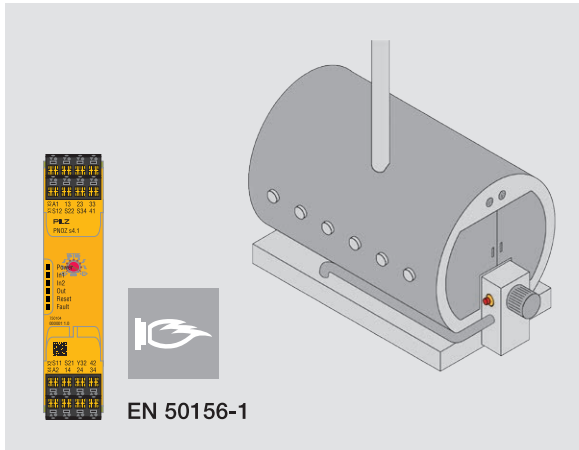
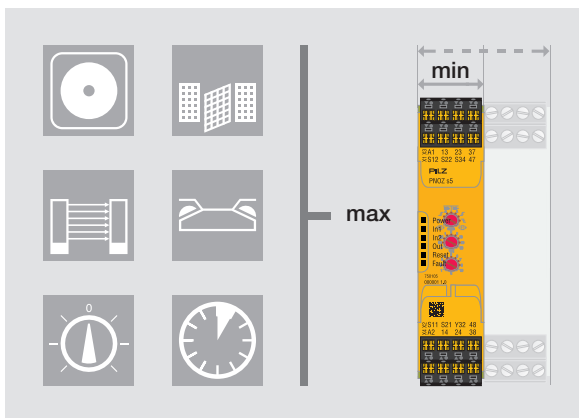


► Safety relay PNOZsigma – tried and tested in special applications



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.



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

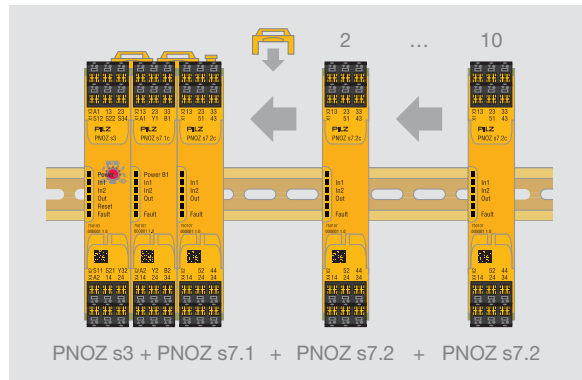


► More contacts with PNOZsigma – simply and quickly

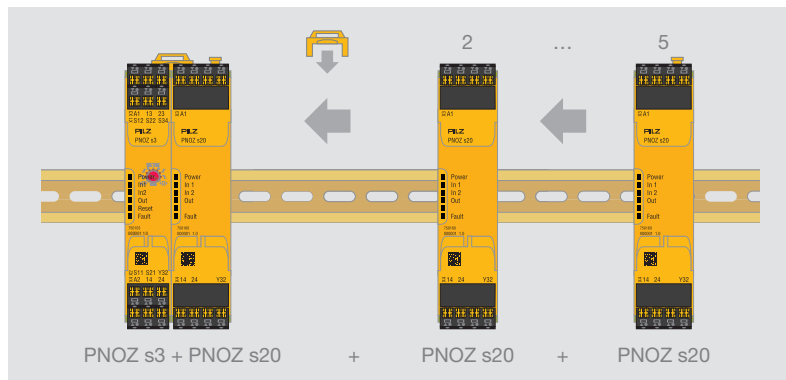
Multiple expansion with PNOZ s7.1 and PNOZ s7.2

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.

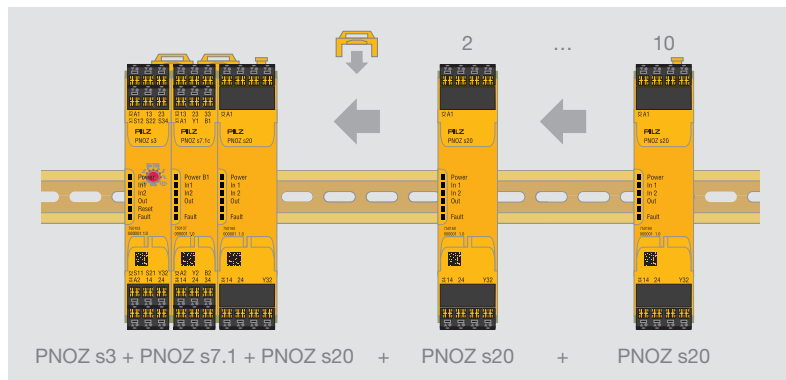
At just 17.5 mm wide, the PNOZ s7.1 has three safety contacts, while the PNOZ s7.2 has four safety contacts plus one auxiliary contact. They can be combined with other PNOZsigma expansion units at any time.



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

► Safety relay PNOZ s30 – Convenient speed moni



SSR



SSM



SDI



SOS



PNOZ s30

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.

Increased safety of operating personnel

Movement at reduced speed during set-up mode, for example, increases operator safety and reduces set-up times. Safe working with the safety gate open or faster access to the machine once standstill is initiated protect you and your products and increase productivity.

Simple use

The speed monitor PNOZ s30 is suitable for all common motor feedback systems and proximity switches. The configurable analogue output transmits the safely measured speed to the controller, allowing you to dispense with additional sensors for speed detection. A safe output signal is also used here to indicate when any values exceed or fall below defined warning thresholds. Furthermore, up to three safety functions can be logically linked together (AND and OR).

User-friendly configuration

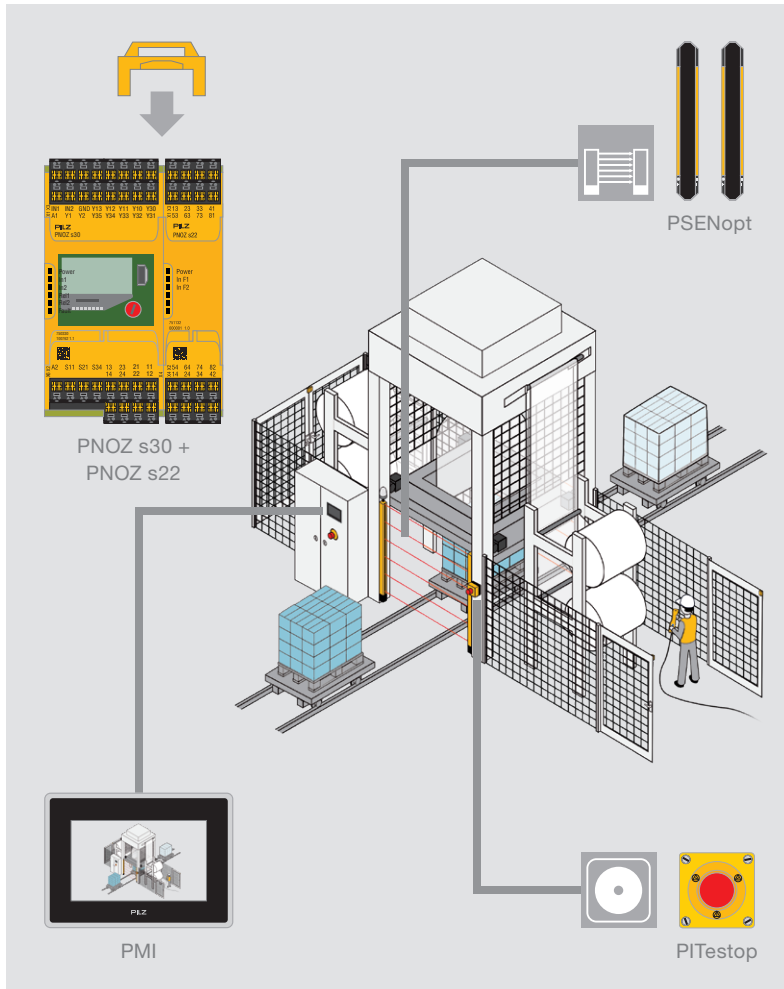
The individual configuration is performed quickly and easily with the PNOZsigma Configurator using a PC. You can create and store new configurations, and existing ones can be read, copied and edited. It is also possible to change settings directly on the device using the rotary knob via the illuminated display.

Applications

Choose PNOZ s30 for applications such as balancing machines, high rack storage systems, centrifuges, filling systems, wind turbines or even amusement parks. PNOZ s30 is the right solution for stand-alone monitoring of safety functions in accordance with EN 61800-5-2, such as speed range (SSR), safe speed monitoring (SSM), safe direction (SDI) and safe operating stop (SOS).



toring

**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
- ▶ Saves time when setting up and when replacing devices thanks to the user-friendly PNOZsigma Configurator
- ▶ 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
- ▶ Configurable analogue output for transmitting the safely measured speed to the controller
- ▶ Logical AND and OR link of up to three safety functions

The number of relay contacts can be multiplied by combining PNOZ s30 and PNOZ s22.



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.



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 the visualisation of 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.

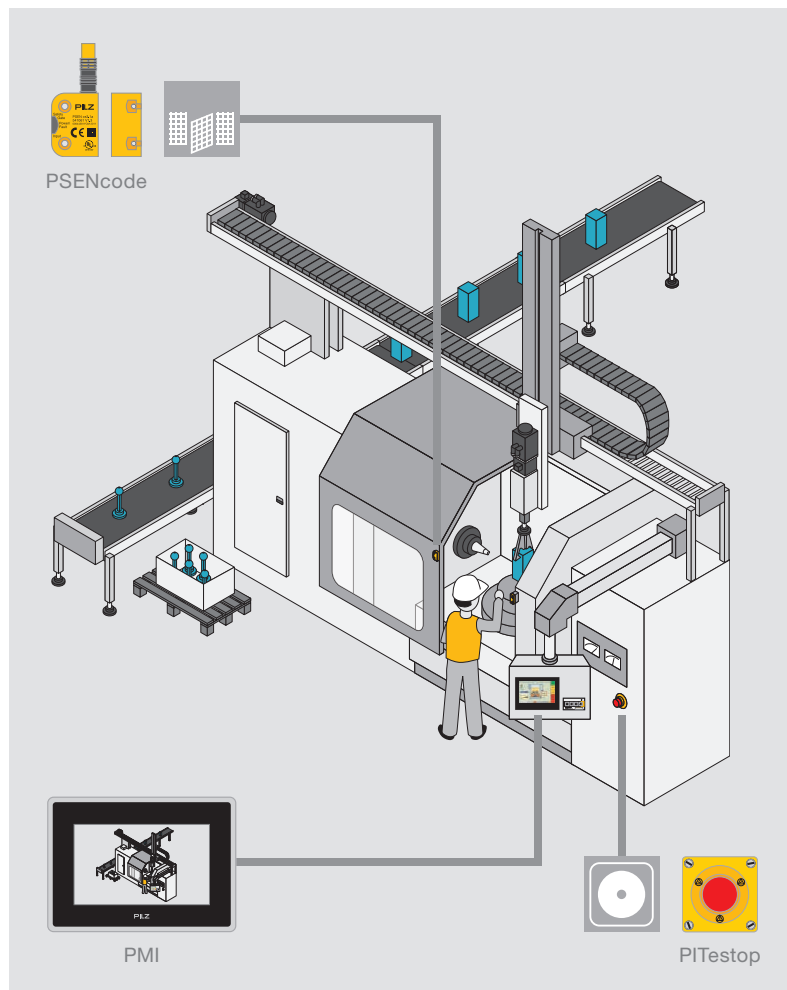
Safety relay PNOZ s50



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 VDC, each with 4.5 A
- Certifications:
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



Your benefits at a glance

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

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

- ▶ Supply voltage:
 - 1-pole: 24 VDC
 - 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 VDC 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

Order number

751 500
(with spring-loaded terminals)

Keep up-to-date
on safety relays
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 EN/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	3
PNOZ s6.1				◆		EN 574, Type IIIA	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 EN/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 EN/IEC 62061
					
PNOZ s50 ³⁾	Safe brake control			e	3

Output contacts		Auxiliary contacts		Semiconductor outputs		Supply voltage (U _a)	Dimensions (H x W x D) in mm
Safe				Safe	Auxiliary outputs		
							
2	-	-	1	-	-	24 VDC	100/98 ¹⁾ x 12.5 x 120
3	-	1	1	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
2	-	-	1	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
3	-	1	1	-	-	24 VDC, 48 ... 240 VAC/DC	100/98 ¹⁾ x 22.5 x 120
3	-	1	1	-	-	24 VDC, 48 ... 240 VAC/DC	100/98 ¹⁾ x 22.5 x 120
2	2	-	1	-	-	24 VDC, 48 ... 240 VAC/DC	100/98 ¹⁾ x 22.5 x 120
3	-	1	1	-	-	24 VDC, 48 ... 240 VAC/DC	100/98 ¹⁾ x 22.5 x 120
3	-	1	1	-	-	24 VDC, 48 ... 240 VAC/DC	100/98 ¹⁾ x 22.5 x 120
4	-	1	-	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
3	-	-	-	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
4	-	1	-	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
2	-	-	1	-	-	24 VDC	100/98 ¹⁾ x 12.5 x 120
-	3	1	-	-	-	24 VDC	100/98 ¹⁾ x 17.5 x 120
4	-	1	-	-	-	24 VDC	100/98 ¹⁾ x 45.0 x 120
8	-	1	-	-	-	24 VDC	100/98 ¹⁾ x 45.0 x 120
-	-	-	-	2	1	24 VDC	100/98 ¹⁾ x 22.5 x 120
2x3	-	2x1	-	-	-	24 VDC	100/98 ¹⁾ x 22.5 x 120

Output contacts		Auxiliary contacts		Semiconductor outputs		Supply voltage (U _a)	Dimensions (H x W x D) in mm
Safe				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 _a)	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 26

Technical
documentation
on safety relays
PNOZsigma:

 Webcode:
web150635

Online information
at www.pilz.com

► Technical details – PNOZsigma

Safety relays PNOZsigma – Base units



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	Certification	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 VDC _____ 751 104 ▶ 24 VDC, coated version _____ 751 184 ▶ 48 ... 240 VAC/DC ____ 751 134	▶ 24 VDC _____ 750 104 ▶ 48 ... 240 VAC/DC ____ 750 134
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, CCC	▶ 24 VDC _____ 751 124 ▶ 48 ... 240 VAC/DC ____ 751 154	▶ 24 VDC _____ 750 124 ▶ 48 ... 240 VAC/DC ____ 750 154
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▶ 24 VDC _____ 751 105 ▶ 24 VDC, coated version _____ 751 185 ▶ 48 ... 240 VAC/DC ____ 751 135	▶ 24 VDC _____ 750 105 ▶ 48 ... 240 VAC/DC ____ 750 135
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▶ 24 VDC _____ 751 106 ▶ 48 ... 240 VAC/DC ____ 751 136	▶ 24 VDC _____ 750 106 ▶ 48 ... 240 VAC/DC ____ 750 136
DC1: 24 V/6 A/150 W	CE, cULus Listed, EAC (Eurasian), TÜV, KOSHA, CCC	▶ 24 VDC _____ 751 126 ▶ 48 ... 240 VAC/DC ____ 751 156	▶ 24 VDC _____ 750 126 ▶ 48 ... 240 VAC/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, position and speed range ► Convenient configuration with PNOZsigma Configurator or parameter entry via rotary knob in conjunction with an illuminated display ► set parameters are saved on a chip card ► Diagnostics via illuminated display ► Configurable analogue output

Outputs: Voltage/current/rating	Certification	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 VDC _____ 751 107 ▶ 24 VDC, 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 VDC _____ 751 109 ▶ 24 VDC, 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	Certification	Order number
▶ Safety functions in accordance with EN 61800-5-2 ▶ Advance warning of shutdown when a certain threshold is reached ▶ Accessories: - Chip card reader: 779 230 - PNOZsigma chip card manager set: 750 030 - PNOZ s30 USB configuration cable: 750 040 - PNOZsigma Configurator s30 Licence unlt: 750 700 - PNOZsigma Configurator s30 Licence 1 y: 750 701	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)

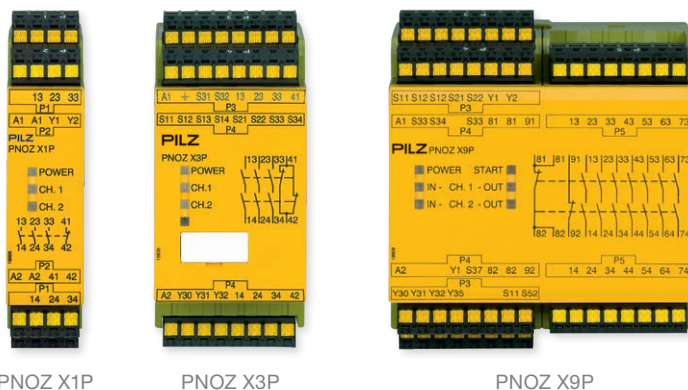
Technical documentation on safety relays PNOZsigma:

 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 area 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!



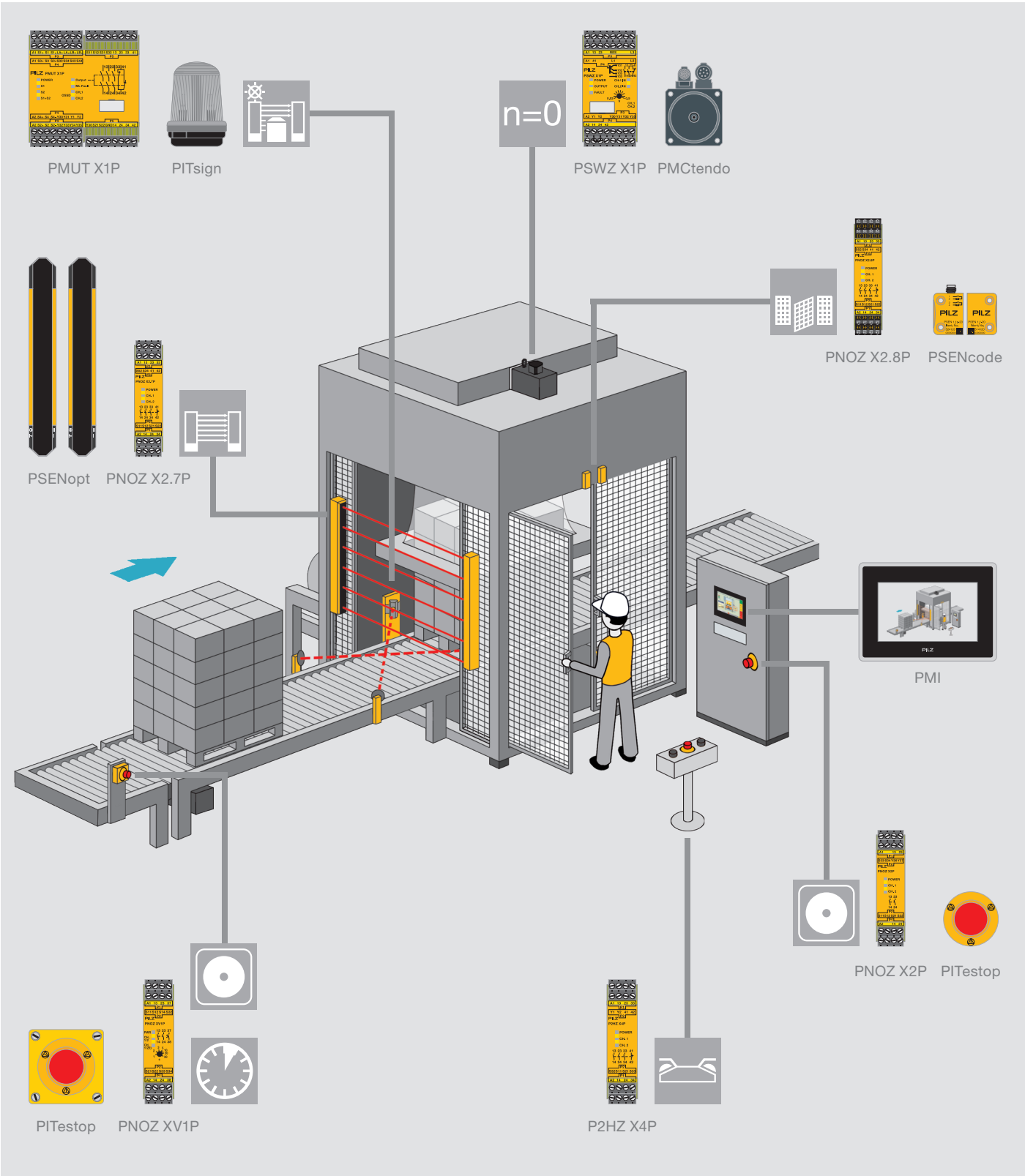
Your benefits at a glance

- 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.