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.

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.

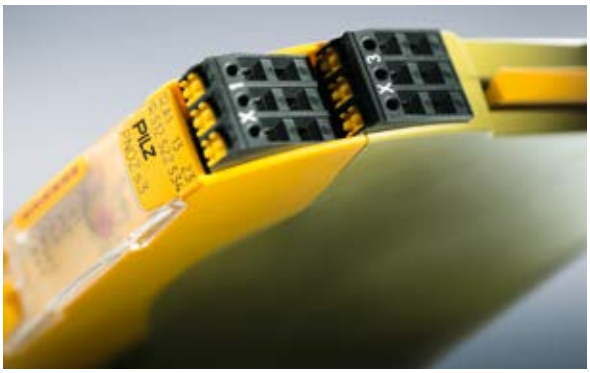
Further information:
www.pilz.com +
Webcode: web0837

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



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

Page 10
Webcode: web150079

Configurable small control systems

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 visualisation using the web-based visualisation software PASvisu

Page 66
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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Webcode: web150509

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

PSSuniversal: page 124
Webcode: web150509

PSSuniversal 2: page 144
Webcode: web150509

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.

Relays

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

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

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-energised 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

	Approvals	Order number
▸ Analogue 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

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

Keep up-to-date on PMDsigma:

Webcode: web150376

Online information at www.pilz.com

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

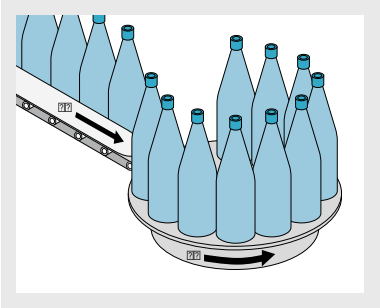
PMDsrange units in 22.5 mm slimline housing cover the widest range of functions. Selectable measuring ranges and a high number of operating voltages enable flexible use. Quick and easy installation, practical terminals, a variety of operator elements as well as luminous displays all help to make commissioning 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.

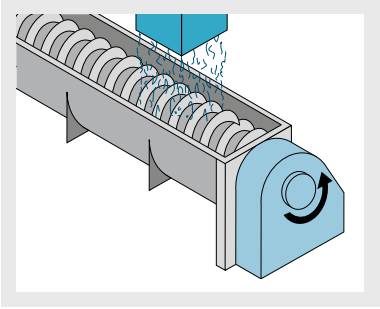
Your benefits at a glance

- 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



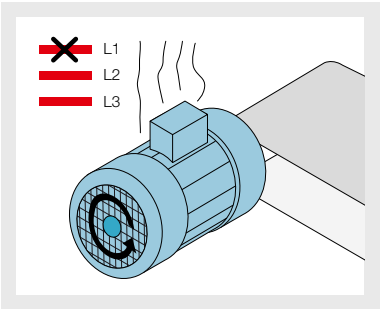
Bottling plant with voltage monitoring

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 energised or normally de-energised 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 energised 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 ▸ Analogue 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 energised 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

Relays

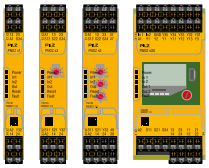
Safety relays PNOZ®

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.

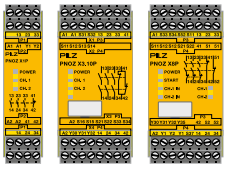
They help you to reduce costs through short commissioning and service times. Based on their different features and functionalities, our products can be divided into the following product groups:

PNOZsigma



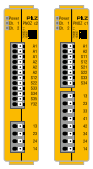
- Maximum functionality in minimum width
- Operating modes and times are selectable
- Scalability thanks to modular structure

PNOZ X



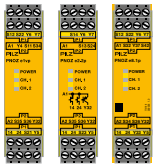
- Tailor-made safety for each function
- Electromechanical, potential-free
- With universal power supply

PNOZcompact



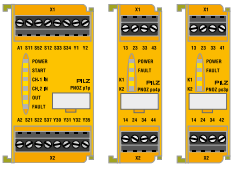
- Square, simple, yellow
- Ideal for high volume manufacturers of series machines
- Basic function of a safety application

PNOZelog



- Easy to link
- Non-wearing
- Extended diagnostics

PNOZpower

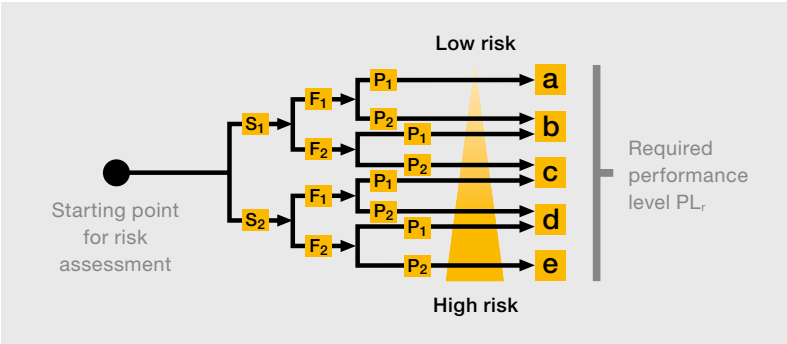


- High loads from 8 A to 16 A
- Switch motor loads directly
- Modular output contacts

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.



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	S	Class CL = Fr + Pr + Av				
		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

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

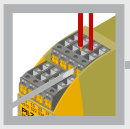

PNOZ s5


PNOZ s30

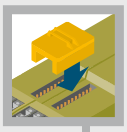
Small number of types – suitable for a variety of uses

- 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

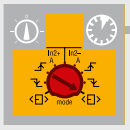


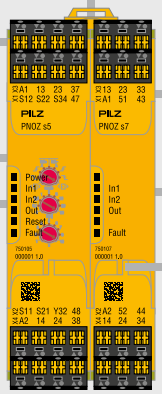
Wiring work is reduced by 20 %: Contact expansion via connectors



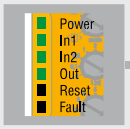
Simple configuration: designation and position of the terminals is the same on all unit types

Maximum flexibility: Operating modes and timer functions are selectable





Rapid assembly via spring clips: No need for tools

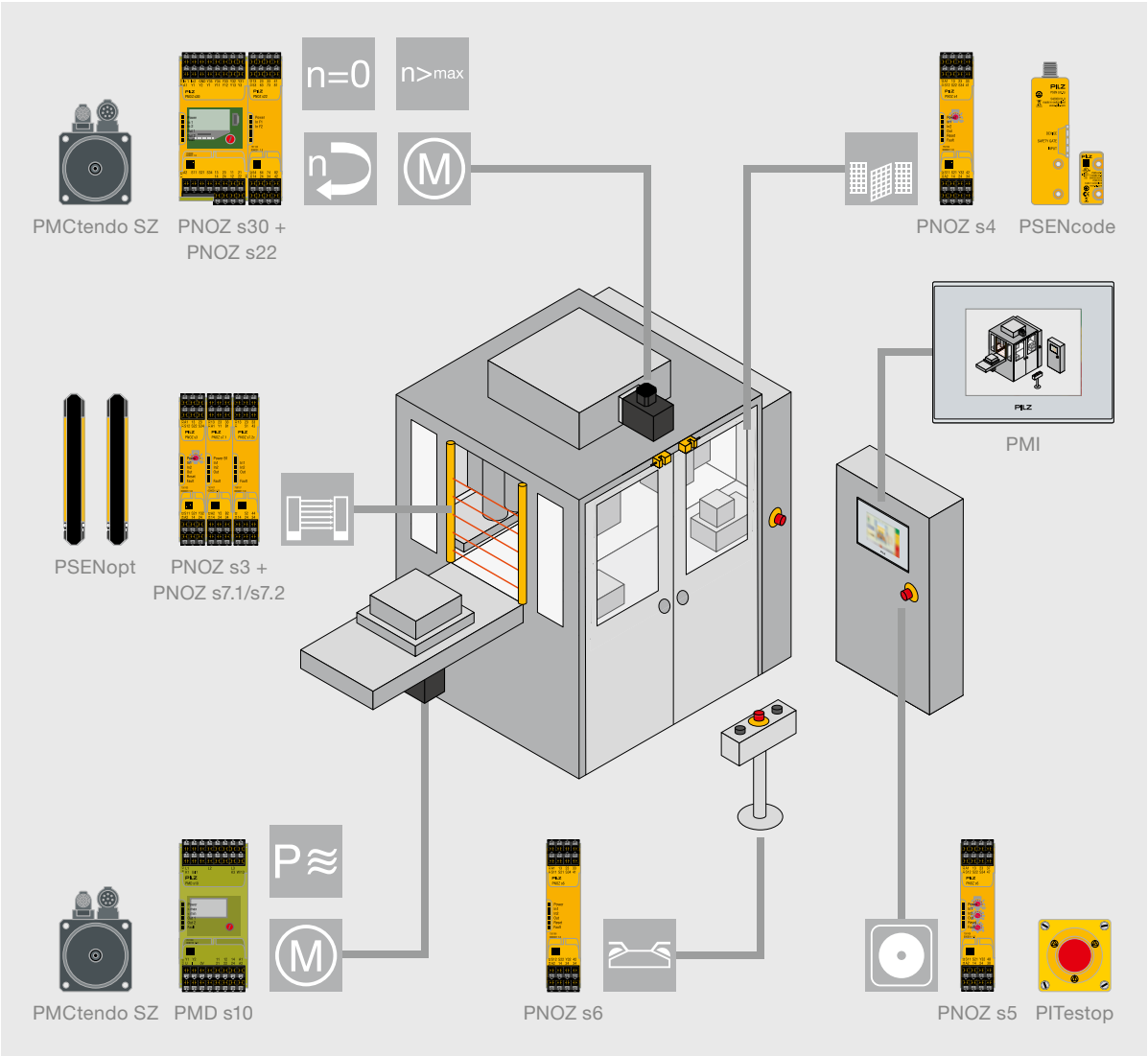


Diagnostics in seconds: Via 6 LED displays – no external measuring devices required

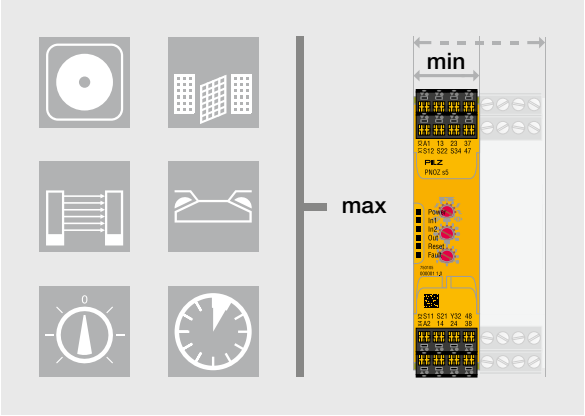
Safe from manipulation: Setting elements have a lockable cover

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 visualisation



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



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

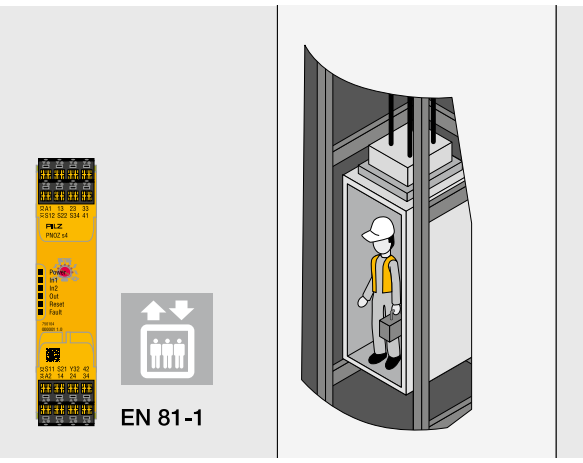
[1)] Compared to standard electromechanical safety relays available on the market

Keep up-to-date on safety relays PNOZsigma:

Webcode: web150099

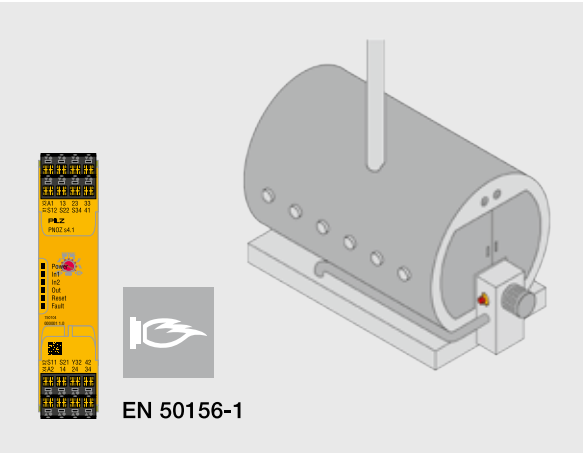
Online information at www.pilz.com

Safety relay PNOZsigma – Tried and tested in special applications



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.



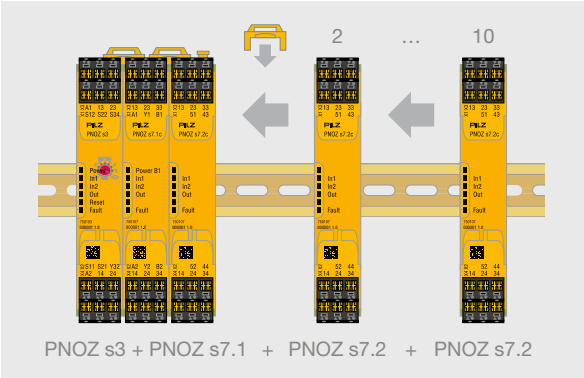
Safety relay PNOZ s4.1 – for use in burner controls

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.

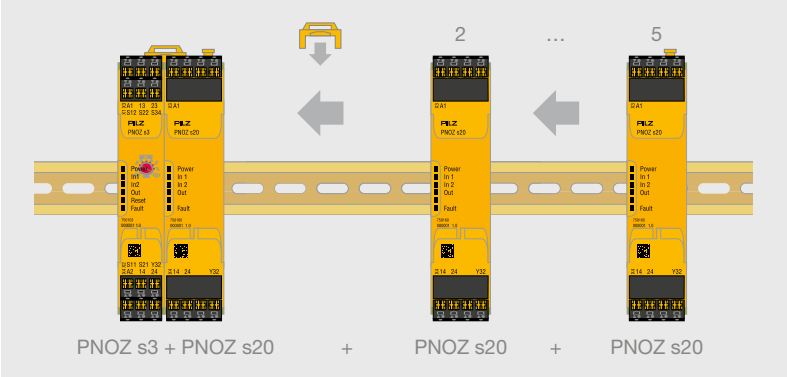
More contacts with PNOZsigma – Simply and quickly

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.

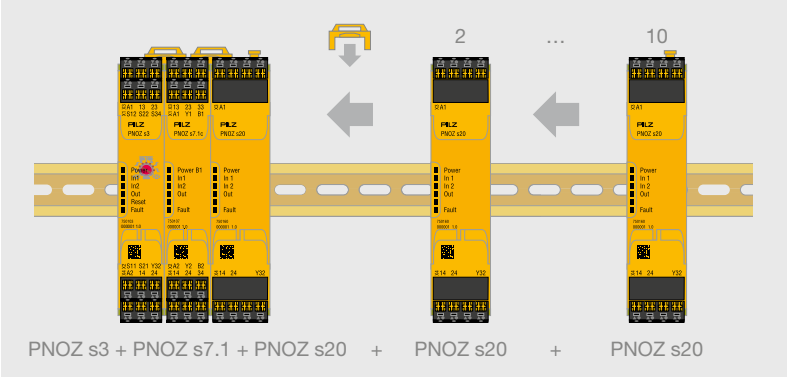
At just 17.5 mm wide, the PNOZ s7.1 has three safety contacts, while the PNOZ s7.2 has four safety contacts plus one auxiliary contact. They can be combined with other PNOZsigma expansion units at any time.



Fast contact expansion – it's easy with PNOZsigma!



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.



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

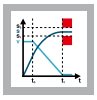
Relays

Safety relay PNOZ s30 – Convenient speed monitoring

SSR

SSM

SDI



SOS

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

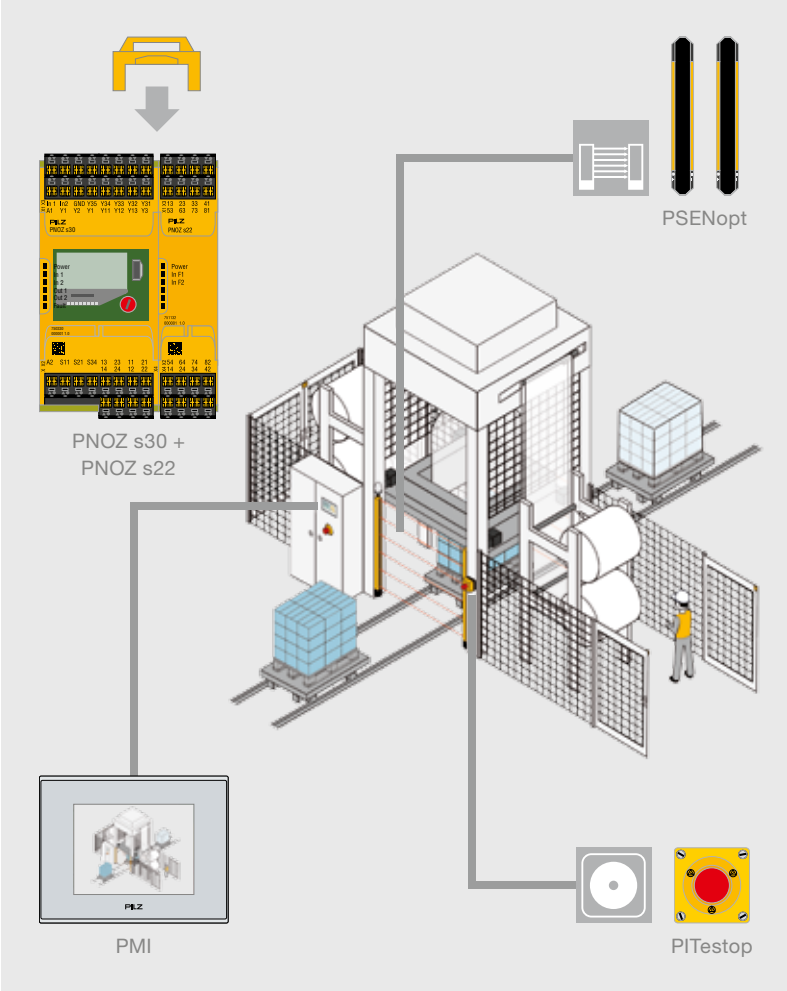
For example, movement at reduced speed during set-up mode increases operator safety and reduces set-up times. Safe working with the safety gate open and faster access to the machine once standstill is initiated, protect you and your products. Productivity is increased, as an unnecessary shutdown is prevented. 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 centres, balancing machines, high rack storage systems, centrifuges, filling systems, amusement parks and many others.



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

PNOZ s22

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.

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.

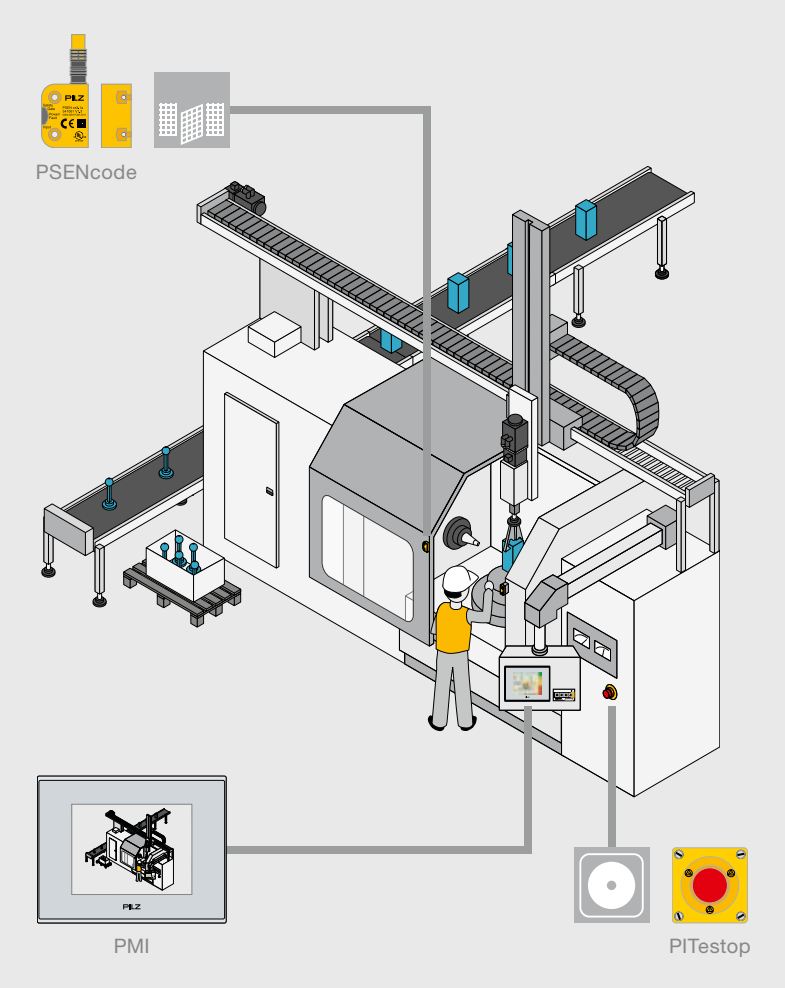
Find out more in the animation for the safety relay PNOZ s50.

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



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.

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

		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
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

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

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

Technical documentation on safety relays PNOZsigma:

Webcode: web150635

Online information at www.pilz.com

Technical details – PNOZsigma

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-energisation ▸ 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


PNOZ s7


PNOZ s8


PNOZ s9


PNOZ s10


PNOZ s11


PNOZ s20


PNOZ s22

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 energisation, delay-on de-energisation, 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

Safety relays PNOZsigma – Speed monitoring


PNOZ s30

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

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

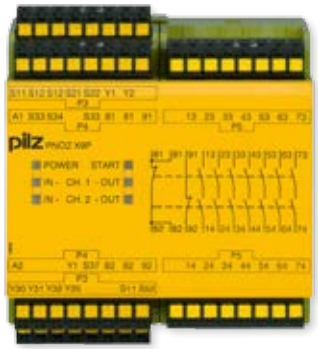
Online information at www.pilz.com

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

Customised 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!

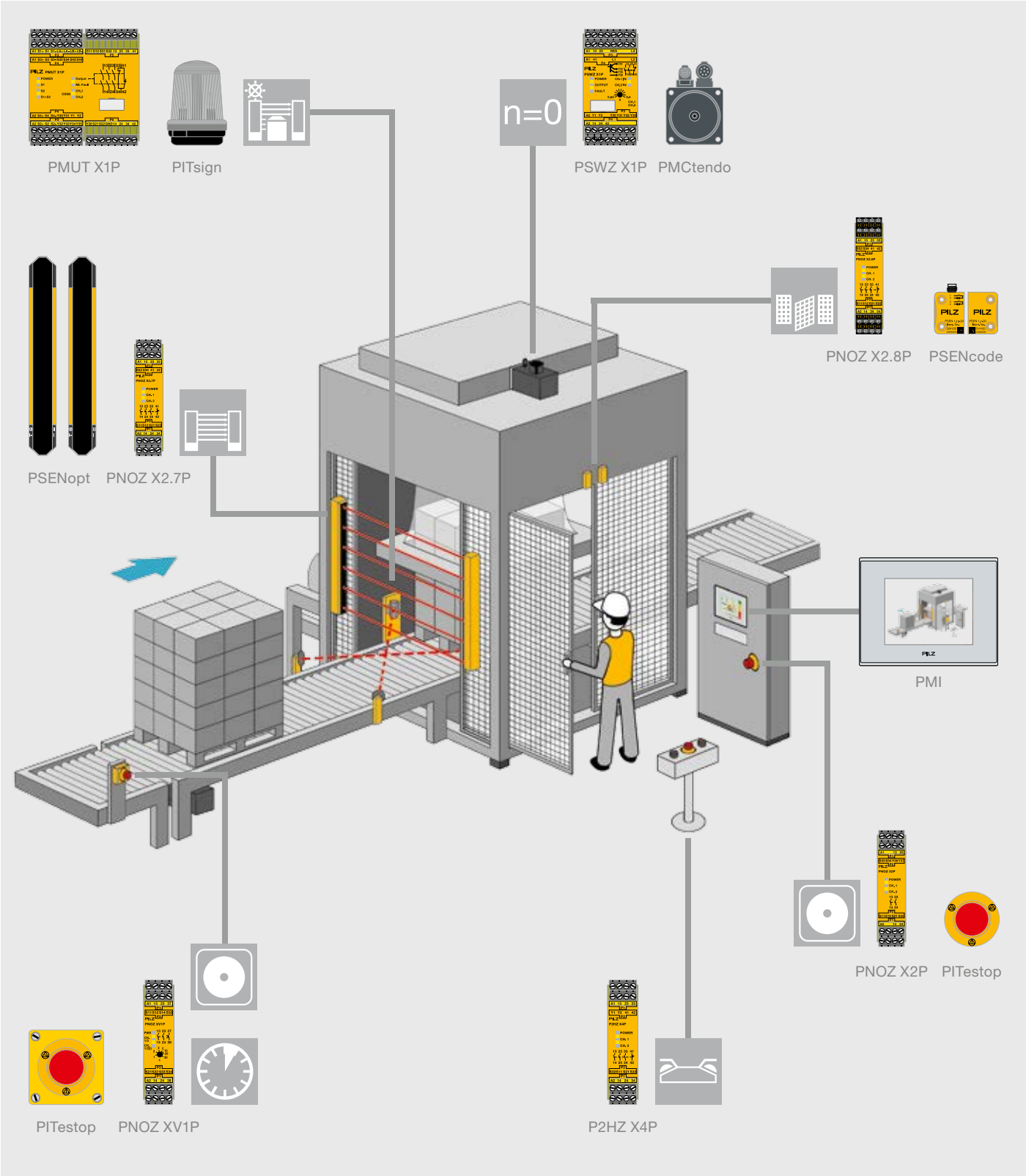
Your benefits at a glance

- 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



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

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

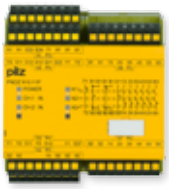

PNOZ X2.8P


PNOZ X3P


PNOZ X7P


PNOZ X8P


PNOZ X9P


PNOZ X10.11P


PNOZ X11P

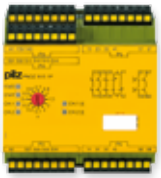
Type	Features
PNOZ X1P	1-channel operation
PNOZ X2P	▸ 2-channel operation with detection of shorts across contacts ▸ Automatic or monitored start can be selected
PNOZ X2.7P	▸ 2-channel operation with or without detection of shorts across contacts ▸ Monitored start
PNOZ X2.8P	▸ 2-channel operation with 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

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

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

Relays

Technical documentation on safety relays PNOZ X:

Webcode: web150635

Online information at www.pilz.com

Safety relay PNOZcompact

The safety relay is optimised 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 standardisation to be implemented economically. Choose a PNOZ safety relay – the original and a byword for safety relays.

PNOZ c1

PNOZ c2

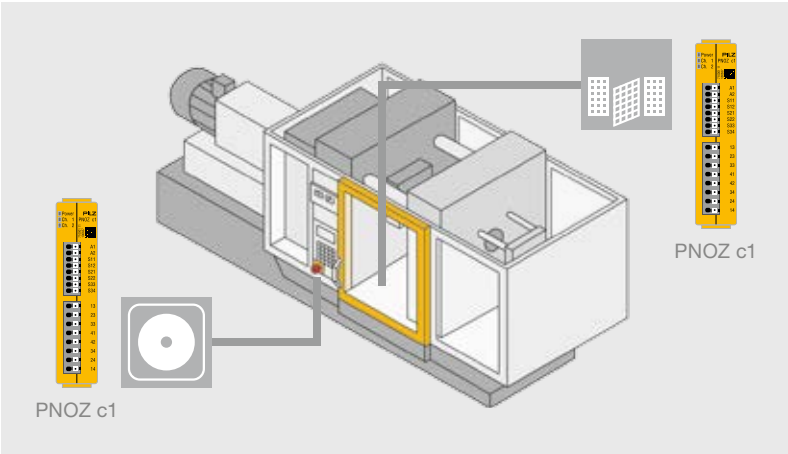
Square, simple, yellow
You want to safely monitor an E-STOP device, safety gate or light beam device? Is it important to you to save time through simple installation and maintenance? Then we have the right solution for you – the safety relay PNOZcompact.

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

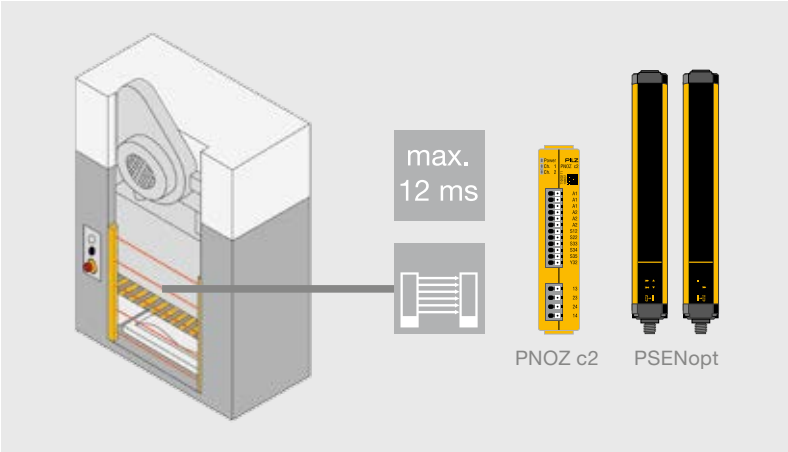
Type	Application area	Dimensions (H x W x D) in mm
PNOZ c1	E-STOP relay and safety gate monitor	105 [1] x 22.5 x 100
PNOZ c2	For monitoring type 4 light beam devices or sensors with OSSD outputs in accordance with EN 61496-1	105 [1] x 22.5 x 100



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



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.

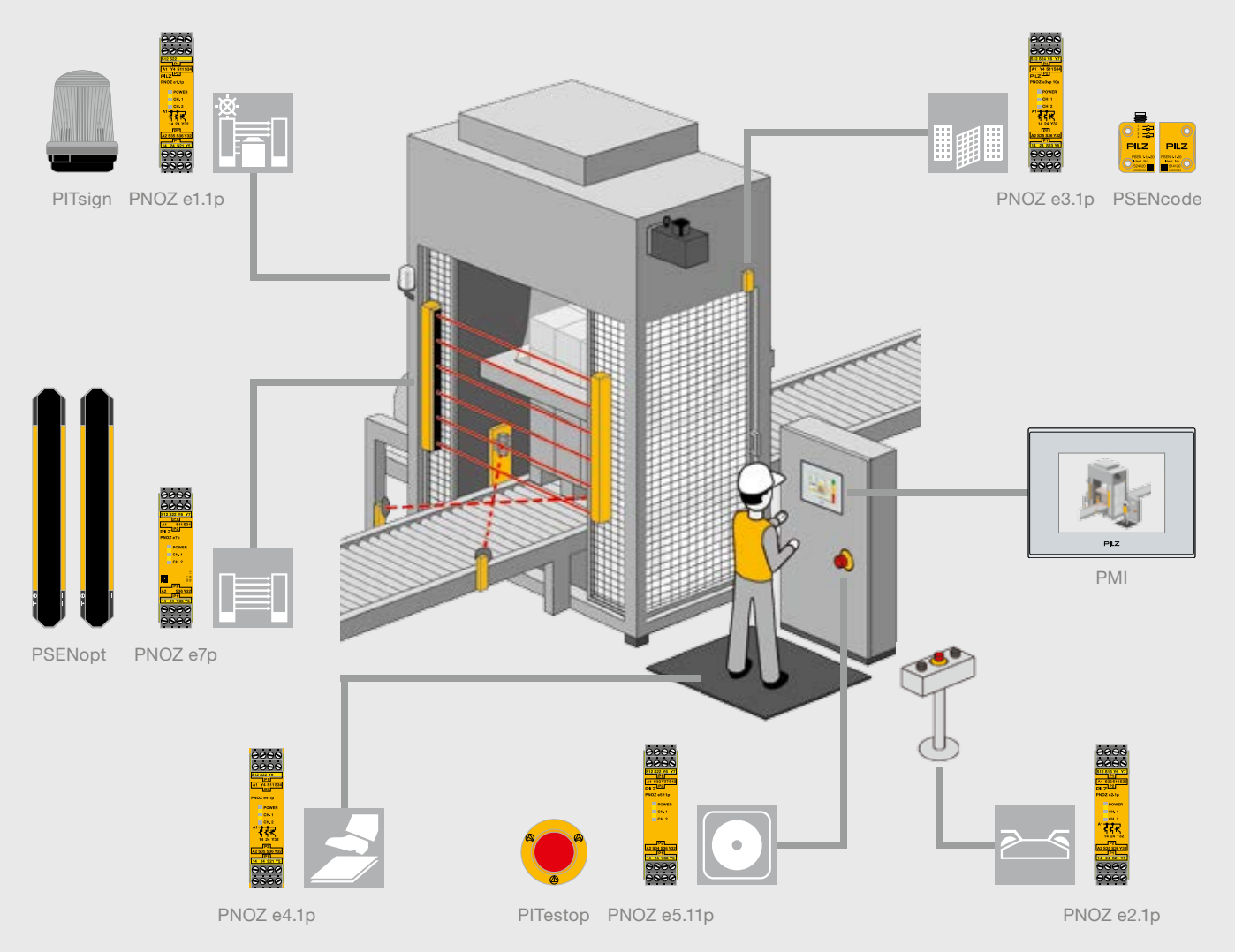
Keep up-to-date on safety relays PNOZcompact:

Webcode: web150086

Online information at www.pilz.com

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

[1] Height incl. spring clip



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:

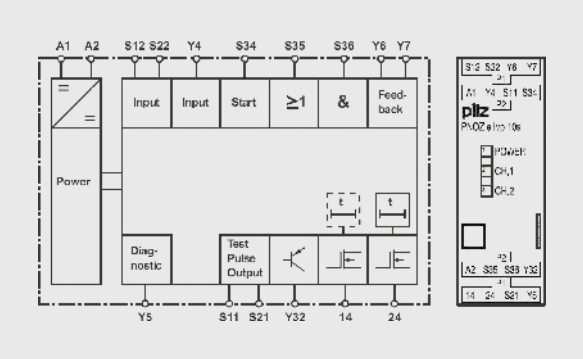
Webcode: web150101

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.

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-energisation 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-energisation 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-energisation 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

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-energisation 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

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

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.

PLID d1 + PNOZ e8.1p

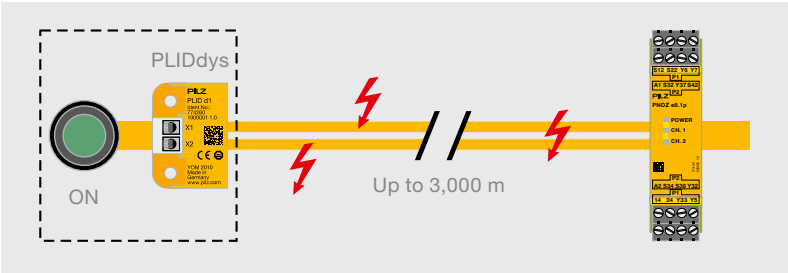
With PLIDdys, unintended power-up or plant start-up can be excluded in the event of an error. This is particularly beneficial on interlinked plants or on plant sections distributed over a wide area, which may not always be clearly visible. The extremely compact design means that PLIDdys can be easily 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.

Selection guide – Safe line inspection device PLIDdys

PLID d1 C

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 customised 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 metres

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

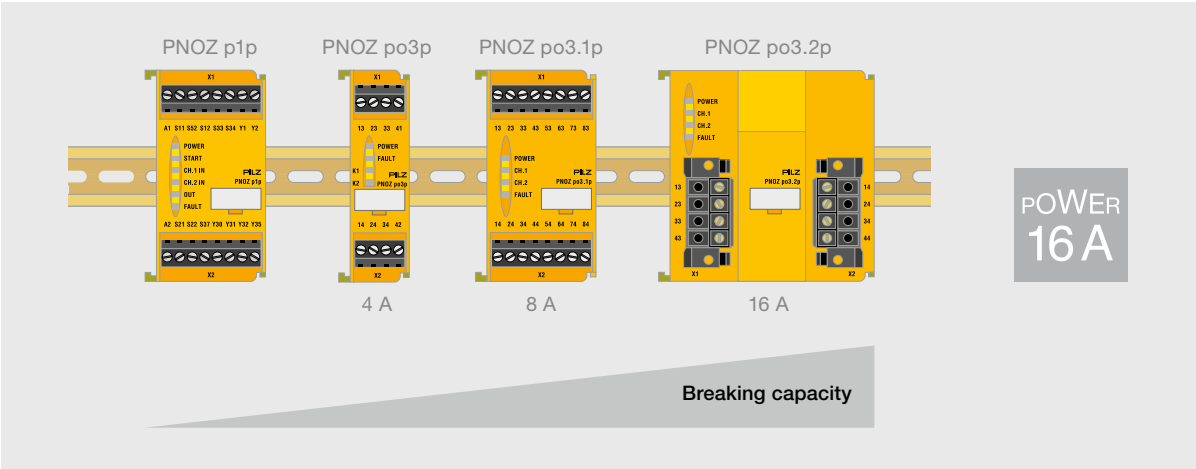
PNOZ po3p

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.



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

Technical documentation on safety relays PNOZelog:

Webcode: web150635

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	773300
▸ 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 ____ 773950 ▸ 300 s ____ 773951
▸ 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	773900
▸ 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	779125
▸ 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	773200
▸ 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: 773634 ▸ PNOZ po4p: 773635
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773630
	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	773631
▸ 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	773632

Technical documentation on safety relays PNOZelog:

Webcode: web150635

Online information at www.pilz.com

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.

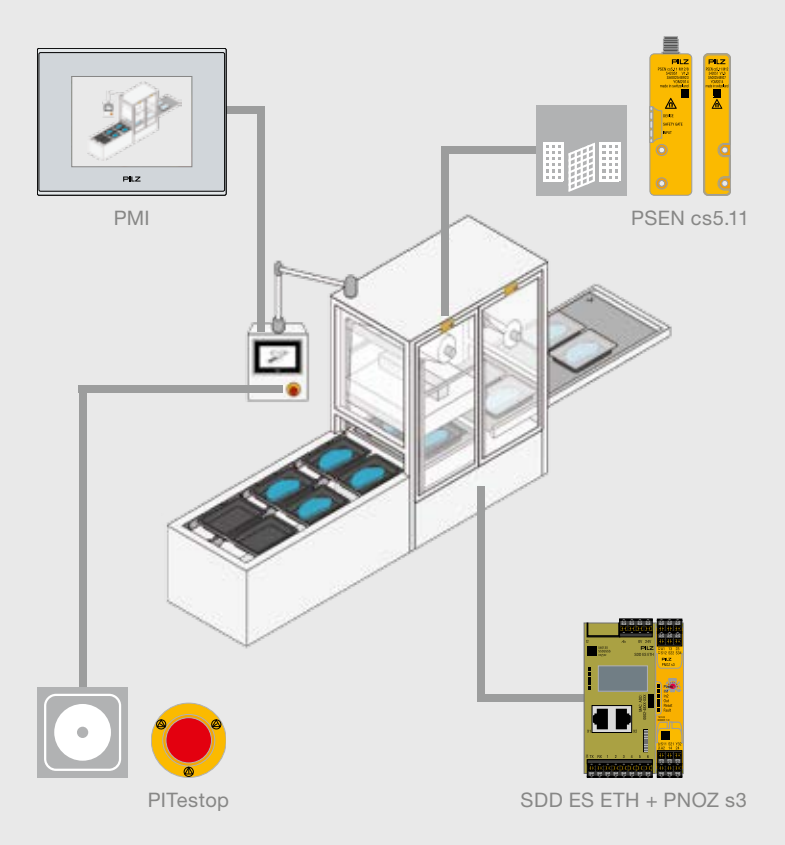
Complete solution for extended diagnostics

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** PROFIBUS PROFINET	**Communication module with ETH interface** Communication module with PROFIBUS interface Communication module with PROFINET interface



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 distributor IP20	540 320 535 112
Evaluation device: PNOZ s3	751 103
Fieldbus module: SDD ES ETH - spring-loaded terminals - plug-in screw terminals	540 130 540 121 540 120

The coded safety switches PSENcode, 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

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 visualised optimally using the web-based visualisation software PASvisu.

Product area

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

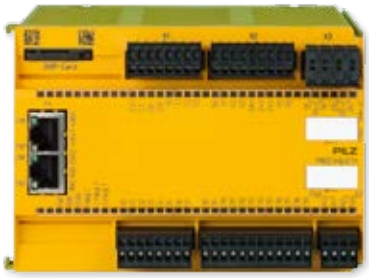
Configurable control systems PNOZmulti 2

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 characterised 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
- Customised 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 rationalisation because safety components cover automation tasks
- Suitable for international use due to worldwide certification
- User-friendly thanks to technical support

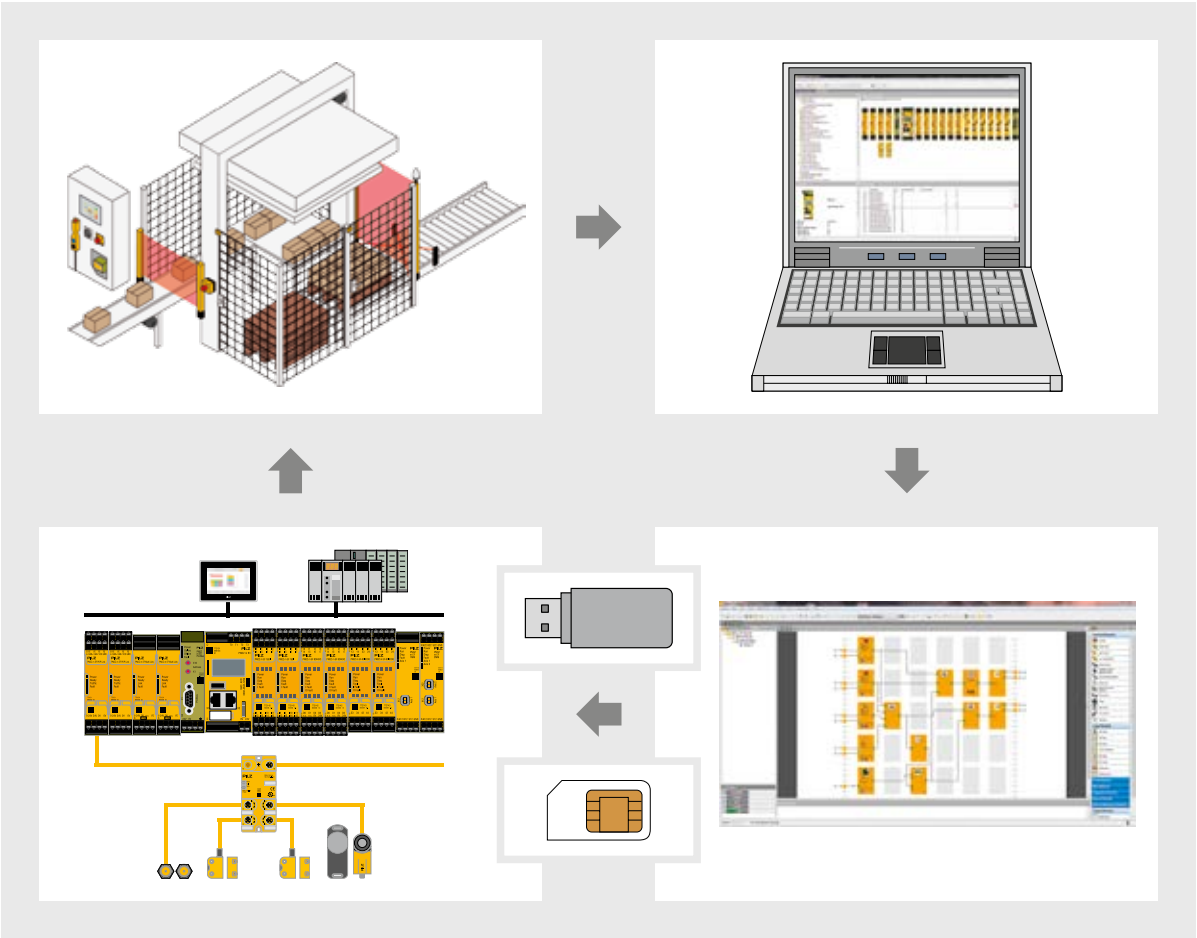
functions, one solution!

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 rationalisation:
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.



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

PNOZmulti

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

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.

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 minimises 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

PVIS®
Professional diagnostic solution

Reducing downtimes using the diagnostic solution PVIS

PVIS helps to visualise 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 Industry 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

Optimum visualisation and simple diagnostics

PNOZ

PAS

PVIS

Use perfectly matched software to visualise 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 visualisation 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 visualisation software PASvisu.

PMIvisu with visualisation 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.

All your automation at a glance!

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

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)

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

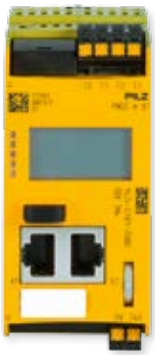
Webcode: web150503

Online information at www.pilz.com

Configurable control systems PNOZmulti 2 – The

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.



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 TPC 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

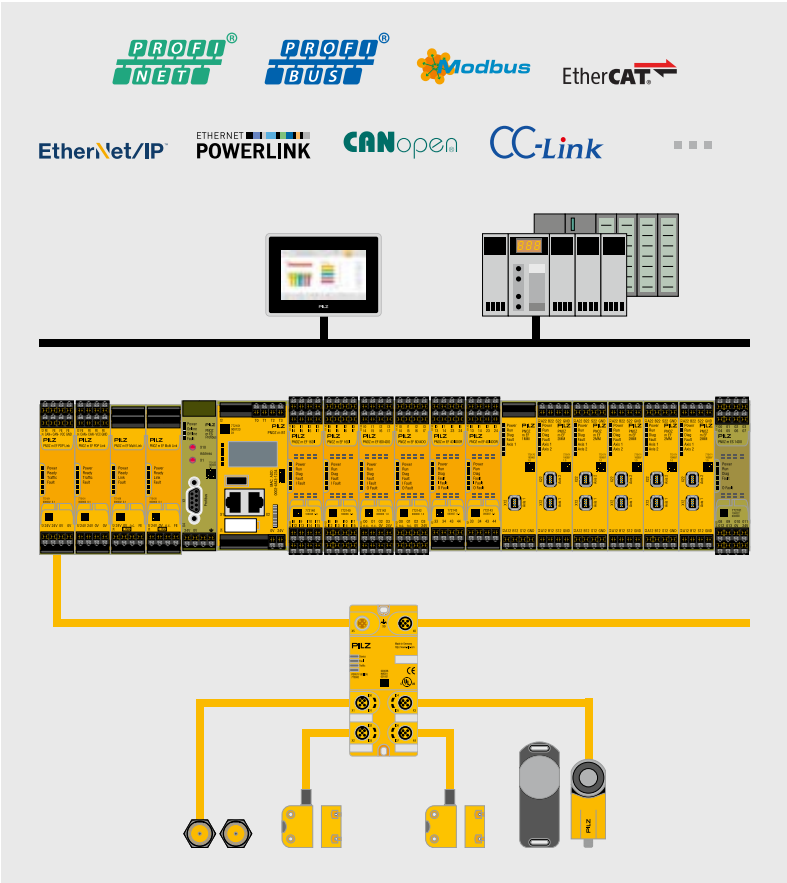
Energy saving by Pilz

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 visualisation software PASvisu, the operator terminals PMI, safe sensor technology PSEN and decentralised 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

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 visualised optimally using the web-based visualisation software PASvisu.

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

Webcode: web150500

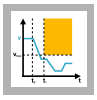
Online information at www.pilz.com

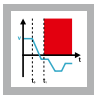
Expansion modules – for particular requirements


SS1


SS2


SSR


SSM


SDI

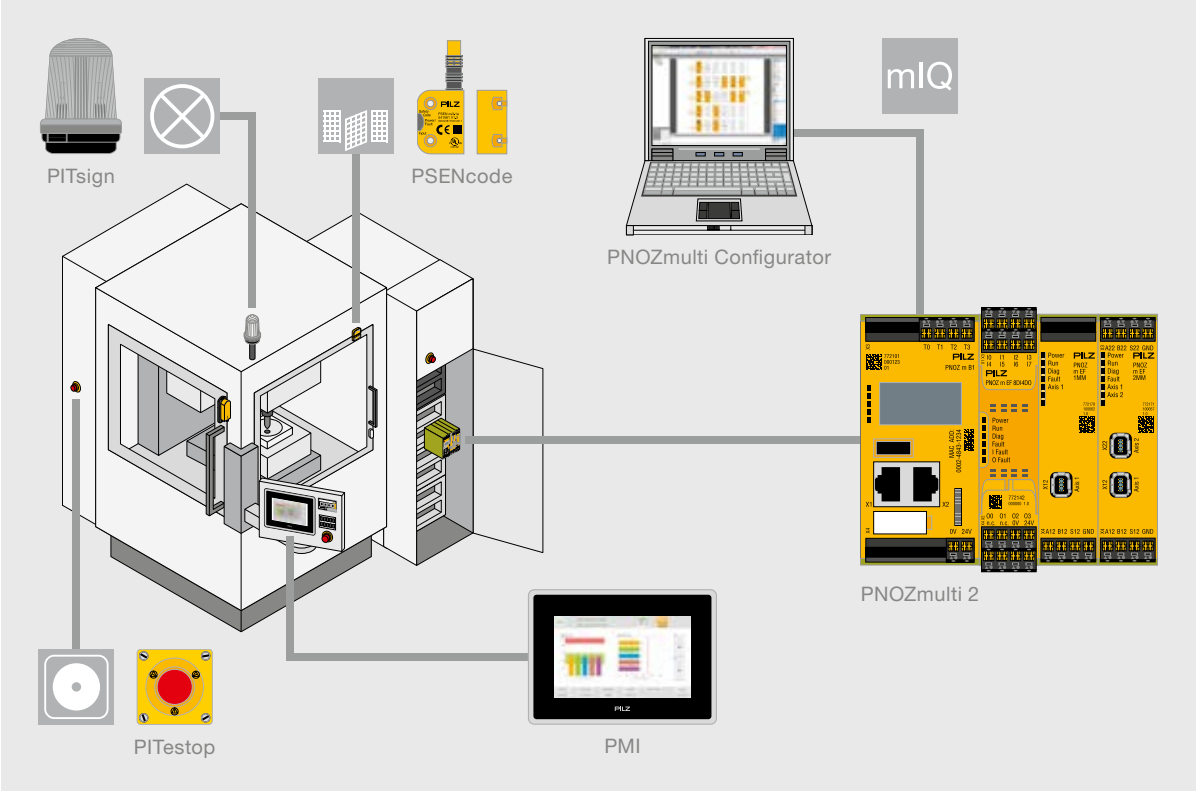

SOS

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

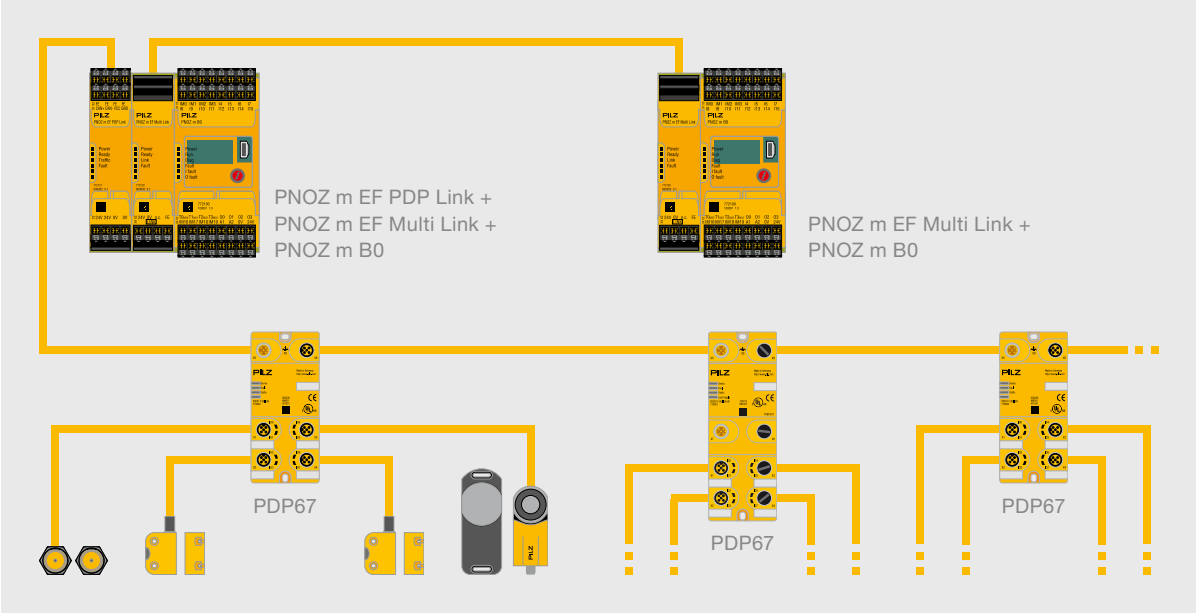
- Safety functions in accordance with EN 61800-5-2 (adjustable speed electrical power drive systems)
- Safe stop 1: SS1
- Safe stop 2: SS2
- Safe speed range: SSR
- Safe speed monitor: SSM
- Safe direction: SDI
- Safe operating stop: SOS
- Connection to all common incremental encoders via industry-compatible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

The safe motion monitoring modules are easily parameterised 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**, characterised by particularly high durability.



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



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

PNOZmulti 2 – with decentralised expansion

The configurable control systems PNOZmulti 2 can be expanded using link modules for decentralisation 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 decentralised 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.

Technical details PNOZmulti 2

PNOZmulti 2 – Base units

Energy saving by Pilz

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 customised texts
- Visualisation 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

	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 TPC 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

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

Webcode: web150382

Online information at www.pilz.com

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) - Analogue 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 decentralised 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 decentralised 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	-	-	-	-

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

PNOZ m ES ETH

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

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 decentralised 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 standardised safety solution independently of the operation control system and simply adapt it to changing applications.

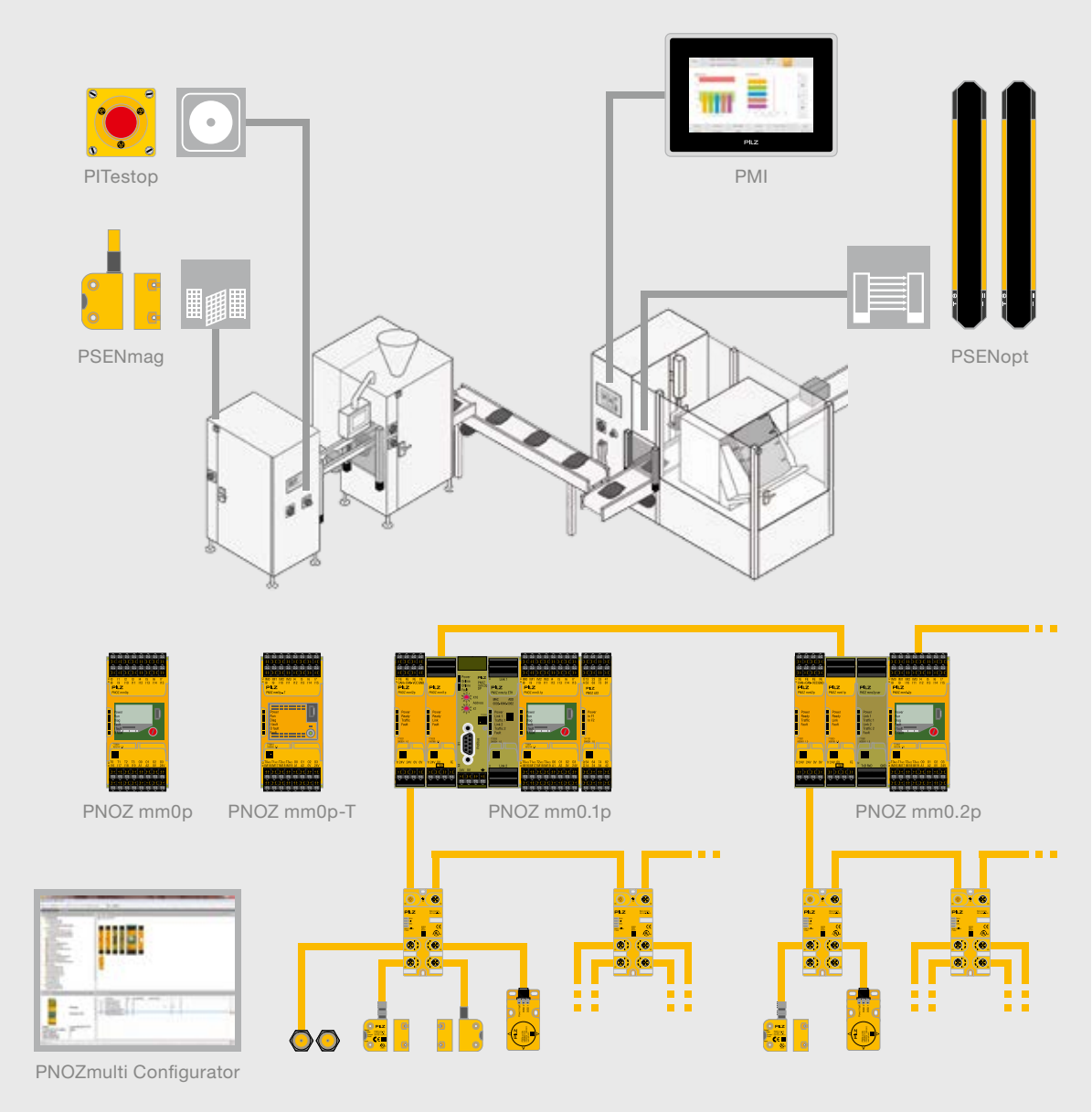
PNOZ mm0p

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 customised 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.



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; customised texts can be displayed
- If the diagnostic solution PVIS is activated, it is possible to display customised texts
- Visualisation 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

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 decentralised 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 decentralised 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

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

Ethernet Modbus

PNOZ mmc1p ETH

RS232

PNOZ mmc2p seriell

PROFIBUS

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

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:

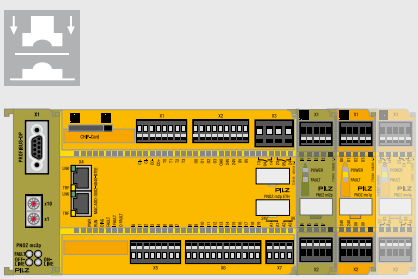
- Input and output modules, e.g. the safe analogue input module
- Fieldbus modules
- Safe speed and standstill monitors
- Safe link modules for the safe connection of several PNOZmulti base units or for the safe connection of decentralised periphery

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

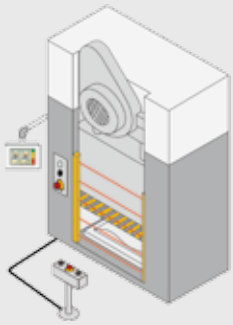
PNOZ ma1p

Monitoring analogue input signals safely

The safe analogue 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 standardised 10 V voltage signals or 20 mA current signals. As users you benefit from rapid commissioning and reduced wiring. With its analogue 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 m2p ETH



Specifically for press applications.

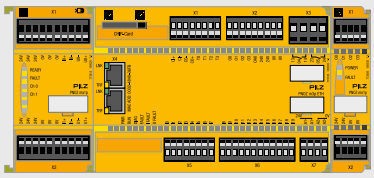
Use in presses

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.

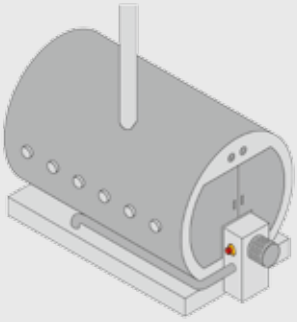
In combination with the dual-pole semiconductor output module PNOZ mo3p, the PNOZ m2p can control press safety valves safely and efficiently.

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.

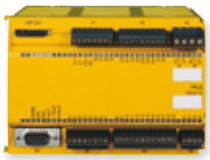
Keep up-to-date on configurable safety systems PNOZmulti:

Webcode: web150497

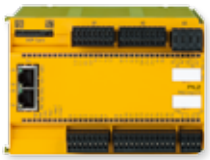
Online information at www.pilz.com

Technical details – PNOZmulti

PNOZmulti – Base units



PNOZ m1p



PNOZ m1p ETH

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)

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 analogue input module

PNOZ ma1p

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

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

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)

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 decentralised modules PDP

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	773800	783800 (1 set)	793800 (1 set)
	CE, cULus Listed, EAC (Eurasian), TÜV, BG, KOSHA, CCC	773810		
▸ 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	773815		
▸ 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	773816		
		773811		
▸ Connection per axis: 1 incremental encoder	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773820		
▸ Connection per axis: 1 incremental encoder with differential output signals from 12 Vss ... 30 Vss	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773825		
▸ Connection per axis: 1 incremental encoder from 0.5 Vss ... 5 Vss	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC	773826		
▸ 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	773830		

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	773540	783400 (1 set)	793400 (1 set)
		773545		
▸ Max. 4 PNOZ ml2p units can be connected to the base unit ▸ Max. 4 decentralised modules PDP67 F 8DI ION can be connected to the link module PNOZ ml2p	CE, cULus Listed, EAC (Eurasian), TÜV, BG, CCC, KCC	773602		

[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 – 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 fibre-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 visualisation/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 CE, cULus Listed, EAC (Eurasian), CCC	773 712 773 727 773 733

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

Keep up-to-date on PNOZmulti communication modules:

Webcode: web150380

Online information at www.pilz.com

Configurable small controllers

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 visualisation/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 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

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

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 visualisation 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 visualisation software, ActiveX control can use “PVIS ActiveX Control UA”.

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	773 010B	773 011B
	▸ User Licence	773010K	773011K
	▸ Lite Licence	773010L	773011L
	▸ Multi User Licence	773010M	773011M
	▸ Project Licence	773010G	773011G
	▸ Time Limited Licence, 2 months	773010S	-
	▸ Time Limited Licence, 3 months	773010R	-
	▸ Time Limited Licence, 4 months	773010Q	-
	Upgrade		
	▸ Basic Upgrade Licence	773010U	773011U
	▸ User Upgrade Licence	773010V	773011V
	▸ Multi User Upgrade Licence	773010N	773011N
	▸ Project Upgrade Licence	773010W	773011W

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

Webcode: web150399

Online information at www.pilz.com

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 metre 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 ____ 773840 ▸ 5 m ____ 773844
PNOZ msi1Bp Adapter Si/Ha 25/25		▸ 2.5 m ____ 773841 ▸ 5 m ____ 773839
PNOZ msi3Ap Adapter Si/Ha 15/15		▸ 2.5 m ____ 773842
PNOZ msi3Bp Adapter Si/Ha 15/15		▸ 2.5 m ____ 773843
PNOZ msi5p Adapter Bos/Rex 15/15		▸ 2.5 m ____ 773857 ▸ 1.5 m ____ 773858
PNOZ msi6p Adapter Elau 9/9		▸ 7.5 m ____ 773859 ▸ 2.5 m ____ 773860 ▸ 1.5 m ____ 773861
PNOZ msi7p Adapter SEW 15/15		▸ 2.5 m ____ 773864 ▸ 1.5 m ____ 773865
PNOZ msi8p Adapter Lenze 9/9		▸ 2.5 m ____ 773862 ▸ 1.5 m ____ 773863
PNOZ msi9p adapter cable		▸ 5.0 m ____ 773856 ▸ 2.5 m ____ 773854 ▸ 1.5 m ____ 773855
PNOZ msi19p ADAPTER ELAU PACDrive3		▸ 2.5 m ____ 773847 ▸ 1.5 m ____ 773846
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 ____ 773882
PNOZ msi b1 Box 15p		▸ 15-pin ____ 773880
PNOZ msi b1 Box 25p		▸ 25-pin ____ 773883
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 ____ 773870
PNOZ msi S15		▸ 15-pin ____ 773871
PNOZ msi S25		▸ 25-pin ____ 773872
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 ____ 773855
PNOZ msi10p		▸ 2.5 m ____ 773854
PNOZ msi11p		▸ 5 m ____ 773856
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 ____ 773881
PNOZ msi b0 cable 25/RJ45		▸ 25-pin, 2.5 m ____ 773884
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 ____ 772200 ▸ 2.5 m ____ 772201 ▸ 5.0 m ____ 772202

Decentralised modules PDP67

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

PDP67 F 8DI ION

Decentralised and passive – decentralised safety

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

Versatile automation architectures are possible due to the possibility of connection to various evaluation 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 decentralised modules optimise the installation and wiring effort – saving you time, money and space in the control cabinet. PDP67 modules with stainless steel threads satisfy the requirements of the food industry.

Type code for decentralised modules PDP67

PDP67 F 8DI ION HP VA

Product area Control technology	Design	Function	Number of inputs	Technology type	Variant	Material
Product range Decentralised Periphery	**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 decentralised modules PDP67:

Webcode: web150510

Online information at www.pilz.com

DESIGN AWARD 2017

PDP67 F 8DI ION PT

New decentralised input module PDP67 F 8DI ION PT

Thanks to an improved manufacturing process, the new decentralised input module is a cost-effective alternative to existing solutions on the market. This new addition to the range of Pilz decentralised 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

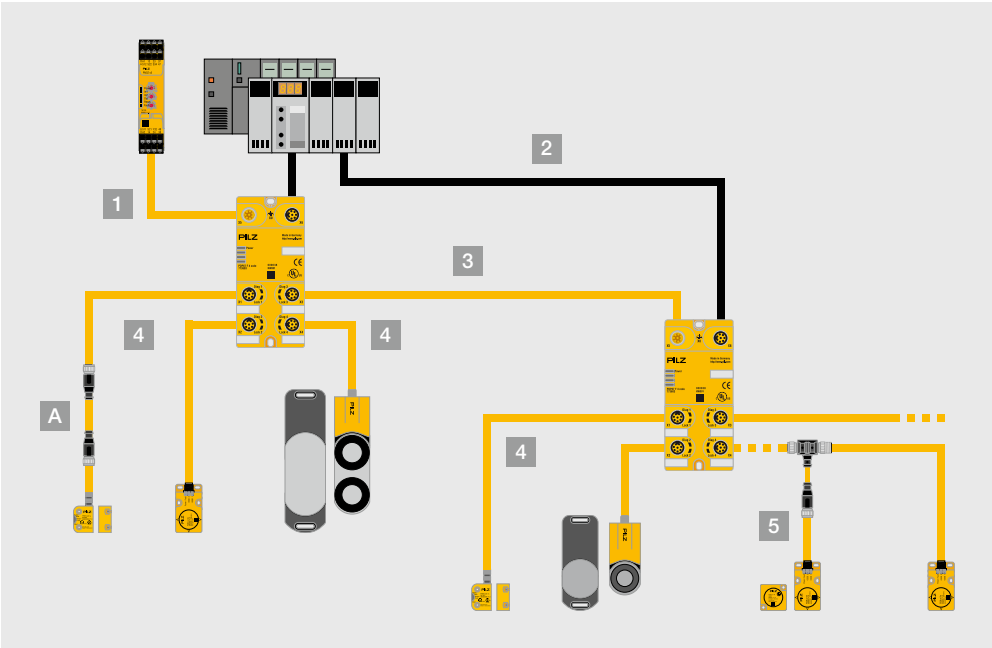
PDP67 Connector cs

Type	Features	Safety	Approvals	Order number
PDP67 F 8DI ION	Decentralised input module for PNOZmulti 2, PNOZmulti Mini and PNOZmulti	▸ PL e of EN ISO 13849-1 ▸ SIL CL 3 of EN/IEC 62061	BG, CE, TÜV, cULus Listed	773600
PDP67 F 8DI ION VA			BG, CE, TÜV, cULus Listed	773614
PDP67 F 8DI ION PT			CE, TÜV, [1]	773616
PDP67 F 8DI ION HP	Decentralised input module for ▸ PNOZmulti 2, PNOZmulti Mini and PNOZmulti ▸ High power ▸ Additional supply voltage for PSENslock and PSENopt		BG, CE, TÜV, cULus Listed	773601
PDP67 F 8DI ION HP VA			BG, CE, TÜV, cULus Listed	773615
PDP67 F 4 code	Passive junction PSENcode		CE, cULus Listed	773603
PDP67 F 4 code VA			CE, cULus Listed	773613
PDP67 Connector cs	Adapter for connection cable to the evaluation device	-	-	773610
PDP67 Connector cs VA			-	773612

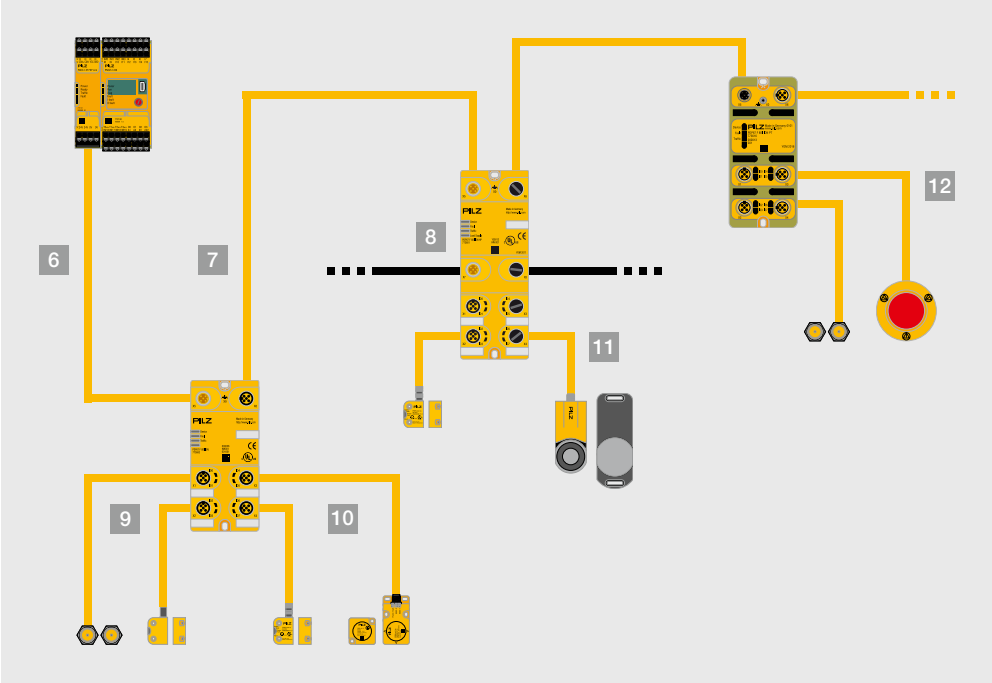
[1] Product labelling for the North American market is currently in preparation

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)

Controllers and I/O systems

You can use controllers and decentralised 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

SafetyNET p

Head modules with I/O functions

PSSu I/O

SafetyNET p

Head modules with I/O functions

PSSu I/O

PROFINET

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 decentralised I/O system

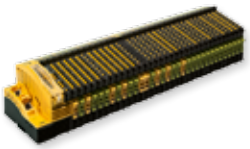
The decentralised I/O systems PSSuniversal can be tailored for use as remote I/Os at field level. Connection to a higher-level third-party controller is via common industrial communication protocols. They can be configured using the PSSuniversal Assistant.

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 decentralised 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 analogue 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

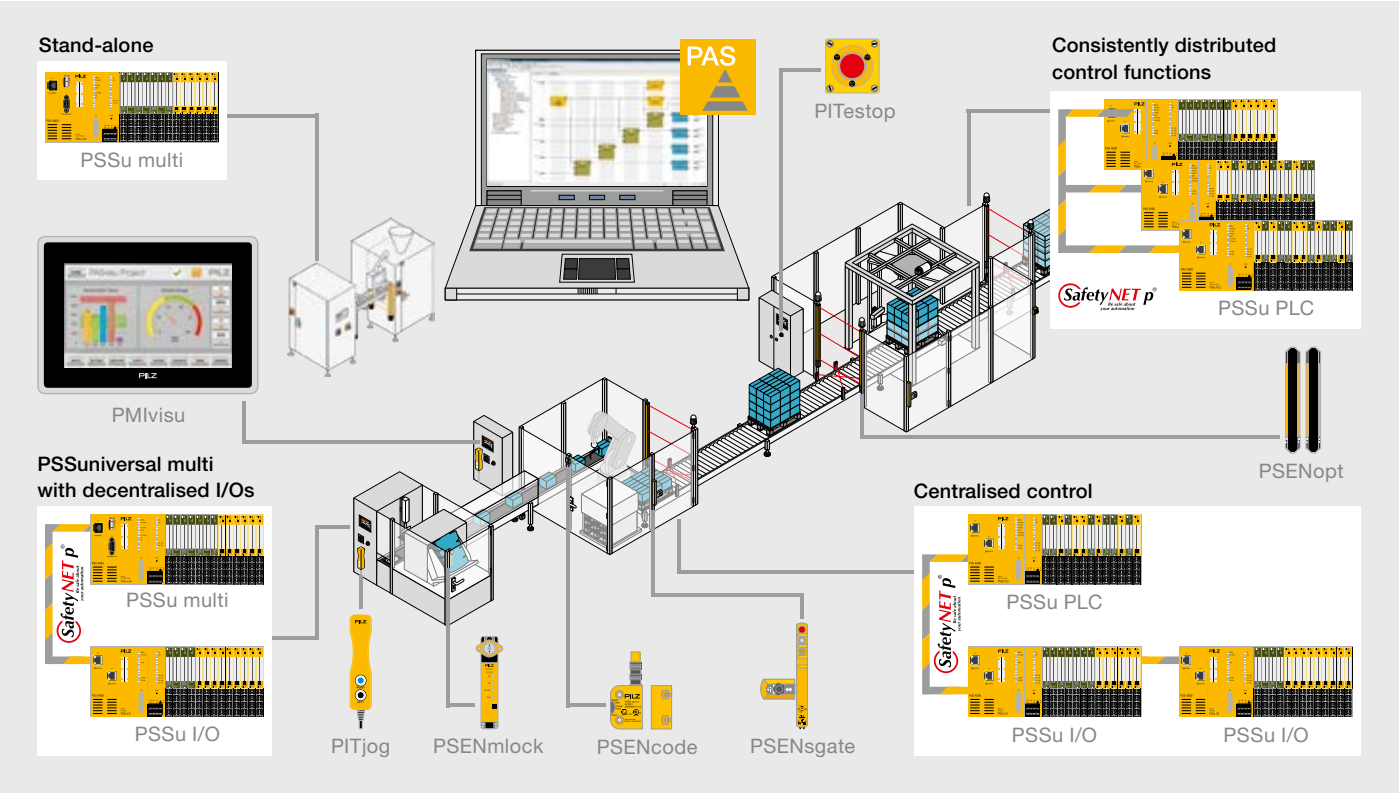
Keep up-to-date on PLC controllers and I/O systems:

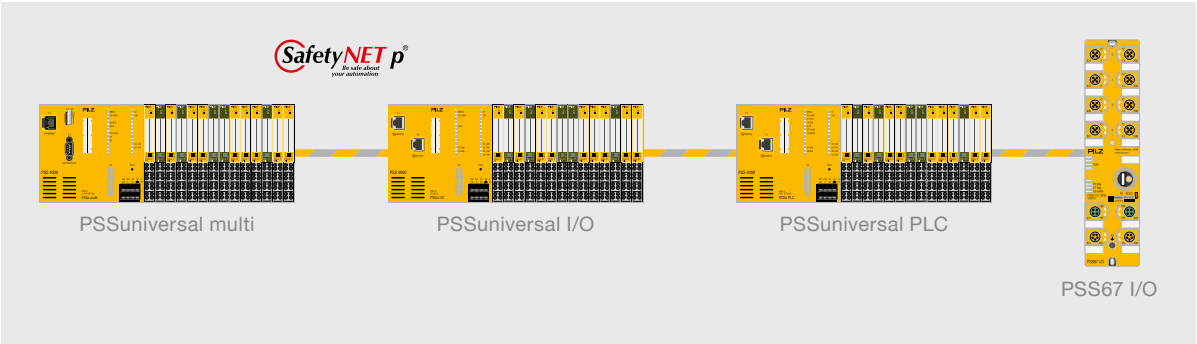
Webcode: web150509

Online information at www.pilz.com

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 customised 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 visualisation software package complete the system. In combination with network components, you can implement various automation architectures and increase network availability.





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 decentralised 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 visualisation 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

SafetyNET p®
Be safe about your automation

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.

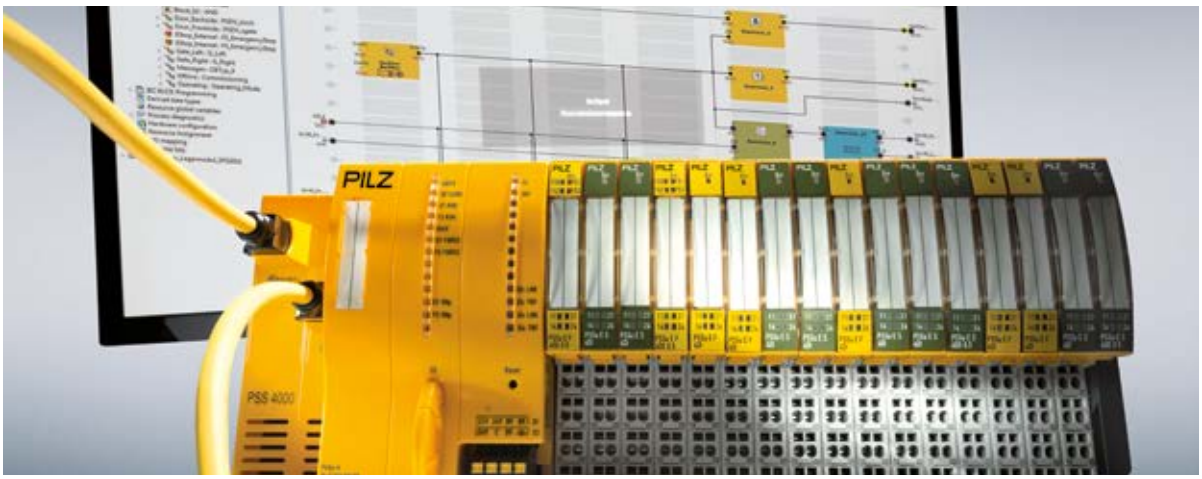
Keep up-to-date on the automation system PSS 4000:

Webcode: web151338

Online information at www.pilz.com

Software PAS4000 – easy handling of complex functions

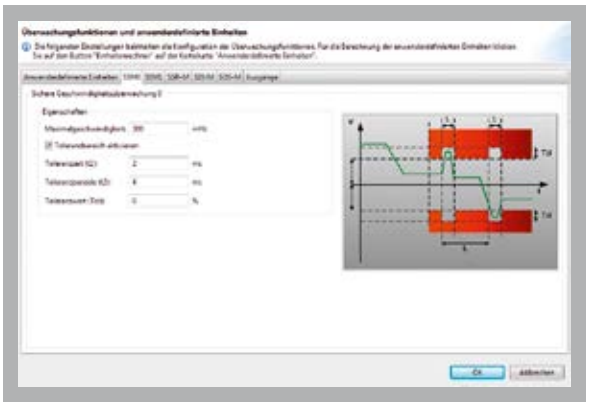
With PAS4000 you can create programs for safety and automation quickly and intuitively using just one interface. You use the graphical program editor PASmulti to configure the controllers PSSuniversal PLC and PSSuniversal multi. Inputs and outputs can be freely configured in the tool. Combination with 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

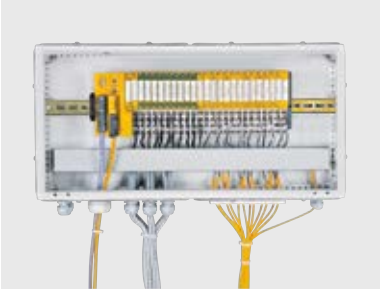
Automation of the future requires solutions that can distribute control intelligence and are still easy to use. The automation system PSS 4000 makes this possible. Multiple controllers with identical authorisation rights are connected simply via the real-time Ethernet SafetyNET p. SafetyNET p exchanges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

In PAS4000, you program and configure all network subscribers centrally. This simplifies the networking of multiple controllers. The PASvisu web-based visualisation 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!

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 visualisation 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 utilisation of extensive diagnostic data from safety devices using Safety Device Diagnostics

One system for all automation requirements



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.

Keeping a close eye on the automation system

The PASvisu web-based visualisation 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 visualisation 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 visualisation software PASvisu:

Webcode: web150430

Online information at www.pilz.com

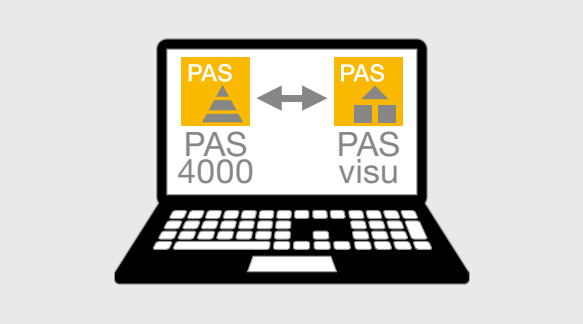
Optimum link: Control project and visualisation.

Control diagnostics

The (safety) blocks configured in the controller are shown grouped as predefined tiles in the visualisation. 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 visualisation.

PASvisu Builder

PMIvisu – Visualisation terminal for PASvisu

PMIvisu from Pilz is a preinstalled and licensed solution package – consisting of the operator terminals PMI with the web-based visualisation software PASvisu. This provides professional visualisation 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 visualisation of plant and machinery
- PASvisu visualisation 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 visualisation 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 visualisation thanks to the most diverse style sheets. Optimum link between control project (PAS4000) and visualisation (PASvisu).

Keep up-to-date on the visualisation panels:

Webcode: web160789

Online information at www.pilz.com

Decentralised I/O system PSSuniversal

The decentralised 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

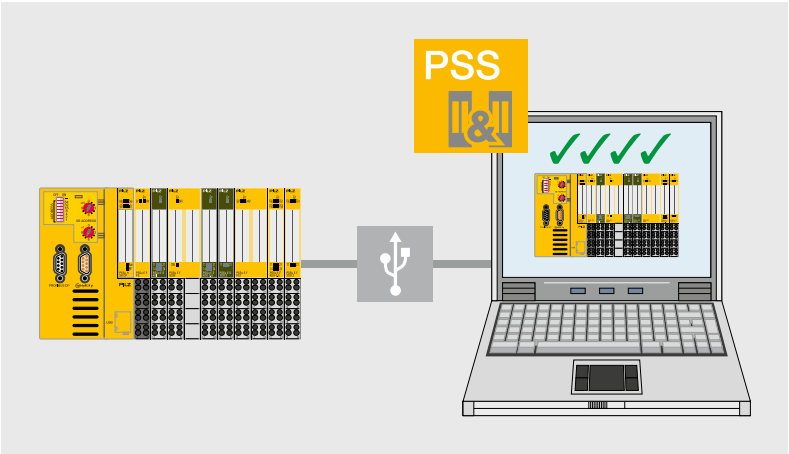
The decentralised I/O systems can be connected to different higher-level controllers as a cost-effective variant of a remote I/O system. The PSSuniversal system is therefore a solution for connecting periphery and safety-related functions to a central controller.

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.

Simple configuration, fast commissioning

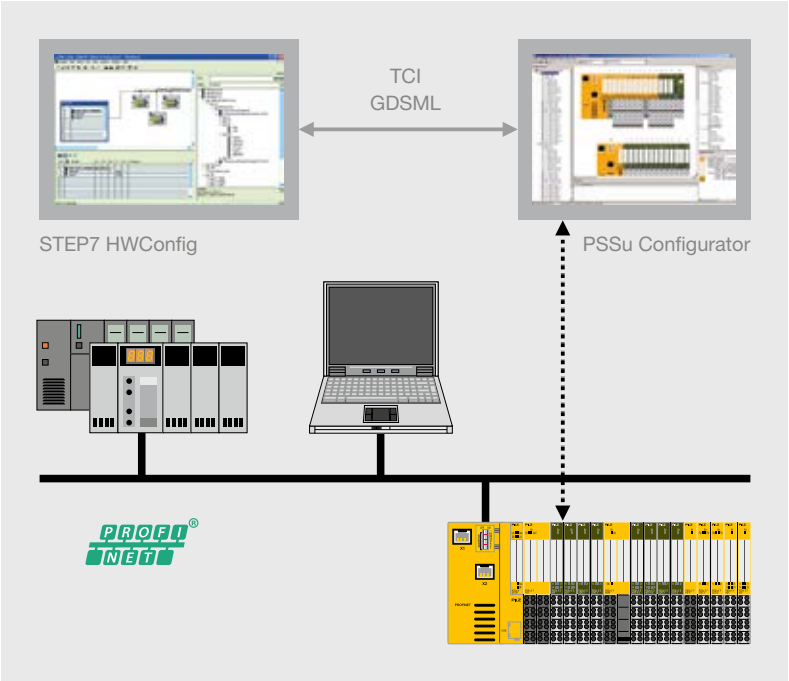
The decentralised I/O systems are configured using the PSSuniversal Assistant. Thanks to the PSSuniversal Startup Tool, the system can be commissioned quickly. You can already perform the first cable and function tests before the plant or machine is set up. That way all of the periphery is already tested 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

Optimised address management on the PROFINET versions of the decentralised I/O system is particularly convincing. The PROFINET/PROFIsafe address is only required once per decentralised 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

Decentralised 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

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	312043	-	-
	CE, EAC, TÜV, cULus Listed	312042	-	-
	CE, cULus Listed	312041	-	-

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	312070	314070	315070
	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312071	-	-
▸ 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	312065	-	-
	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312060	-	-
	BG, CE, EAC (Eurasian), TÜV, cULus Listed	312066	-	-
▸ Communication with other SafetyNET p devices (RTFN) ▸ Standard module bus for standard I/O modules	BG, CE, EAC (Eurasian), KOSHA, TÜV, cULus Listed	312085	314085	315085
▸ 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	316010	-	-

[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

Technical details – PSSuniversal

Supply modules, junction modules and safe block switching module

PSSu E F PS

PSSu E PD

Type	Suitable for		Function	Applica-tion 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	-

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

Webcode: web150421

Online information at www.pilz.com

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 Analogue input, voltage INC Incremental encoder PS Power supply … Further functions

Current load capacity Periphery supply	Approvals						Order number	Screw terminals [5]												Cage clamp terminals [6]										
	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed		Order number	312600	312610	312618	312620	312622	312628	312630	312650	312652	312654	312656	312601	312611	312619	312621	312623	312629	312631	312651	312653	312655	312657
								Suitable base module	PSSu BP 1/8 S [3]	PSSu BP-C 1/8 S [4]	PSSu BP 1/12 S	PSSu BP-C 1/12 S	PSSu BP-C1 1/12 S	PSSu BP 2/16 S	PSSu BP-C 2/16 S	PSSu BS 1/8 S	PSSu BS-R 1/8 S	PSSu BS-R 2/8 S	PSSu BS 2/8 S	PSSu BP 1/8 C [3]	PSSu BP-C 1/8 C [4]	PSSu BP 1/12 C	PSSu BP-C 1/12 C	PSSu BP-C1 1/12 C	PSSu BP 2/16 C	PSSu BP-C 2/16 C	PSSu BS 1/8 C	PSSu BS-R 1/8 C	PSSu BS-R 2/8 C	PSSu BS 2/8 C
Max. 10 A	◆	◆	◆	◆	◆	◆	312190 [1]									◆	◆										◆	◆		
Max. 10 A	◆	◆	◆	◆	◆	◆	312191 [1]											◆	◆										◆	◆
Max. 10 A	◆	◆	◆	◆	◆	◆	312192 [1], [2]											◆											◆	
Max. 10 A	◆	◆	◆	◆	◆	◆	312185 [1], [2]									◆											◆			
-		◆				◆	312195 [1]		◆	◆	◆		◆							◆	◆	◆	◆							
-		◆				◆	312196 [1]							◆	◆										◆	◆				
-		◆				◆	312197		◆	◆	◆	◆								◆	◆	◆		◆						
Max. 8 A		◆	◆	◆	◆	◆	312230 [1]												◆											◆
-	◆	◆			◆	◆	312590		◆		◆		◆							◆		◆	◆							
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-	◆	◆			◆	◆	312592		◆		◆		◆							◆		◆	◆							

[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

Digital inputs and outputs

PSSu E F 4DI

PSSu E S 4DI

Type	Suitable for		Function	Application area	
	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000		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	Approvals						Order number		Screw terminals [5]								Cage clamp terminals [6]						
Feature Inputs Outputs	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed	Regular version	Diagnostic modules (-D)	Order number Suitable base module	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	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
-	◆	◆	◆	◆	◆	◆	312200 [1]	-		◆		◆		◆			◆		◆		◆		
0.5 A	◆	◆	◆	◆	◆	◆	312210 [1, 2]	-		◆	◆	◆		◆			◆	◆	◆		◆		
2 A	◆	◆	◆	◆	◆	◆	312215 [1, 2]	-		◆	◆	◆		◆			◆	◆	◆		◆		
1 (2 A), 2-pin 1 test pulse output	◆	◆	◆	◆	◆	◆	312220 [1, 2]	-		◆	◆	◆		◆			◆	◆	◆		◆		
2 N/O AC1: 250 V/8 A; 2000 V DC1: 24 V/8 A	◆	◆	◆	◆	◆	◆	312225 [1, 2]	-							◆	◆						◆	◆
- 2 (2 A) 1-pin 2 (2 A) 2-pin		◆	◆	◆	◆	◆	312435	-															
2 (3 A) 2-pin		◆	◆		◆	◆	312421	-															
2 (1.75 A) 1-pin		◆	◆		◆	◆	312420	-															
-	◆	◆			◆	◆	312400 [1, 2]	312401		◆	◆	◆		◆			◆	◆	◆		◆		
0.5 A	◆	◆			◆	◆	312405 [1]	312406 [1]		◆	◆	◆		◆			◆	◆	◆		◆		
2 A	◆	◆			◆	◆	312410 [1]	312411 [1]		◆	◆	◆		◆			◆	◆	◆		◆		
2 N/O	◆	◆			◆	◆	312510 [1]	-							◆	◆						◆	◆
2 N/O		◆				◆	312511 [1]	-		◆	◆	◆		◆			◆	◆	◆		◆		
0.5 A		◆	◆		◆	◆	312431 [1]	-															
-		◆	◆		◆	◆	312430	-															
0.5 A		◆	◆		◆	◆	312432	-															

[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 (312963)

[6] Shield terminal available (312964)

Technical details – PSSuniversal

Analogue inputs and outputs

PSSu E S 4AO U

Type	Suitable for		Function	Application area	
	PSSuniversal – I/O system	PSSuniversal – controllers PSS 4000		Failsafe functions	Automation functions
PSSu E S 2AI U	◆	◆	2 analogue inputs		◆
PSSu E S 4AI U	◆	◆	4 analogue inputs		◆
PSSu E S 2AI I s.e.	◆	◆	2 analogue inputs		◆
PSSu E S 2AO U	◆	◆	2 analogue outputs		◆
PSSu E S 4AO U	◆	◆	4 analogue outputs		◆
PSSu E S 2AO I	◆	◆	2 analogue outputs		◆
PSSu E S 2AI RTD	◆	◆	2 analogue inputs		◆
PSSu E S 2AI TC	◆	◆	2 analogue inputs		◆
PSSu E F AI I		◆	1 analogue input	◆	
PSSu E F AI U		◆	1 analogue input	◆	
PSSu E AI SHT1	◆	◆	1 analogue input, 2 analogue outputs	◆	◆
PSSu E AI SHT2	◆	◆	1 analogue input, 2 analogue outputs	◆	◆

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

Webcode: web150421

Online information at www.pilz.com

Electrical data	Approvals						Order number	Screw terminals [5]									Cage clamp terminals [6]								
Feature Inputs Outputs	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed		Order number	312600	312610	312602	312612	312618	312620	312622	312628	312630	312601	312611	312603	312613	312619	312621	312623	312629	312631
								Suitable base module	PSSu BP 1/8 S [3]	PSSu BP-C 1/8 S [4]	PSSu BP 1/8 S-J	PSSu BP-C 1/8 S-J	PSSu BP 1/12 S	PSSu BP-C 1/12 S	PSSu BP-C1 1/12 S	PSSu BP 2/16 S	PSSu BP-C 2/16 S	PSSu BP 1/8 C [3]	PSSu BP-C 1/8 C [4]	PSSu BP 1/8 C-J	PSSu BP-C 1/8 C-J	PSSu BP 1/12 C	PSSu BP-C 1/12 C	PSSu BP-C1 1/12 C	PSSu BP 2/16 C	PSSu BP-C 2/16 C
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 (312963)

[6] Shield terminal available (312964)

Technical details – PSSuniversal

Counter modules

PSSu E S INC

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	◆	

Electronic modules with serial interface

PSSu E S RS232

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		◆

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

Webcode: web150421

Online information at www.pilz.com

Electrical data	Approvals						Order number	Screw terminals[5]										Cage clamp terminals[6]								
Feature Inputs Outputs	BG	CE	EAC (Eurasian)	KOSHA	TÜV	cULus Listed		Order number	312600	312610	312602	312612	312618	312620	312622	312628	312630	312601	312611	312603	312613	312619	312621	312623	312629	312631
								Suitable base module	PSSu BP 1/8 S[3]	PSSu BP-C 1/8 S[4]	PSSu BP 1/8 S-J	PSSu BP-C 1/8 S-J	PSSu BP 1/12 S	PSSu BP-C 1/12 S	PSSu BP-C1 1/12 S	PSSu BP 2/16 S	PSSu BP-C 2/16 S	PSSu BP 1/8 C[3]	PSSu BP-C 1/8 C[4]	PSSu BP 1/8 C-J	PSSu BP-C 1/8 C-J	PSSu BP 1/12 C	PSSu BP-C 1/12 C	PSSu BP-C1 1/12 C	PSSu BP 2/16 C	PSSu BP-C 2/16 C
SSI		◆				◆	312480[1]		◆	◆								◆								
INC		◆				◆	312485[1]									◆	◆								◆	◆
INC		◆			◆	◆	312486[1]									◆	◆								◆	◆
SSI	◆	◆	◆	◆	◆	◆	312275[1]		◆	◆								◆	◆							
INC	◆	◆	◆	◆	◆	◆	312280[1]									◆	◆								◆	◆
INC	◆	◆	◆	◆	◆	◆	312437[1]																			
Sin/Cos, TTL, HTL, initiators 24 V		◆			◆	◆	312433																			
Sin/Cos, TTL, HTL, initiators 24 V		◆			◆	◆	312434[1]																			
-		◆				◆	312515[1]		◆	◆			◆	◆				◆	◆			◆	◆			
-		◆				◆	312439[1]																			
-		◆				◆	312438[1]																			
-		◆				◆	312516[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 (312963)

[6] Shield terminal available (312964)

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)

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.

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 fibre-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 fibre-optic ports ▸ Multimode connection	CE, cULus Listed	380 602
PSSnet SHL 6T 2FSMSC MRP	▸ 6 electrical ports ▸ 2 fibre-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

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 metre) ▸ 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

Selection guide – Software

Configuration tools for decentralised I/O system PSSuniversal

Type	Features
PSSuniversal Startup Software incl. PSSuniversal Assistant Configuration of and independent periphery test on decentralised 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

Visualisation software PASvisu

Type	Features
PASvisu Web-based visualisation software	▸ Consists of the configuration tool PASvisu Builder and PASvisu Runtime ▸ Wide range of predefined GUI elements (tiles) ▸ Sophisticated visualisation thanks to a wide variety of different style sheets ▸ Optimum link between the control project (PAS4000) and visualisation (PASvisu) ▸ Convenient overview, locally and via remote access

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

Selection guide – Software blocks PAS4000®

Part of PSS 4000

General failsafe control blocks

FS_EmergencyStop

FS_TwoHandControl

Type	Function
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

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	Initialises the counter, calculates the current counter status (in increments) and transmits status information.
FS_AnalogueInput Dual	Monitors redundant, analogue input values for upward violation of a value range, downward violation of a value range and upward violation of a difference between the analogue input value 0 and analogue input value 1 over a defined period of time (plausibility check).
FS_Scaling	Scales an analogue 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.

The PAS4000 software blocks can be found directly within the tool in the software library.
Tool download: www.pilz.com/PAS4000

Keep up-to-date on PAS4000:

Webcode: web150424

Online information at www.pilz.com

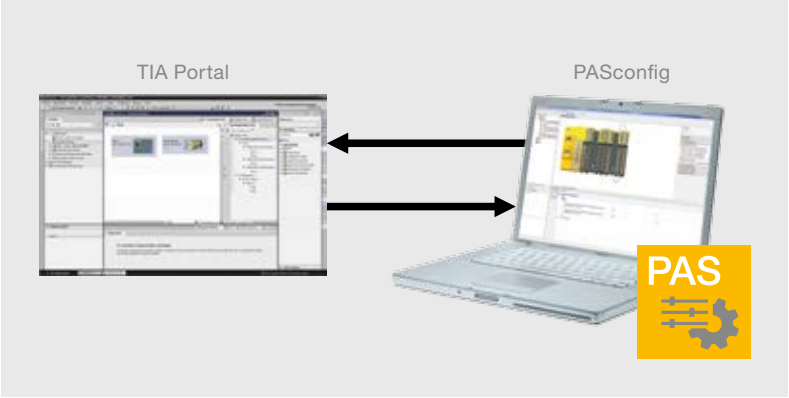
Remote I/O system PSSuniversal 2

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

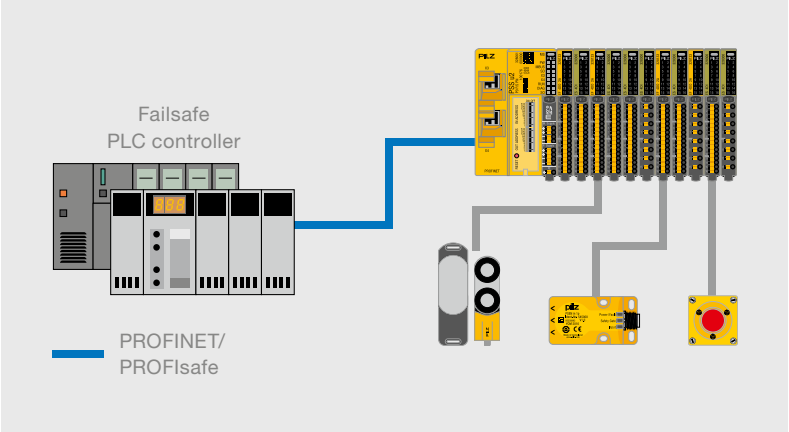
- Easy, flexible and granular:
  - Optimised handling during commissioning and service
  - Three-part system structure reduces servicing work
- Compact:
  - Minimised dimensions thanks to maximum packing density, with up to 16 channels on 12.5 mm
- Functional safety as a basic function:
  - Design of 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 localisation 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

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.

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

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

Keep up-to-date on the remote I/O system PSSuniversal 2:

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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)

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

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 organisational 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.

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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.

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.

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.

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

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).

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

Training

Pilz offers two types of course: 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

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Energy saving by Pilz

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PILZ
THE SPIRIT OF SAFETY

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