Thanks to the integrated real-time task (processing time: 1 ms), you now also have the scope to implement high-performance applications such as path interpolations.

The clearer interface structure offers a much wider range of options in online mode, simplifying plant commissioning.

PMCprimo now has the real-time Ethernet EtherCAT Master. PMCprimo in addition of course supports master and slave communication interfaces such as Modbus/TCP, CAN or PROFIBUS-DP-S and offers a flexible solution for a wide range of application areas, thanks also to a large number of I/O interfaces on-board as well as three encoder inputs.

Your benefits at a glance

▶ Increased flexibility and wider range of applications thanks to EtherCAT Master, CAN, Modbus/TCP, PROFIBUS-DP-S

▶ Fast commissioning thanks to programming by the latest soft PLC in accordance with IEC 61131

▶ Enhanced manufacturing quality and high cycle counts thanks to increased performance

▶ More flexibility thanks to a large number of interfaces, encoder inputs and digital inputs/outputs

▶ Large memory for realising complex applications

▶ Flexible to use, since PMCprimo comprises PLC, motion and CNC functionality

▶ Motion control card PMCprimo C saves space in the control cabinet through installation in the servo amplifier PMCprotego D and can also easily be expanded with the safety functions (plug-in cards)

Motion control systems with PMCprimo now with EtherCAT Master and Version 3.5 of the PLC

PMCprimo MC

PMCprimo C

Technical features		PMCprimo MC	PMCprimo C
	▶ Processor	Intel Atom 1.3 GHz	Intel Atom 0.6/1.3 GHz
	▶ Digital inputs	16	6
	▶ Digital outputs 0.5 A	16	6
	▶ Encoder inputs	3 (incr. or absolute)	1 (incr. or absolute)
	▶ CANopen master	4/3 (configurable)	2/1
	▶ PROFIBUS-DP-S	0/1 (configurable)	0/1
	▶ Ethernet Modbus TCP (client)	1	1
	▶ USB	Yes	No
	▶ RAM (MB)	512	128/512
	▶ Memory applications (MB)	256	256
	▶ Non-volatile memory (kB)	512	512

Order number			
	PMCprimo MC		
	▶ PMCprimo MC.C/16DIDO/2	680 080	
	▶ PMCprimo MC.C/16DIDO/3	680 081	
	▶ PMCprimo MC.C/16DIDO/4	680 082	
	▶ PMCprimo MC.C/16DIDO/5	680 083	
	▶ PMCprimo MC.C/16DIDO/6	680 084	
	▶ PMCprimo MC.C/16DIDO/7	680 085	
	PMCprimo C		
	▶ PMCprimo C.0/A/A/2		680 050
	▶ PMCprimo C.0/A/A/3		680 051
	▶ PMCprimo C.0/A/A/4		680 052
	▶ PMCprimo C.0/A/A/5		680 053
	▶ PMCprimo C.0/A/A/6		680 054
	▶ PMCprimo C.0/A/A/7		680 055
	▶ PMCprimo C.0/A/B/2		680 060
	▶ PMCprimo C.0/A/B/3		680 061
	▶ PMCprimo C.0/A/B/4		680 062
	▶ PMCprimo C.0/A/B/5		680 063
	▶ PMCprimo C.0/A/B/6		680 064
	▶ PMCprimo C.0/A/B/7		680 065
	▶ PMCprimo C.0/C/A/2		680 160
	▶ PMCprimo C.0/C/A/3		680 161
	▶ PMCprimo C.0/C/A/4		680 162
	▶ PMCprimo C.0/C/A/5		680 163
	▶ PMCprimo C.0/C/A/6		680 164
	▶ PMCprimo C.0/C/A/7		680 165
	▶ PMCprimo C.0/C/B/2		680 170
	▶ PMCprimo C.0/C/B/3		680 171
	▶ PMCprimo C.0/C/B/4		680 172
	▶ PMCprimo C.0/C/B/5		680 173
	▶ PMCprimo C.0/C/B/6		680 174
	▶ PMCprimo C.0/C/B/7		680 175

Type code PMCprimo MC

Type
PMCprimo MC. _ / _ _ _ _ _ _ / _

CPU	1.3 GHz	C

Hardware	16DIDO

Software option	2	3	4	5	6	7
Without	▓					
Dynamic curve calculation		▓	▓	▓	▓	▓
IEC-61131-3 programming			▓	▓		
Path interpolation					▓	▓

Type code PMCprimo C

Type	Voltage
PMCprimo C.0 _ / _ / _ / _	24 V DC

CPU (GHz)	A	C
0.6	▓	
1.3		▓

Hardware option	A	B
CANopen/CANopen	▓	
CANopen/PROFIBUS-DP		▓

Software option	2	3	4	5	6	7
Without	▓					
Dynamic curve calculation		▓	▓	▓	▓	▓
IEC-61131-3 programming			▓	▓		
Path interpolation					▓	▓

Webcode: web150507

Online information at www.pilz.com

▶ SecurityBridge protects Pilz controllers

NEW

The networking of plant and machinery using Ethernet-based standards with IT is steadily increasing. The demand for products that increase IT safety is therefore also increasing.

With the SecurityBridge, certified by TÜV in accordance with IEC 62443-4-1 and IEC 62443-3-3, the configurable safe small controllers PNOZmulti and the automation system PSS 4000 are protected against manipulation through unauthorised access. SecurityBridge can be connected upstream of the base unit of the PNOZmulti or PLC controller PSSuniversal PLC. It acts as a VPN server, via which a virtual private network (VPN) with one or more client PCs (configuration PC) can be established. The connection between PC and device is thus protected. Only suitably authorised users can make changes to a project's configuration. This prevents unauthorised access to the protected network. The result is that the data transfer between the client PC and SecurityBridge is protected against tapping and manipulation.

Your benefits at a glance
▶ TÜV-certified and developed in accordance with IEC 62443-4-1 and IEC 62443-3-3
▶ Protection against manipulation of data through authentication and authorisation management
▶ Increases plant availability because only required data (authorised configuration and process data) is transferred
▶ Forwarding of low-latency process data
▶ Reveals unauthorised changes to the project by monitoring the check sum (CRC)
▶ Prevents unauthorised access because downstream devices are in a protected network
▶ Only suitably authorised users can make changes to a project's configuration
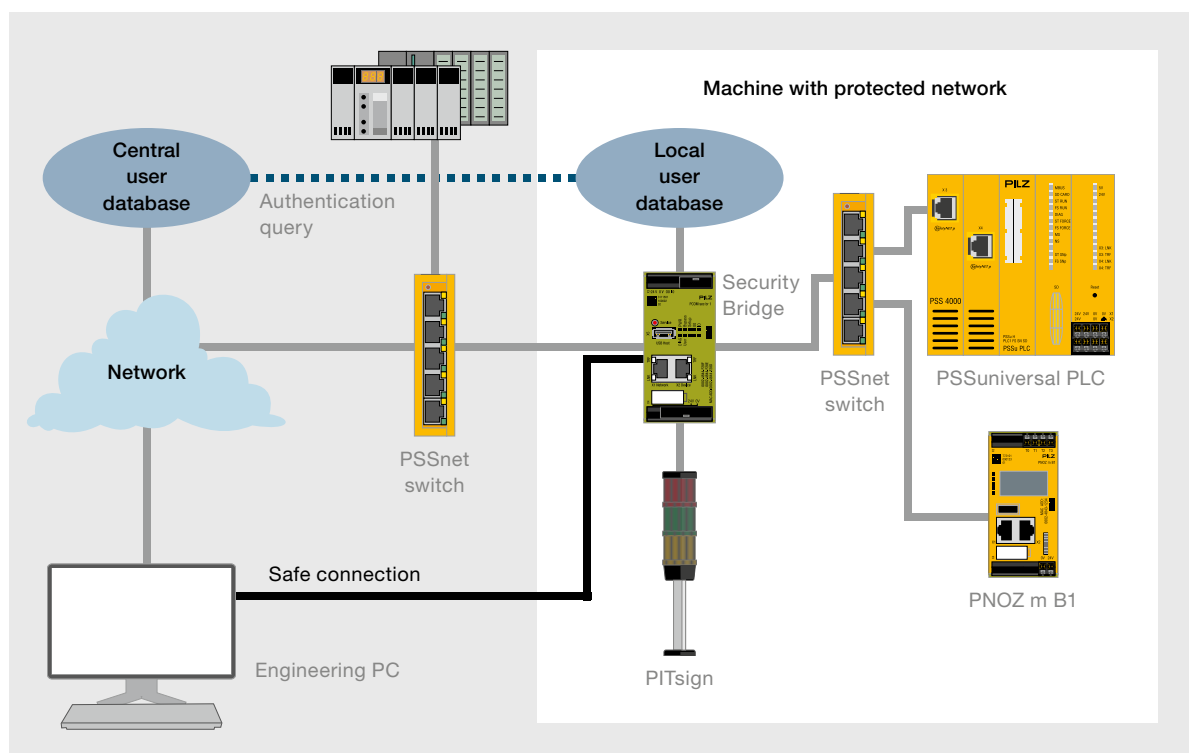
SecurityBridge

PCOM sec br1

Technical features	▶ Web-based user interface for easy configuration, diagnostics and maintenance
	▶ Connection with the central authentication system via RADIUS
	▶ Continuous updates independent of the control system
	▶ Integrated digital inputs and outputs, e.g. to activate the VPN tunnel
	▶ VPN server to establish a VPN tunnel for safe data transfer
	▶ USB interface for protecting and re-establishing the configuration on USB memory
	▶ LED display for error messages and diagnostics
Order number	▶ PCOM sec br1 311 501
	Module for safe authentication and communication with PNOZmulti2
	▶ PCOM sec br2 311 502
	Module for safe authentication and communication with PNOZmulti and the controllers PSSuniversal PLC and PSSuniversal multi
	▶ 1 set of spring-loaded terminals 751 016
	▶ 1 set of screw terminals 750 016

SecurityBridge is used within a corporate network and prevents unauthorised access to the downstream devices.

Webcode: web188268

Online information at www.pilz.com

▶ Revolution Pi connects your data to the cloud

Recommended by Pilz

NEW

With the Revolution Pi from Kunbus, Pilz is expanding its product portfolio in the industrial network sector. Revolution Pi is based on the established Raspberry Pi designed for private use but has been equipped with a specially developed printed circuit board whose interfaces and connections are suitable for industrial use. As such it is ready to use in your industrial automation environment. As a gateway for the Industrial Internet of Things (IIoT), Revolution Pi collects data in the immediate vicinity of plant and machinery and connects the IIoT to cloud services. This gives you a permanent overview of your plant and machinery, wherever you are!

When used as an IIoT gateway, Revolution Pi supports your company's evolution into a smart factory. It is flexible, progressive and ideally suited to industrial environments. Revolution Pi guarantees you simple implementation of your digitisation projects.

Your benefits at a glance
▶ The optimum solution for many industrial application areas
▶ Data can be collected, evaluated and processed in the immediate vicinity of plant and machinery
▶ Protected against interference in accordance with EN 61131-2 and fully functional at temperatures from -40 to +55 °C
▶ Rugged housing and 24 V connection allow industrial application
▶ Can be integrated into all common system architectures thanks to numerous communication modules
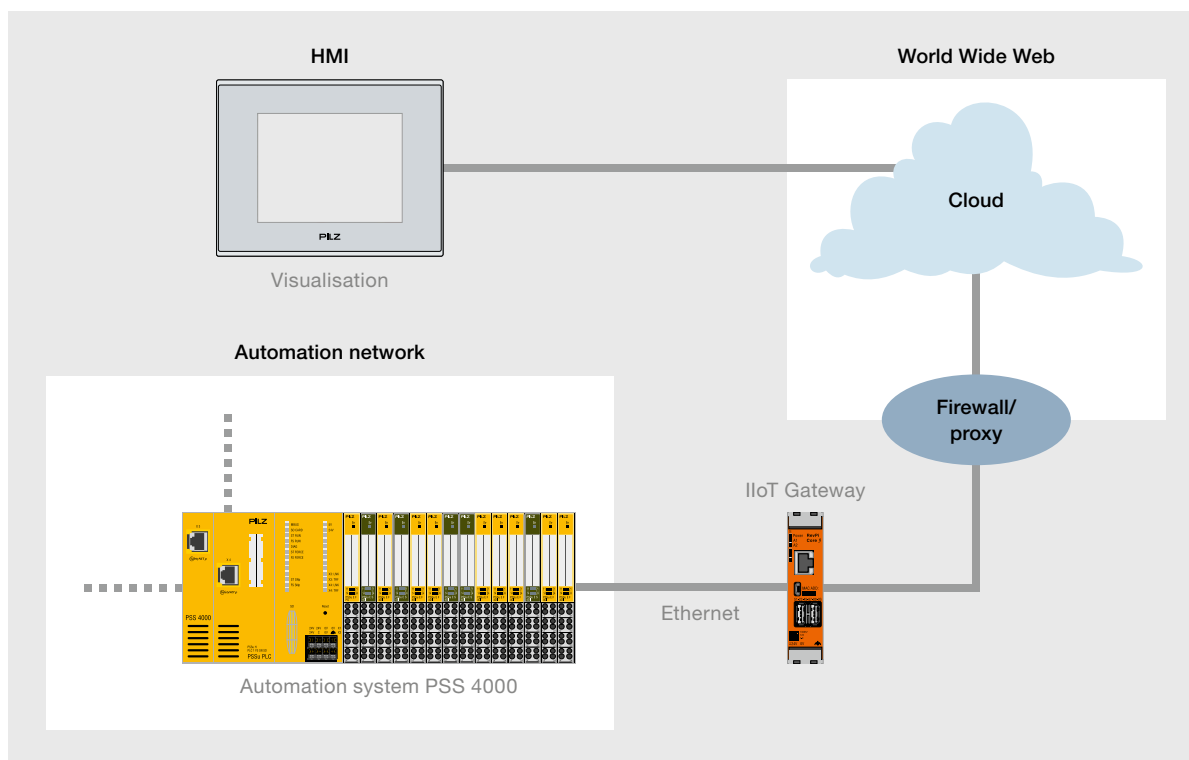
Revolution Pi

RevPi Core 3

Technical features	
	▶ Rail-mounted housing (for rail-mounted version EN 50022)
	▶ Classification level: IP20
	▶ Voltage supply: min. 10.7 V … max. 28.8 V
	▶ Processor: BCM2837, Quad-Core 4 x 1.2 GHz
	▶ RAM: 1 GB
	▶ eMMC flash memory: 4 GB
	▶ Interfaces:
	- 2 x USB 2.0 A (each can be exposed to 450 mA)
	- 1 x Micro USB
	- 1 x Micro HDMI
	- 1 x RJ45 (Ethernet) 10/100 Mbit/s
	▶ Dimensions in mm (H x W x D): 96 x 22.5 x 110.5

Used as an IIoT gateway, Revolution Pi sends your machine data to a cloud.

▶ Operator terminals PMI 6 primo – With PLC, motion and CNC functionality

NEW

Operator terminals PMI 6 primo have PLC, motion and CNC functionality. They perform the automation within a plant, including motion management. Up to 32 axes can be linked flexibly to form a kind of electronic main shaft, and simple CNC tasks can be managed. The functions "flying saw", "cross cutter" or "cam disc functions" and many more can be easily implemented with the control system. Machine functions such as "flow wrapping" are also available.

The PMI 6 primo touchscreens are available in 7, 12 or 15 inches. The powerful processor and memory equipment results in a powerful platform for your automation tasks. The operator terminals are already equipped with a user-friendly visualisation unit, yet are compatible with any standard HMI software.

A PMI Assistant is available, making it even easier to install the software packages.

Your benefits at a glance

▶ High degree of integration and fast commissioning with minimum space requirement
▶ Flexible to use, since PMI 6 primo comprises PLC, motion and CNC functionality
▶ Soft PLC in accordance with IEC-61131-3 standard
▶ Increased flexibility and wide range of applications thanks to EtherCAT Master, CAN, Modbus/TCP and Profibus-DP-S
▶ Optimum combination options with PSSu I/Os from Pilz
▶ PNOZmulti safety relay integrated via Ethernet
▶ Compact, powerful platform on the latest processor basis
▶ Equipped with the Windows Embedded Compact 7 operating system
▶ Coordinated, preconfigured HMI packages for efficient project planning
▶ PMI 6 Assistant for straightforward software package installation
▶ Enhanced manufacturing quality and high cycle counts thanks to high performance
▶ Large memory for realising complex applications

Operator terminals PMI 6 primo

PMI 607 primo

PMI 612 primo

PMI 638 primo

Technical features

PMI 607 primo
- Diagonal: 7"
- Resolution: 800 x 480 pixels
- Power consumption: 14.4 W
- Capacitive glass touchscreen
- Colour depth: 16.2 million colours
- Format: 16:9

PMI 612 primo
- Diagonal: 12"
- Resolution: 1280 x 800 pixels
- Power consumption: 21.6 W
- Capacitive glass touchscreen
- Colour depth: 16.2 million colours
- Format: 16:9

PMI 638 primo
- Diagonal: 15"
- Resolution: 1024 x 768 pixels
- Power consumption: 25.6 W
- Resistive film touchscreen
- Colour depth: 65,000 Colours
- Format: 4:3

Common features
- Motion control: dynamic curve calculation and CNC
- Display: graphic colour TFT, LED backlight
- Master systems: CANopen, Modbus/TCP, EtherCAT
- Interfaces: 1 x RS232, 2 x RJ45ETH, 1 x SD card, 2 x USB 2.0
- Fieldbus interfaces: CAN, EtherCat
- Operating system: Windows Embedded Compact 7
- Processor: Intel 1.3 GHz, x86
- Memory: 512 MByte RAM, 512 MByte Flash
- Supply voltage: 24 V DC
- Ambient temperature: 0–50 °C
- Battery-buffered real-time clock
- Protection type: IP65 front, IP20 rear
- Package contains: projection stand and application memory (SDHC card 4 GB) with PMI 6 Assistant
- CODESYS Runtime and Target Visu preinstalled and licensed

Order number

PMI 607 primo	265 608
PMI 612 primo	265 613
PMI 638 primo	264 639
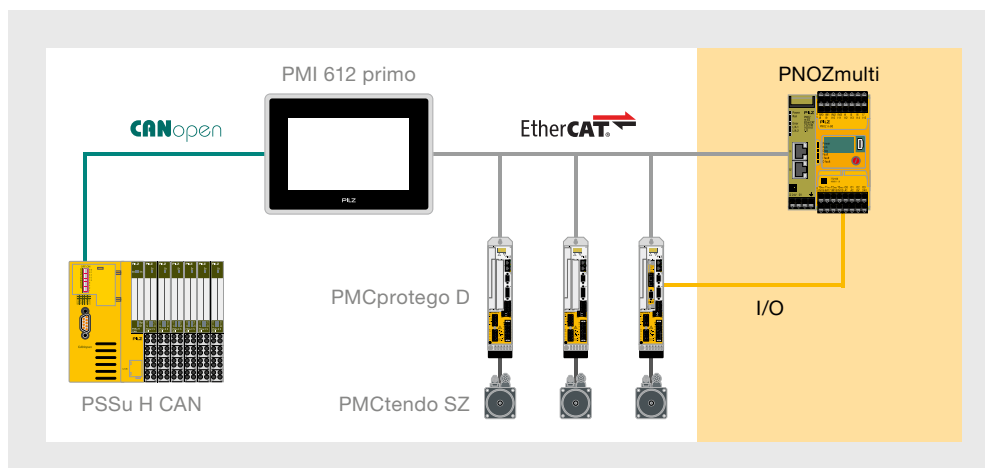
Webcode: web150595

Online information at www.pilz.com

▶ PMIvisu v7e – Professional diagnostics and visualisation panels

NEW

Pilz Human Machine Interfaces (PMI) are the link between human and machine.
The PMIvisu v704e and v707e supplement and complete the portfolio of diagnostic and visualisation panels and offer the best possible cost/performance ratio.

The cost-optimised "Economy" series comprises the robust PMI v7e panel and the web-based visualisation software PASvisu. This is already pre-installed and licensed on the panels with scratch and impact-resistant glass display. PMIvisu v7e panels are equipped with the operating system Linux and available in both a compact 4.3-inch variant and a 7-inch variant.

The PMI Manager is available to you for simple commissioning and management of the capacitive displays. In combination with the small controller PNOZmulti, the PMIvisu v7e devices form a perfect automation system and enable the professional diagnostics and visualisation of plant and machinery at a glance!

Your benefits at a glance
- ▶ Professional visualisation of plant and machinery
- ▶ PASvisu visualisation software preinstalled and licensed
- ▶ Equipped with the Linux operating system
- ▶ Remote access via web technologies
- ▶ Comprehensive library for graphic representation of your automation process
- ▶ Integrated alarm triggering, internationalisation and user manager
- ▶ PMI Manager for simple panel commissioning and management
- ▶ 150 external variables are included in the PMI runtime licence
- ▶ Quality product "made in Germany" – from design to production

Visualisation terminals PMI v7e series

PMI v704e

PMI v707e

CE

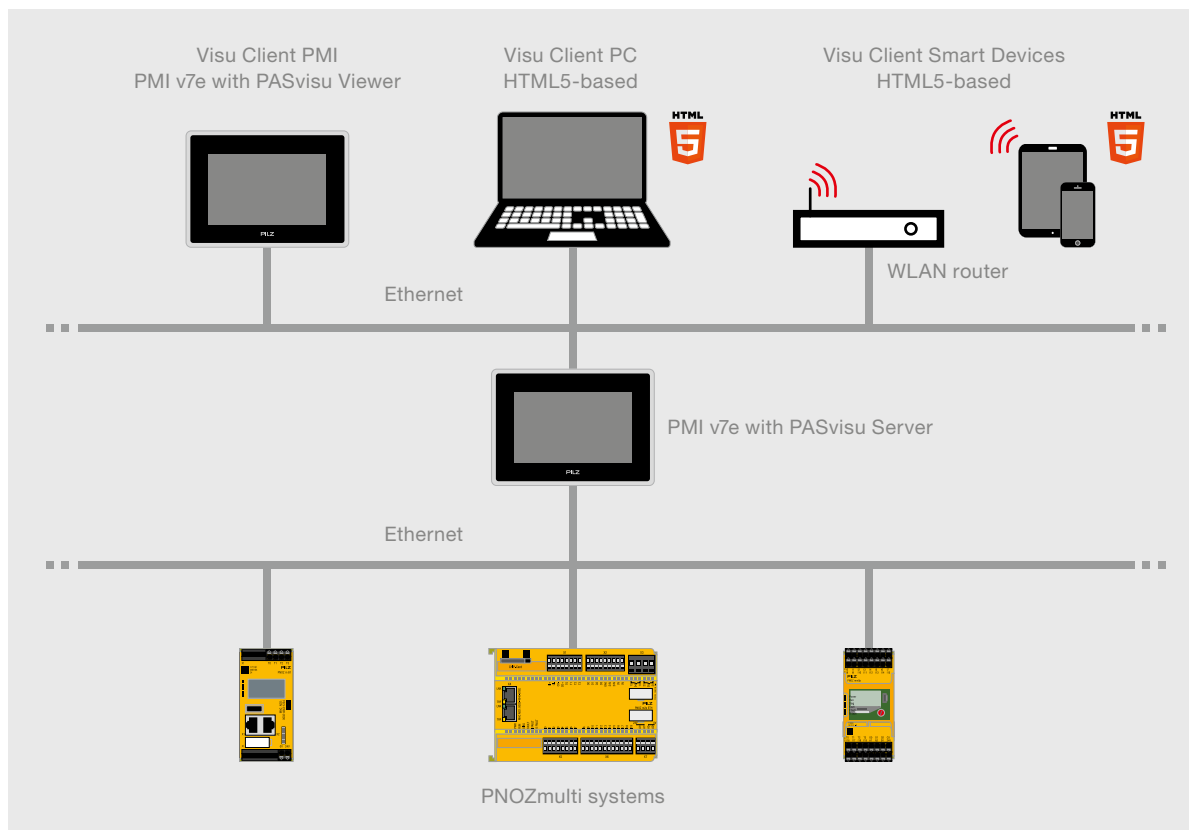| Technical features	**PMI v704e** ▸ Diagonal: 4.3" ▸ Resolution: 480 x 272 pixels ▸ Power consumption: ~ 3 W ▸ Capacitive glass touchscreen **PMI v707e** ▸ Diagonal: 7" ▸ Resolution: 800 x 480 pixels ▸ Power consumption: ~ 5 W ▸ Capacitive glass touchscreen **Common features** ▸ Display: graphic colour TFT, 18-bit colour depth, LED backlight ▸ Format: 16:9 ▸ Interfaces: 1 x Ethernet, 1 x USB 2.0 ▸ Operating system: - Linux - Supply voltage: 24 V DC - Ambient temperature: 0 … 50 °C - Capacitor-buffered real-time clock ▸ Approval: UL-508 approval ▸ Protection type: IP65 front, IP20 rear	
Order number	▸ PMI v704e ▸ PMI v707e	266 704 266 707

Visu Client PMI
PMI v7e with PASvisu Viewer

Visu Client PC
HTML5-based

Visu Client Smart Devices
HTML5-based

WLAN router

Ethernet

PMI v7e with PASvisu Server

Ethernet

PNOZmulti systems

Networking of visualisation terminals PMIvisu with configurable safe small controllers PNOZmulti.

Webcode: web150778

Online information at www.pilz.com

▶ International compliance – NR-12

NEW

NR:12
by Pilz

Your requirements:

Any **manufacturer** who sells machinery from all over the world to Brazil must ensure that it complies with the Brazilian regulatory standard NR-12. In turn, **operators** of machinery in Brazil are obliged to put in place protective measures for their employees in accordance with NR-12.

NR-12 introduces technical references, basic principles and protective measures to ensure the health and physical integrity of workers. It also establishes minimum requirements for the prevention of accidents across the entire lifecycle of a machine. NR-12 applies for **new and used machinery** and also includes specifications for modifying existing machinery.

Our proposal

Benefit from our structured compliance assessment procedure for your machine with regard to NR-12. It's applicable worldwide! As a complete supplier, we can provide support en route to final acceptance locally in Brazil. The result: an NR-12-compliant machine, including documentation for the local authorities.

Your benefits at a glance

▶ One-stop shop: from risk assessment to validation and technical documentation at the machine manufacturer's through to acceptance by the operator in Brazil – we will guarantee that your machine is NR-12-compliant.

▶ Legal certainty:
  - Right from the design process, we can advise you on compliance with all the relevant standards and the requirements of the directives. We can guarantee this throughout the whole project – at global level.
  - Our experts in Brazil are acknowledged specialists in the field of NR-12 compliance; they can support your project and clarify the local formalities for gaining acceptance in Brazil.

▶ Save time and costs by following our standardised procedure, following a standard international flowchart.

▶ Optimise your documentation processes:
  We will provide standardised international documents – even if your machinery is to be manufactured or commissioned at different locations.

The safest route to NR-12-compliant machines. Worldwide!

We can support you with the following services:
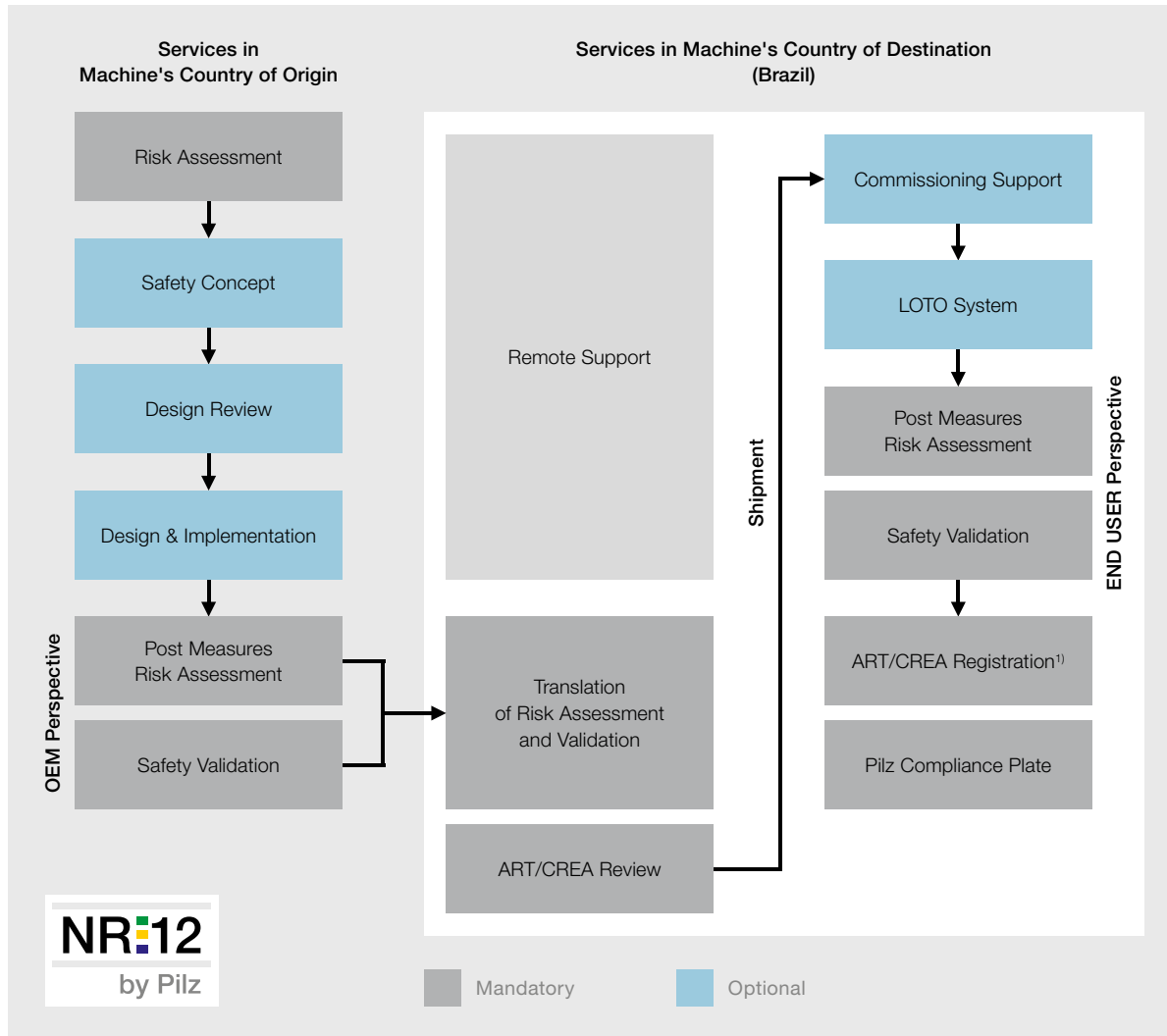
¹⁾ Pilz Brazil is officially registered with ART/CREA and so has to provide the official approval and compliance assessments for users and manufacturers in accordance with the regulatory standard NR-12.

CREA
(Portuguese: Conselho Regional de Engenharia e Agronomia):

Brazilian engineering council, which assesses and registers safety engineers. Parts of the NR-12 documentation must be created by an engineer registered through CREA.

ART
(Portuguese: Anotação de Responsabilidade Técnica):

Mandatory document, which names the responsible engineer for a project/service.

Online information at
www.pilz.com/nr12

▶ Pilz Education Systems PES –
Training systems for the training sector

NEW

Pilz Education Systems PES are modular training systems with industrially implemented components for practical training in electrical engineering. They consist of safety and automation functions that are clearly arranged on an operator board. The training systems allow apprentices, students or training participants to learn to program controllers or implement safety functions for plant and machinery in a practically orientated way. The systems focus in particular on teaching how the Machinery Directive 2006/42/EC is correctly implemented and what requirements are placed on the safety functions for plant and machinery in accordance with EN ISO 13849-1.

You can choose from different operator boards that can be combined with one another from the sensor technology, control, operation and maintenance sectors as well as a board that simulates a real plant. Thanks to the use of real industrial components, the safety and automation functions of a plant or machinery are shown in practice.
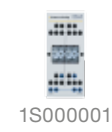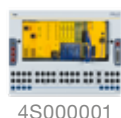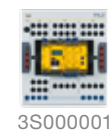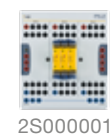

Your benefits at a glance
▸ Optimal tool for knowledge transfer in the field of safe automation
▸ Realistic simulation modules for practical training in many fields of mechanical engineering
▸ Commissioning and configuration of safety and automation functions for machines directly applied to the system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

Pilz Education Systems PES operator boards

	Operator board	Components	Order number
G9000001	Sensor board I	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Two-hand control relay PITjog ▸ Illuminated pushbuttons ▸ Fan (motor simulation) ▸ Safety gate	G9000001
G9000002	Sensor board II	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Enabling switch PITenable ▸ Illuminated pushbuttons ▸ Fan (motor simulation) ▸ Safety gate	G9000002
G9000003	Sensor board III	▸ E-STOP pushbutton PITestop ▸ Coded safety switch PSENcode ▸ Enabling switch PITenable ▸ Illuminated pushbuttons ▸ Safety gate ▸ DC motor ▸ Proximity switch for speed monitoring	G9000003
5S000001	Operation and monitoring board	▸ Human Machine Interface PMIvisu ▸ Visualisation software PASvisu ▸ Operating mode selector switch PITmode ▸ Transponder key	5S000001
2S000001	Logic board PNOZsigma	PNOZsigma safety relays	2S000001
3S000001	Logic board PNOZmulti	▸ Configurable small controller PNOZmulti 2 ▸ Safe I/O modules ▸ PNOZmulti Configurator	3S000001
4S000001	Logic board PSS 4000	▸ Automation system PSS 4000 ▸ Electronic modules PSSuniversal ▸ Software platform PAS4000	4S000001
1S000001	Actuator board contactor	Auxiliary contactors 24 V DC	1S000001
6S000001	Actuator board conveyor	▸ Machine model with sliders, conveyor belts, drill or milling cutter ▸ Optoelectronic protective devices	6S000001

Pilz Education Systems PES accessories

Order number		Order number
	▸ Power supply	1S000002
	▸ Connection cable black	1S000003
	▸ Connection cable red	1S000004
	▸ Connection cable blue	1S000005
	▸ Insulated connection cable black	1S000006
	▸ Insulated connection cable red	1S000007
	▸ Insulated connection cable blue	1S000008

Webcode:
web150778

Online information
at www.pilz.com

▶ Services:
Consulting, engineering and training

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

Pilz Services
for Safety and Automation

Machinery safety

Safety through the whole machine lifecycle

▶ **Risk Assessment**

▶ **Safety Concept**

▶ **Safety Design**

▶ **System Implementation**

▶ **Validation**

**Safe machinery
at any stage**

International compliance

Conformity with international standards and regulations

▶ **CE Marking**

▶ **NR-12**

**Compliant machines
worldwide**

Workplace safety

Absolute safety when operating machines

▶ **Plant Assessment**

▶ **Lockout Tagout System**

▶ **Inspection of Safeguarding Devices**

**The maximum possible
safety for man and machine**

Training

International qualification programme and certified courses

Enhancement of professional development

Training

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

And to progress to the expert level in machinery safety we offer the qualification of CMSE® – Certified Machinery Safety Expert.

Machinery safety

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

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

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

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

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

International compliance

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

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

Workplace safety

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

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

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

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

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

▶ Support

Technical support is available from Pilz round the clock.

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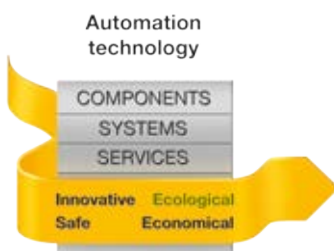
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+49 711 3409-444
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Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Offices and production facilities are ecologically designed, environmentally-aware and energy-saving. So Pilz offers sustainability, plus the security of using energy-efficient products and environmentally-friendly solutions.

energy saving by Pilz

BLUeCOMPETENCE
Alliance Member
Partner of the Engineering Industry
Sustainability Initiative

Automation technology
COMPONENTS
SYSTEMS
SERVICES
Innovative   Ecological
Safe   Economical

pilz
the spirit of safety
Partner of:
The Best of German Engineering

DIN EN ISO 9001
DQS
QUALITY SYSTEM
REG. NO.2462

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PILZ
THE SPIRIT OF SAFETY