What's New, 2014

pilz

the spirit of safety

For your automation solutions

▶ What's new in 2014 for your automation solutions

Pilz offers automation solutions for plant and machinery: Complete and simple. From sensor technology to control technology and beyond to drive technology, including safety and automation. Different software tools allow ease of use and make commissioning easier. Thanks to extensive diagnostic options, you benefit from short downtimes and high plant availability. We present you with the new products for 2014 for your safe automation.
You will find further information on our homepage at www.pilz.com. Just enter the webcode specified on the pages.

Contents

▶ Safety gate system PSENsgate – new variants for more flexibility

NEW

PSENsgate offers safety gate monitoring with safe guard locking for protection of personnel and plant to the highest category PL e in one system. Benefit from high flexibility: A number of new system variants with optional integratable control elements such as pushbuttons, key switches, illuminated buttons, section stop or functions such as emergency stop or escape release. Due to its rugged design and the mechanical load capacity the safety gate system PSENsgate guarantees a long product service life.

Your benefits at a glance
▶ Reduced installation and wiring effort due to ready-to-install system with integrated control elements and optional emergency stop
▶ Highest safety with just one switch per safety gate: For protection of personnel and plant up to PL e
▶ More flexibility thanks to selectable operator elements such as key buttons, key switches, section or emergency stop and a connection option for enable switches

Safety gate system PSENsgate

PSEN sg2c-3LPE

PSEN sg2c-5LPLLE

Technical features	▶ Spring-loaded terminal, plug in ▶ Type of coding: Coded ▶ Suitable for 45 mm profiles ▶ Safety gate system contains safe interlock with safe guard locking in accordance with DIN EN 60947-5-3 ▶ For applications up to SIL CL 3 and PL e		
Order number	**Short unit type:** ▶ PSEN sg2c-3LPE[1] ▶ PSEN sg2c-3LBE ▶ PSEN sg2c-3LPS ▶ PSEN sg2c-3LBS ▶ PSEN sg2c-3LPC ▶ PSEN sg2c-3LBC	**Dimensions in mm (H x W x D):** 445 x 200 x 105 445 x 200 x 105 445 x 200 x 105 445 x 200 x 105 445 x 200 x 105 445 x 200 x 105	570 800 570 802 570 804 570 806 570 808 570 810
	Long unit type: ▶ PSEN sg2c-5LPLLE ▶ PSEN sg2c-5LBLLE ▶ PSEN sg2c-5LPLLS ▶ PSEN sg2c-5LBLLS ▶ PSEN sg2c-5LPLLC ▶ PSEN sg2c-5LBLLC	546 x 200 x 105 546 x 200 x 105 546 x 200 x 105 546 x 200 x 105 546 x 200 x 105 546 x 200 x 105	570 812 570 814 570 816 570 818 570 820 570 822
	Long unit type: **Connection type M12, 5-pin** ▶ PSEN sg2c-5LPKLE-M12/5 ▶ PSEN sg2c-5LBKLE-M12/5 ▶ PSEN sg2c-5LPKLS-M12/5 ▶ PSEN sg2c-5LBKLS-M12/5 ▶ PSEN sg2c-5LPKLC-M12/5 ▶ PSEN sg2c-5LBKLC-M12/5	558.5 x 200 x 105 558.5 x 200 x 105 558.5 x 200 x 105 558.5 x 200 x 105 558.5 x 200 x 105 558.5 x 200 x 105	570 824 570 826 570 828 570 830 570 832 570 834

Type code for PSENsgate:

PSEN sg2c - 3 _ _ _
PSEN sg2c - 5LPKLE - M12/5

Product area **P**ilz **SEN**sors	Generation	Connection via	Design/elements	Operator elements/ emergency stop [1]	Connection type [2]
Product range sg – PSENsgate	1 2	**c** Spring-loaded terminal, plug in	**3** Short design, 3 elements 5 Long design, 5 elements	_ Not present **P** Pushbutton **L** Illuminated pushbutton **K** Key switch B Key button S Section stop C Blind cover **E** E-STOP	_ Not present **M12/5** Male connector, M12, 5-pin M12/8 Male connector, M12, 8-pin
Operation ▶ Mechanical, coded ▶ Transponder (RFID) ▶ With safe guard locking and safety gate monitoring					

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

Webcode 6474

▶ PSENopt Advanced light beam devices – for every discipline

NEW

The new PSENopt Advanced light beam devices allow the highest flexibility thanks to their multifunctionality: Depending on the request, either muting or blanking and the cascading are implemented with the same light beam device. Together with the configurable control system PNOZmulti they can be used across the full function range. Thanks to the inclusion of single beams in the new PSENopt Configurator software, the alignment and monitoring of the light beam devices is much easier and the reaction times can be reduced to a minimum thanks to rapid diagnostics. In addition, continuous single beams from PSENopt Advanced ensure the highest level of safety for your application as no "dead zones" are created.

Your benefits at a glance

▶ Simple operation and commissioning with new PSENopt Configurator software
▶ Short reaction times thanks to rapid diagnostics of fault statuses
▶ High flexibility:
  - Three muting, blanking and cascading functionalities in one light beam device
  - Flexible fitting thanks to coding
  - More safety as no "dead zones" are created
▶ Safe, complete solution: Multifunctional scope of PSENopt Advanced together with PNOZmulti

Light beam devices PSENopt advanced

PSEN op2H-A-...
PSEN op Advanced
Programming
Adapter

Technical features		
▸ Safe outputs:		2
▸ Resolution:		Finger (14 mm)
		Hand (30 mm)
▸ Approved to type 2/type 4 EN/IEC 61496-1/-2		
▸ Functions/features test/reset …man./aut. RESTART, EDM/blanking/muting/cascading		
▸ Height of protected field:		300 ... 1 800 mm
▸ Operating range:		PSEN op2H: 0.2 ... 20 m
		PSEN op4H: 0.2 ... 20 m
		PSEN op4F: 0.2 ... 7 m
▸ Light beam device reaction time:		PSEN op2H: 13 ... 22 ms
		PSEN op4F: 15 ... 33 ms
		PSEN op4H: 13 … 22 ms

Order number	Type	Height of protected field	Resolution[1]	
	▸ PSEN op2H-A-30-060/1	30 mm	600 mm	631 042
	▸ PSEN op2H-A-30-075/1	30 mm	750 mm	631 043
	▸ PSEN op2H-A-30-090/1	30 mm	900 mm	631 044
	▸ PSEN op4H-A-30-060/1	30 mm	600 mm	631 022
	▸ PSEN op4H-A-30-075/1	30 mm	750 mm	631 023
	▸ PSEN op4H-A-30-090/1	30 mm	900 mm	631 024
	▸ PSEN op4F-A-14-060/1	14 mm	600 mm	631 002
	▸ PSEN op4F-A-14-075/1	14 mm	750 mm	631 003
	▸ PSEN op4F-A-14-090/1	14 mm	900 mm	631 004

[1] All light beam devices are available in additional lengths from 300 mm - 1,800 mm under **webcode 5197**.

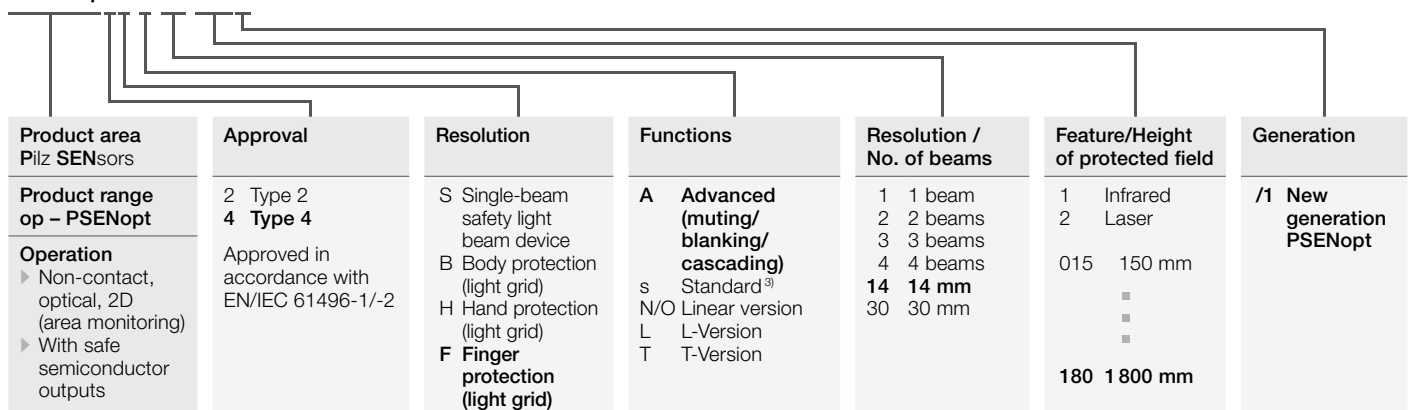| Order number	Type	Description	
	▸ PSEN op pigtail emitter	Emitter connection cable	631 055
	▸ PSEN op pigtail receiver blanking	Blanking receiver connection cable	631 056
	▸ PSEN op pigtail receiver muting	Muting receiver connection cable	631 057
	▸ PSEN op Advanced Programming Adapter	Programming adapter for PSENopt Configurator[2]	631 070
	▸ PSEN op Ethernet cable 1 m	Ethernet cable for PSEN op	631 071
	▸ PSEN op Ethernet cable 3 m	Advanced Programming Adapter	631 072
	▸ PSEN op Ethernet cable 10 m	(4-pin/RJ45)	631 073
	▸ PSEN op cascading 0.05m	Cable for cascading	631 058
	▸ PSEN op cascading 0.5m		631 059
	▸ PSEN op cascading 1m		631 060
	▸ PSEN op cascading bracket	Bracket for two light beam devices at a diagonal	631 061

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

Scan the QR code to find out more about PSENopt.

Webcode 5196

Online information at www.pilz.com

Type code for PSENopt:

PSEN op4F-A-14-180/1

Product area Pilz SENsors	Approval	Resolution	Functions	Resolution / No. of beams	Feature/Height of protected field	Generation
Product range op – PSENopt	2 Type 2	S Single-beam safety light beam device	**A Advanced (muting/ blanking/ cascading)**	1 1 beam	1 Infrared	**/1 New generation PSENopt**
Operation	**4 Type 4**	B Body protection (light grid)	s Standard[3]	2 2 beams	2 Laser	
▸ Non-contact, optical, 2D (area monitoring)	Approved in accordance with EN/IEC 61496-1/-2	H Hand protection (light grid)	N/O Linear version	3 3 beams	015 150 mm	
▸ With safe semiconductor outputs		**F Finger protection (light grid)**	L L-Version	4 4 beams		
			T T-Version	**14 14 mm**		
				30 30 mm	**180 1 800 mm**	

[3] incl. feedback loop monitoring

▶ Operating mode selector switch PITmode – safe operating mode selection

NEW

The operating mode selector switch PITmode provides two functions in one compact unit: safe selection of defined operating modes and access authorisation for the machine. The coded key gives every user the machine enables that match his abilities. Identification numbers are used in the machine control to assign authorisations, which control access. As an option the operating mode selector switch is also available with pictograms for machine tools – ideal for international use.

Your benefits at a glance

▶ Safe switching of operating mode through self-monitoring
▶ Saves space, as operating mode selector switch and access authorisation are combined in one unit
▶ Keys optionally with/without pictograms for machine tools
▶ Rapid recording of the selected operating mode as well as the authorisation level by means of LEDs
▶ High level of manipulation protection through universal coding

Operating mode selector switch PITmode

PIT m3.2p

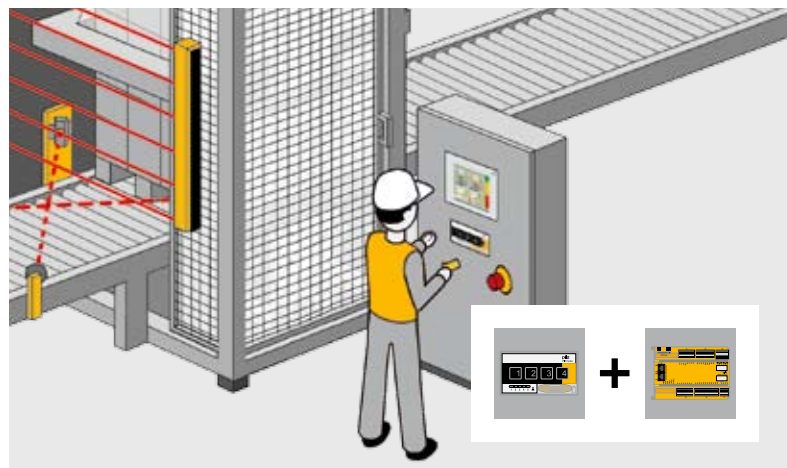|			
Technical features	5 selectable operating modes; e.g.: Automatic mode, set-up mode (with enable switch), manual intervention under restricted conditions (with enable switch), special mode/process monitoring (without enable switch), service mode		
	▶ Mode of operation: Transponder technology ▶ Supply voltage: 24 V DC, -15 % … +10 % ▶ Ambient temperature: 0 … 55 °C ▶ Protection type: IP54 (installed) ▶ Evaluation with configurable safety systems PNOZmulti and control systems from the automation system PSS 4000 ▶ For applications up to PL d of EN ISO 13849-1 or SIL CL 2 of EN 62061		
	Dimensions in mm (H x W x D): ▶ 55.0 x 98.0 x 42.3		
Order number	▶ PITmode starter set	Starter set consisting of: PIT m3.2p machine tools pictogram, PIT m3p key mode 1, PIT m3p key mode 2, PIT m3p key mode 3, PIT m3p key mode 4, PIT m3p key service, PIT m3.2p terminal set spring load, Screwdriver	402 299
	▶ PIT m3.2p machine tools pictogram	Operating mode selector switch: Keys with digits and pictograms for machine tools	402 231
	▶ PIT m3.2p	Operating mode selector switch: Keys with digits	402 230
	▶ PIT m3p key mode 1	Transponder key, authorisation 1	402 211
	▶ PIT m3p key mode 2	Transponder key, authorisation 2	402 212
	▶ PIT m3p key mode 3	Transponder key, authorisation 3	402 213
	▶ PIT m3p key mode 4	Transponder key, authorisation 4	402 214
	▶ PIT m3p key service	Transponder key, service function	402 215
	▶ PIT m3.2p terminal set spring load	Spring-loaded terminals (1 set)	402 302
	▶ PIT m3.2p screw terminal set angled	Screw terminals angled (1 set)	402 303
	▶ PIT m3.2p screw terminal set	Screw terminals straight (1 set)	402 305

The optimum solution: Select operating modes with PITmode and configurable safety system PNOZmulti.

Webcode 6422

Online information at www.pilz.com

▶ Safety relay PNOZcompact – PNOZ c2 for light beam device monitoring

NEW

Are you a series machine manufacturer producing large quantities? In that case, the new product range PNOZcompact is the right solution for you. The safety relay PNOZ c2 for the safe monitoring of light beam devices of type 4 or sensors with OSSD outputs in accordance with EN 61496-1 is now available. A fast reaction time of only 12 ms brings maximum safety to your application. The reaction time is printed on the front. That saves you time in the annual ESPE inspection.

As does the rapid installation, because the light beam device is supplied with voltage directly via the evaluation device PNOZ c2.

Opt for a safety relay PNOZ – the original, the synonym for safety relays. With PNOZ you get the optimum safety solution for each requirement – in the usual Pilz quality. Simpler is simply better! Square, simple, yellow. PNOZ – the original!

Your benefits at a glance

▶ For monitoring light beam devices of type 4, e.g. PSENopt from Pilz or sensors with OSSD outputs in accordance with EN 61496-1

▶ Closer to the application thanks to the fast 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

▶ The simplified connection of two start options (monitored or automatic start) saves you money

▶ Its compact design saves you space in the control cabinet

▶ Simple installation and maintenance saves you money: spring-loaded terminals fixed on the device, connected without the need for tools

▶ Maximum safety: Performance Level (PL) e of EN ISO 13849-1, Safety Integrity Level (SIL) CL claim limit 3 of IEC 62061

▶ Block diagram shows a connection example, so separate documentation is not needed for connection

Safety relay PNOZcompact – PNOZ c2

PNOZ c2

|		
Technical features	▸ For monitoring light beam devices of type 4, e.g. PSENopt from Pilz or sensors with OSSD outputs in accordance with EN 61496-1	
	▸ Guaranteed reaction time across the entire lifecycle: Max. 12 ms	
	▸ PL e of EN ISO 13849-1, Safety Integrity Level (SIL) CL claim limit 3 in accordance with IEC 62061	
	▸ 2 safety contacts (N/O)/1 semiconductor output	
	▸ Supply voltage (U_B): 24 V DC, +/- 20 %	
	▸ Dual-channel wiring without detection of shorts across contacts, monitored or automatic start	
	▸ LEDs to display operating voltage and switch status	
	▸ Spring-loaded terminals fixed on the device	
	▸ Outputs (voltage/current) - DC1: 24 V/4 A - DC13: 24 V/1.5 A - AC15: 230 V/1.5 A	
	Dimensions in mm (H x W x D) 105[1] x 22.5 x 100 [1] Height inc. spring clip	
Order number	▸ PNOZ c2 24VDC 2n/o	710 002
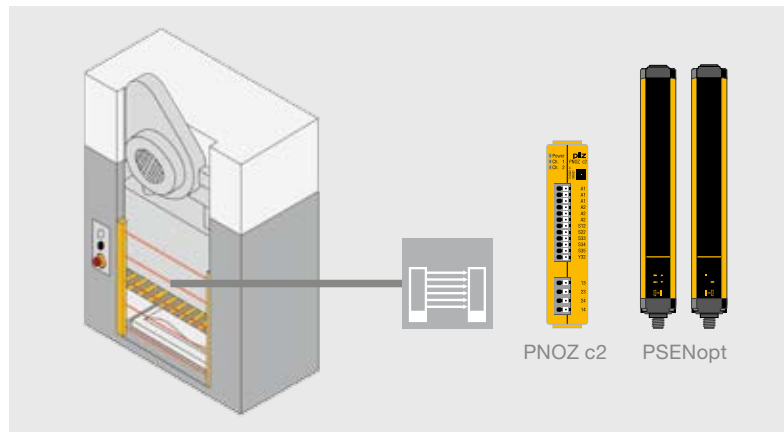
Monitor light beam devices such as PSENopt from Pilz or sensors with OSSD outputs in safe, simple and compact form. It is also possible to connect all common light beam devices. Use one safety relay per safety function.

PNOZ c2   PSENopt
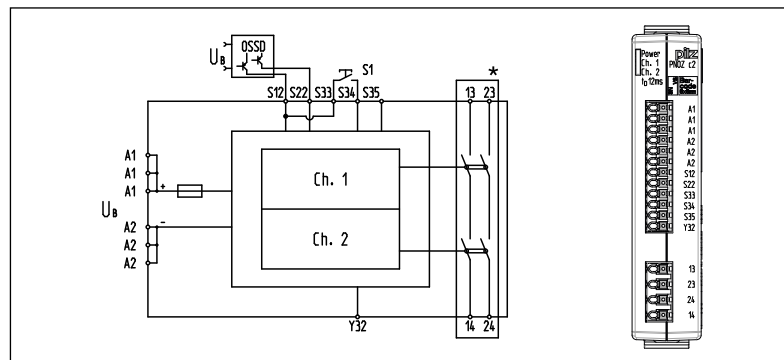
Block diagram with terminal configuration.

Scan the QR code to learn more about the safety relay PNOZcompact.

Webcode   8180

Online information at www.pilz.com

▶ PNOZ s50 – safe brake control

NEW

The stand-alone safety relay PNOZ s50 offers a cost-effective solution to the control of two brakes or valves up to category PL e. 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. As another module of the PNOZsigma product series, PNOZ s50 also has a rotary knob for navigating through the menus and a display showing the setting parameters and diagnostic messages.

Your benefits at a glance

▶ Maximum safety up to PL e* with control of two brakes
▶ Contactless technology up to 4.5 A per brake allows short reaction times and a long-lasting solution
▶ 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 display
▶ Easy operation thanks to intuitive menu guidance
▶ Manufacturer-independent brake control thanks to safe, digital inputs

*in accordance with EN ISO 13849-1 / SIL CL 3 of EN/IEC 62061

Safety relay PNOZ s50

PNOZ s50

| Technical features	▸ Stand-alone device	
	▸ 2 brakes up to PL e, 1 brake up to PL d of EN ISO 13849-1 / SIL CL 3 of EN/IEC 62061	
	▸ 2x2-pin safe electronic digital outputs for 24 V DC, each 4.5 A	
	▸ Temporary overexcitation with subsequent voltage reduction	
	Electrical data	
	▸ Ambient temperature	0 ... 55 °C
	▸ Number of failsafe/standard inputs	4/4
	Semiconductor output 1-pin/2-pin	
	▸ Supply voltage	24 V DC/24 V DC, 48 V DC
	▸ Voltage tolerance	-15 % ... +20 %/-10 % ... +10 %
	▸ Number of semiconductor outputs:	
	- Failsafe	3/2
	- Output current	0.1 A
	- Test pulse outputs	2
	▸ Reduced voltage of semiconductor outputs (2-pin)	6 V, 8 V, 12 V, 16 V, 24 V
	▸ Output current of semiconductor outputs (2-pin):	
	- 24 V DC supply voltage	
	Continuous duty (1 output/2 outputs) at 45 °C and at a distance from other devices	1 x 6.5 A/2 x 4.5 A
	Overexcitation (1 output/2 outputs)	1 x 6.5 A/ $\sum$ = 10
	- 48 V DC supply voltage	
	Continuous duty (1 output/2 outputs) at 45 °C and at a distance from other devices	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	▸ PNOZ s50 (with spring-loaded terminals)	751 500
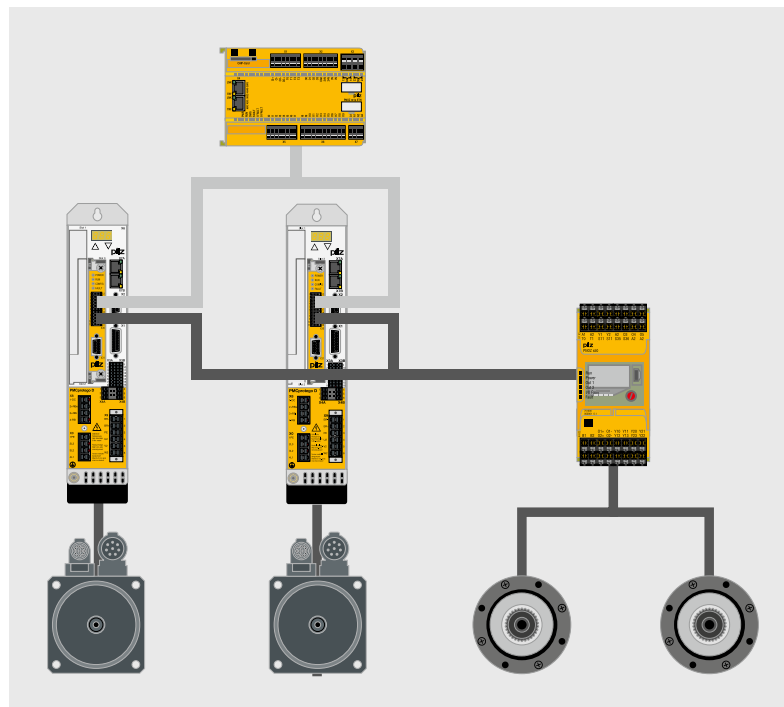
Safe and contactless braking with the safety relay PNOZ s50.

Webcode 9713

Online information at www.pilz.com

▶ Configurable control system PNOZmulti – communication module POWERLINK available!

NEW

The new communication module PNOZ mc12p Powerlink is now available with immediate effect for the configurable control system PNOZmulti. It allows the left-hand side expansion of all available PNOZmulti and connection to a Powerlink network. "Powerlink is CANopen over Ethernet", which means it combines the benefits of both protocols in one system – original Ethernet features, proven and robust CANopen mechanisms and real-time capability. You can exploit these benefits in your PNOZmulti with our new communication module PNOZ mc12p Powerlink. The virtual inputs and outputs can be configured in the software tool PNOZmulti Configurator.

The configurable control 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.

Your benefits at a glance

▶ Option of connection to Powerlink networks (supports CANopen over Ethernet)

▶ Real-time capable communication with a primary Powerlink master control

▶ Two-way signalling and control via the communication module

▶ Switched interface

▶ Activation of the PVIS diagnostic concept in PNOZmulti Configurator; even individual customer texts can be integrated

▶ With the PNOZmulti you can play it safe – it's the worldwide safety standard for all machine types. Irrespective of the standard control system, you will always have a one-stop safety solution, which can easily be adapted to changing requirements.

Configurable control system PNOZmulti – Communication module PNOZ mc12p Powerlink

PNOZ mc12p Powerlink

| Technical features	▶ Subscriber (slave) on Powerlink (CANopen over Ethernet)
	▶ Transmission rate: 100 MBit/s (half-duplex)
	▶ Connection to network via RJ45 connector
	▶ Can be configured using the PNOZmulti Configurator
	▶ Status indicators via LEDs
	▶ Max. 1 communication module can be connected to the base unit
	▶ Connection to base unit via a connector on the back of the unit
	Dimensions in mm (H x W x D) 94 x 22.5 x 114
Order number	▶ PNOZ mc12p Powerlink 773 719
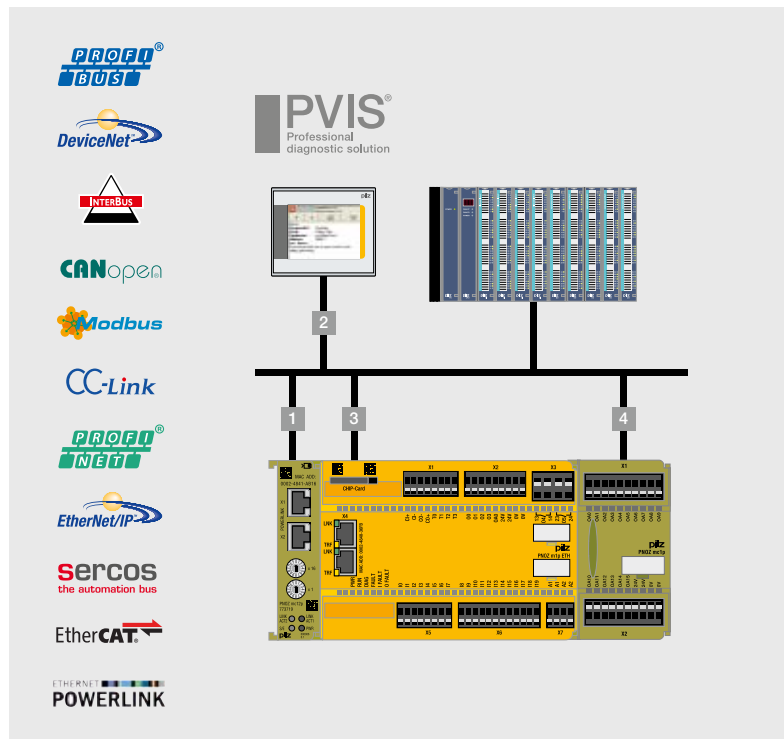
1 Two-way signalling and control: can be connected to all standard fieldbus systems

2 Diagnostic solution with the operator terminals PMI

3 Interface Ethernet TCP/IP and Modbus TCP

4 Status messages to the PLC: PNOZ mc1p

Webcode 5553

Online information at www.pilz.com

▶ Configurable safety relays PNOZmulti Mini – for EtherCAT

NEW

The configurable safety relays PNOZmulti Mini can be used as a stand-alone or modular expandable variant. The base units PNOZ mm0.1p and PNOZ mm0.2p can be expanded with safe connection, relay output and communication modules. A new communication module for connection to the fieldbus system EtherCAT is now available. EtherCAT is designed for fast data exchange at field level. The expansion module PNOZ mmc11p EtherCAT is a passive subscriber (slave). The basic communication functions with EtherCAT conform to the System Description published by the EtherCAT User Group (ETG). They enable you to integrate the PNOZmulti Mini in your EtherCAT network as a configurable control system. At the same time, you can connect it to your operational control system in order to exploit all important diagnostic and status information.

The EtherCAT interface also allows you to use the virtual inputs and outputs of the PNOZmulti Mini. Thanks to the switched interface, even several PNOZmulti Minis can be added to an EtherCAT network.

Your benefits at a glance
▶ Option of connection to EtherCAT networks (supports CANopen over EtherCAT)
▶ Data lengths of the PDOs can be freely configured in the EtherCAT master
▶ No data collisions thanks to switched interface
▶ User-friendly diagnostic and control information guarantees short downtimes and high plant availability
▶ Two-way signalling and control via fieldbus modules
▶ Simple reading of diagnostic data and use of virtual inputs/outputs for standard functions
▶ Activation of the PVIS diagnostic concept in PNOZmulti Configurator; even individual customer texts can be integrated
▶ Play it safe and use PNOZmulti Mini – the worldwide safety standard for all machine types. Irrespective of the standard control system, you will always have a one-stop safety solution, which can easily be adapted to changing requirements.

Configurable safety relays PNOZmulti Mini – Communication module EtherCAT available

PNOZ mmc11p
EtherCAT

Technical features	▶ Subscriber (slave) on EtherCAT, CANopen over EtherCAT (DS301 V4.02 compliant) ▶ Transmission rate: 100 MBit/s ▶ Connection to fieldbus via RJ45 connector ▶ max. 148 Bytes TxPDO and 20 Bytes RxPDO ▶ Can be configured using the PNOZmulti Configurator ▶ Status indicators via LEDs ▶ Max. 1 fieldbus module can be connected to the base unit, a communication module PNOZ mmc1p ETH or PNOZ mmc2p can also be connected in series ▶ Connected to base unit via connector **Dimensions in mm (H x W x D)** 100 x 22.5 x 115
Order number	▶ PNOZ mmc11p (without terminals) 772 036 ▶ 1 set of spring-loaded terminals 783 542 ▶ 1 set of plug-in screw terminals 793 542
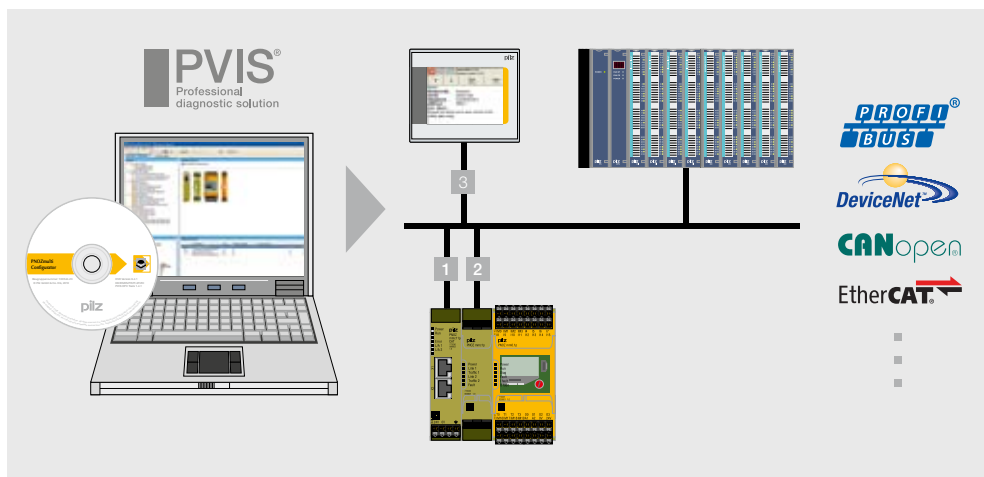
User-friendly diagnostic and control information.

1 Two-way signalling and control

2 Interface Ethernet TCP/IP and Modbus TCP

3 Diagnostic solution with the operator terminals PMI

Scan the
QR code to find
out more about
the safety relays
PNOZmulti Mini.

Webcode   5553

Online information
at www.pilz.com

▶ Configurable control systems
PNOZmulti 2 – safe motion monitoring

NEW

The new safe motion monitoring modules for the configurable control systems PNOZmulti 2 ensure safe monitoring of your drives. Making your plant and machinery even more productive. 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 interface Mini I/O.

The safe motion monitoring modules for PNOZmulti 2 are configured easily using the software tool PNOZmulti Configurator.
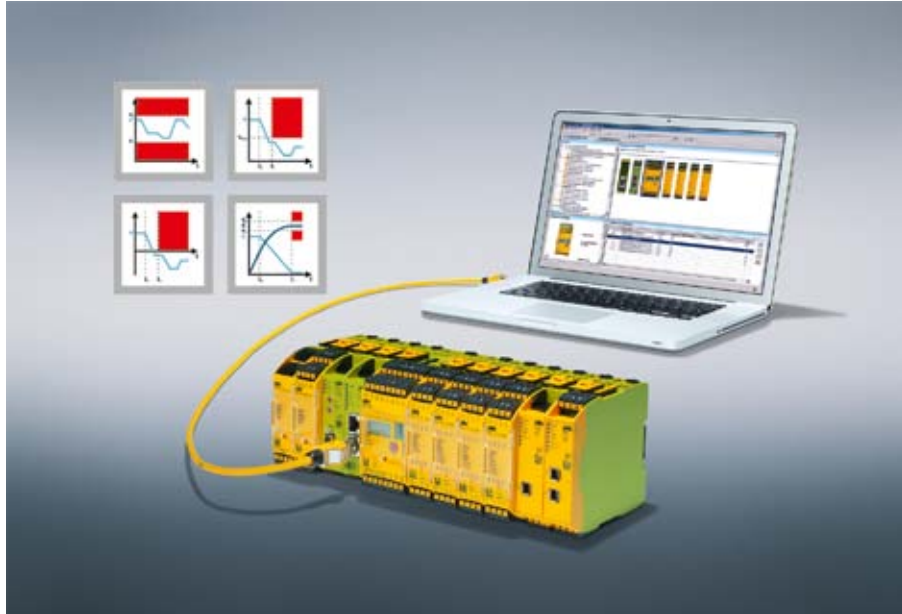
Your benefits at a glance

▶ Implementation of safety functions in accordance with EN 61800-5-2 for adjustable speed electrical power drive systems

▶ Comprehensive motion monitoring functions for high availability of your application

▶ Productive plant and machinery – reduce your costs with the highest safety

▶ Simple configuration of the functions via certified software blocks in the PNOZmulti Configurator

▶ Connection to all common incremental encoders via industry-compatible interface Mini I/O

▶ Play it safe and use PNOZmulti 2 – the worldwide safety standard for all machine types.

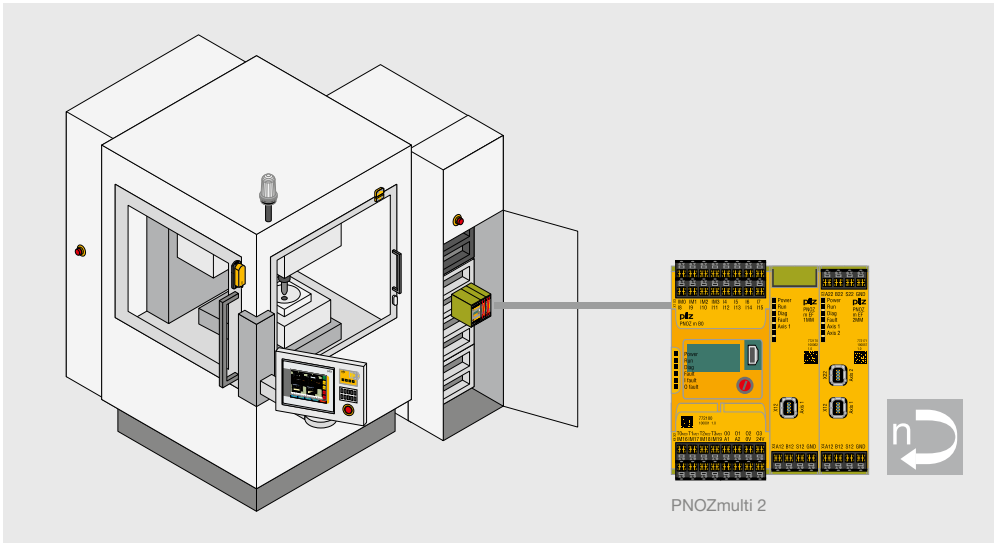## Configurable control systems PNOZmulti 2 – Motion monitoring modules

PNOZ m EF 1MM

PNOZ m EF 2MM

Technical features	**PNOZ m EF 1MM** ▸ For monitoring one axis **PNOZ m EF 2MM** ▸ Monitoring of two independent axes (8 limit frequencies can be selected) **Common features** ▸ Safety functions in accordance with EN 61800-5-2 (Adjustable speed electrical power drive systems) ▸ Safe speed range: SSR ▸ Safe speed monitor: SSM ▸ Safe direction: SDI ▸ Safe operating stop: SOS	
Order number	▸ PNOZ m EF 1MM	772 170
	▸ 1 set of spring-loaded terminals	783 542
	▸ 1 set of plug-in screw terminals	793 542
	▸ PNOZ m EF 2MM	772 171
	▸ 1 set of spring-loaded terminals	783 544
	▸ 1 set of plug-in screw terminals	793 544

PNOZmulti 2

The complete solution for safe motion monitoring: Configurable control system PNOZmulti 2 with Pilz sensor technology and operator and visualisation systems.

Online information at www.pilz.com

▶ Configurable control systems PNOZmulti 2 – now with decentralised expansion

NEW

Link modules for decentralisation and safe communication between several base units are now available for the configurable control systems PNOZmulti 2.

Decentralised modules PDP67 can be connected to the PDP link module. As a result, the link modules can be used to communicate signals from the connected sensors directly from the field to the base units for further processing. Interlinked, decentralised plants can now also be implemented with PNOZmulti 2.

The multi link module enables simple, safe data exchange between several base units. Thanks to the modular structure of PNOZmulti 2, up to 4 link modules can be connected to the base unit, enabling ring and tree topologies to be established.

As a result, users can employ several PNOZmulti units to implement safety functions for more complex plants and machinery.

Your benefits at a glance

▶ Decentralised expansion of PNOZmulti 2 by the PDP link module possible – connection of decentralised modules to protection type IP67 for the implementation of interlinked, decentralised plants

▶ Safe data exchange between several PNOZmulti 2 base units by means of the multi link module – selective shutdowns and commissioning of individual plant sections are possible here

▶ Simple configuration of the modules in the software tool PNOZmulti Configurator – less planning and design work

▶ The base unit requires up to **80 % less energy consumption** than comparable products

▶ With the PNOZmulti you can play it safe – it's the worldwide safety standard for all machine types

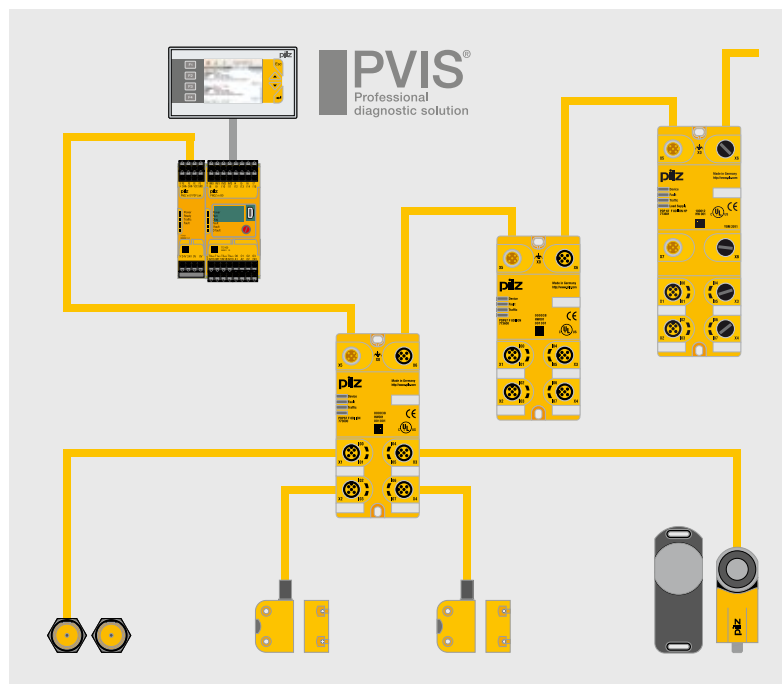## Configurable control systems PNOZmulti 2 – link modules

Technical features	**PNOZ m EF PDP Link –** safe link module for connection of the decentralised modules PDP67 and PDP20 ▶ Max. 4 PDP link modules can be connected to the base unit ▶ Max. 4 decentralised modules PDP67 F 8 DI ION (VA) or PDP67 F 8 DI ION HP (VA) can be connected to the link module	
	PNOZ m EF Multi Link – Safe link module for linking of several PNOZmulti 2 base units ▶ 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 multi link modules can be connected to the base unit	
	Common features ▶ Can be configured in the PNOZmulti Configurator	
Order number	▶ PNOZ m EF PDP Link	772 121
	▶ 1 set of spring-loaded terminals	783 540
	▶ 1 set of plug-in screw terminals	793 540
	▶ PNOZ m EF Multi Link	772 120
	▶ 1 set of spring-loaded terminals	783 538
	▶ 1 set of plug-in screw terminals	793 538

PNOZ m EF
PDP Link

PNOZ m EF
Multi Link

The decentralised modules PDP67 can be connected to the PNOZmulti 2 via the link module PNOZ m EF PDP Link – for cost-effective, simple, decentralised expansion.

Webcode   9966

Online information
at www.pilz.com

▶ Configurable control system PNOZmulti 2 – for EtherCAT connection

NEW

You can use the configurable control systems PNOZmulti 2 in a stand-alone or modular, expandable version. There is a new communication module for connection to the fieldbus system EtherCAT. It allows the base unit to be expanded on the left-hand side and connected to EtherCAT networks.

EtherCAT is designed for fast data exchange at field level. The expansion module is a passive subscriber (slave). The EtherCAT interface also allows you to use the virtual inputs and outputs of the PNOZmulti 2. Thanks to the switched interface, even several PNOZmulti 2 systems can be added to an EtherCAT network.

The virtual inputs and outputs can be configured as usual in the software tool PNOZmulti Configurator. Instead of wiring, you can simply configure your safety circuit on a PC.

Your benefits at a glance

▶ Option of connection to EtherCAT networks (supports CANopen over EtherCAT)
▶ No data collisions due to switched interface
▶ User-friendly diagnostic and control information guarantees short downtimes and high plant availability
▶ Two-way signalling and control via fieldbus modules
▶ Simple reading of diagnostic data and use of virtual inputs/outputs for automation functions

With the PNOZmulti you can play it safe – it's the worldwide safety standard for all machine types.
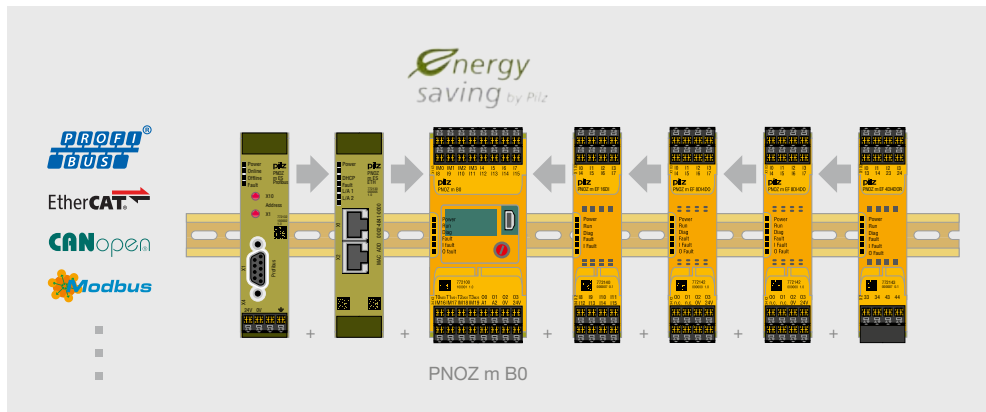
Configurable control systems PNOZmulti 2 – communication module EtherCAT

PNOZ m ES
EtherCAT

Technical features	▸ Subscriber (slave) on EtherCAT, CANopen over EtherCAT (DS301 V4.02 compliant)	
	▸ Transmission rate: 100 MBit/s	
	▸ Connection to fieldbus via RJ45 connector	
	▸ Max. 148 Bytes TxPDO and 20 Bytes RxPDO	
	▸ Can be configured using the PNOZmulti Configurator	
	▸ Status indicators via LEDs	
	▸ Max. 1 fieldbus module can be connected to the base unit, a communication module PNOZ m ES ETH or PNOZ m ES RS232 can also be connected in series	
	▸ Connected to base unit via connector	
	Dimensions in mm (H x W x D) 101.4 x 22.5 x 115	
Order number	▸ PNOZ m ES EtherCAT	772 136
	▸ 1 set of spring-loaded terminals	783 538
	▸ 1 set of plug-in screw terminals	793 538

Expansion modules for different applications and connection to common fieldbus systems – that's flexibility.

Webcode 5553

Online information
at www.pilz.com

▶ Configurable control system PNOZmulti and automation system PSS 4000

NEW

There is now the option of using the configurable control systems PNOZmulti together with the hardware of the automation system PSS 4000 in system architectures. Using a simple block solution the previously separate "worlds" can be safely linked using Modbus TCP. The failsafe block "FS_SafeEthernet-Connection" is available in the software platform PAS4000 and the block "Safe Ethernet Connection Status" is available in the PNOZmulti Configurator for this purpose.
In the respective user program you simply store the data that should be exchanged for both blocks – additional configuration is not necessary.

Your benefits at a glance
▶ Expansion of existing plants, irrespective of whether these were implemented with the configurable control system PNOZmulti or with control systems from the automation system PSS 4000
▶ Investment protection is guaranteed; no need to convert fully to a different system
▶ No additional wiring as safe linking is implemented via two software blocks in the respective user program of the control systems
▶ Simple configuration and programming of a safe communication connection between two systems
▶ Full diagnostic capability in both systems

PSS 4000/PNOZmulti – Safe Ethernet Connection

PNOZ m1p ETH

PSSu H PLC1
FS SN SD

Technical features	**PSSu H PLC1 FS SN SD**
	PSSu H PLC1 FS DP SN SD
	▸ Control systems from the automation system PSS 4000
	▸ Safety and automation functions
	▸ PSSuniversal module bus for connection of up to 64 I/O modules for safety and automation
	▸ SD card to store the device project and configuration data
	▸ International safety standards:
	- EN/IEC 61508 up to SIL CL 3
	- EN ISO 13849 up to PL e
	PNOZ m0p ETH
	PNOZ m1p ETH
	PNOZ m2p ETH
	PNOZ m3p ETH
	▸ Configurable control systems, expandable and stand-alone
	▸ Safety functions
	▸ 20 safe inputs
	▸ 4 safe semiconductor outputs
	▸ 2 safe relay outputs
	▸ Modbus TCP/IP as configuration and communications interface
	▸ User program on chip card
	▸ International safety standards:
	- EN/IEC 61508 up to SIL CL 3
	- EN ISO 13849 up to PL e

Order number		
	▸ PSSu H PLC1 FS SN SD	312 070
	▸ PSSu H PLC1 FS SN SD-T	314 070
	▸ PSSu H PLC1 FS DP SN SD	312 071
	▸ PAS block: FS_SafeEthernetConnection	You can find the block in the library in the tool
	▸ PNOZ m0p ETH	773 113
	▸ PNOZ m1p ETH	773 103
	▸ PNOZ m1p ETH coated version	773 104
	▸ PNOZ m2p ETH	773 123
	▸ PNOZ m3p ETH	773 126
	▸ PNOZmulti block: "Safe Ethernet Connection Status"	The block is integrated in the operating system
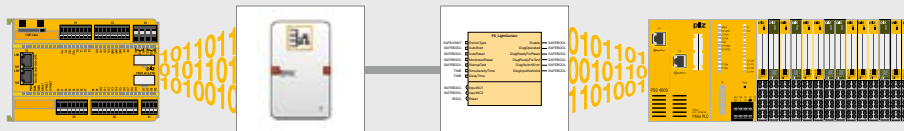
Safe Ethernet Connection

Webcode 9965

Online information
at www.pilz.com

▶ Automation system PSS 4000 – extended protocol support

NEW

The control systems PSSuniversal PLC and PSSuniversal multi of the automation system PSS 4000 can now also be integrated into existing CANopen or EtherCAT communication networks – which means they can be connected to various other third-party control systems. This can be done using two different Gateways characterised by reduced engineering work. Diagnostics is quick and user-friendly thanks to LEDs on the device.

Your benefits at a glance
- ▶ Reduced engineering work due to fixed, predefined mapping
- ▶ The configuration can be adapted and extended via webserver, so it's possible to change the IP address, for example
- ▶ There is no need for an additional configuration tool
- ▶ Diagnostics can be performed via status LEDs on the device; more comprehensive diagnostics can also be performed via the webserver
- ▶ In the web interface it is possible to display fieldbus data and enter values, enabling easier commissioning and simpler service
- ▶ As well as PSS 4000, protocol implementation for: motion control systems PMCprimo, diagnostic devices PMI, compact and modular control systems PSS 3000 with ETH-2 interfaces

Automation system PSS 4000 – PSSnet GW1 MOD-EtherCAT and PSSnet GW1 MOD-CAN

PSSnet GW1 MOD-EtherCAT	**Technical features**	**PSSnet GW1 MOD-EtherCAT** ▸ Fieldbus interface: EtherCAT (slave) ▸ Fieldbus protocol: CANopen over EtherCAT ▸ Fieldbus connection: RJ45 connector ▸ Fieldbus transmission rate: 100 MBit/s
		PSSnet GW1 MOD-CAN ▸ Fieldbus interface: CANopen (slave) ▸ Fieldbus protocol: CiA 301 V4.2.0 ▸ Fieldbus connection: male 9-pin D-Sub connector ▸ Fieldbus transmission rate (infinitely adjustable): 1 MBit/s, 800 kBit/s, 500 kBit/s, 250 kBit/s, 125 kBit/s, 50 kBit/s, 20 kBit/s, 10 kBit/s
PSSnet GW1 MOD-CAN		**Common features** ▸ Status indication via LEDs ▸ Plug-in screw terminal ▸ Plug-in spring-loaded terminal **Dimensions in mm (H x W x D)** ▸ 96 x 22.5 x 114.3
	Order number	▸ PSSnet GW1 MOD-EtherCAT 311 601 ▸ PSSnet GW1 MOD-CAN 311 602

▸ ST controller is network master
▸ Gateway as slave on ST network and as slave to PSS 4000 via Modbus/TCP
▸ Minimum configuration in ST controller (master) and PSS 4000
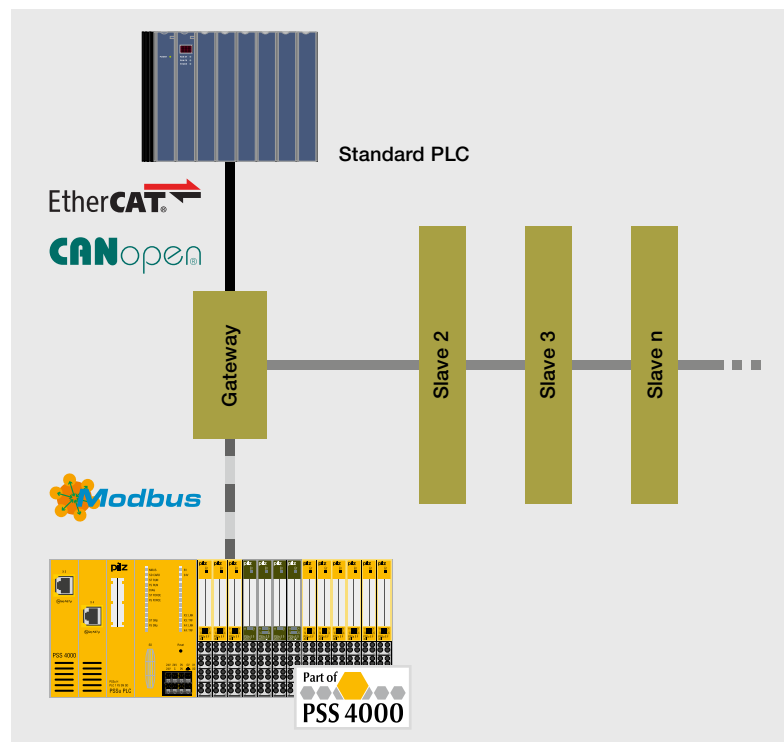
▶ Control system PSSuniversal PLC – can now be integrated into Ethernet/IP networks

NEW

Communication via Ethernet/IP is now also possible in the automation system PSS 4000 with the control systems PSSuniversal PLC. Ethernet/IP users can thus also use PSS 4000 hardware in their architectures. The function is easy to call up via the software platform PAS4000.

The control systems are easily configured with the graphics Program Editor PASmulti – the PLC programming is created via the editors PAS STL (Structured Text), PAS LD (Ladder Diagram) or PAS IL (Instruction List) in accordance with EN/IEC 61131-3. PSSuniversal PLC can be used as a PLC control system or as a periphery system for safety and automation. As a periphery system it can record standard data and forward it by means of "bypass function" to a master standard control system.

Your benefits at a glance

▶ Open system: A connection to Ethernet/IP networks is now also possible

▶ Standardisation of safety solutions – connection of PSS 4000 hardware to a number of communication networks

▶ Can be used as a PLC control system for safety and automation or as a periphery system for safety and automation functions

▶ Reduced engineering work due to simple management for setting communication parameters

▶ The function is available in the software platform PAS4000; existing hardware can also perform the function using a firmware update from the Pilz homepage

Control system PSSuniversal PLC

PSSu H PLC1
FS SN SD

Technical features	▸ Automation and failsafe functions
	▸ PSSuniversal module bus for connection of up to 64 I/O modules
	▸ Configuration with 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
	▸ Integral power supply, integrated switch function for Ethernet linear topology
	▸ Max. number of failsafe tasks: 9
	▸ Max. number of standard tasks: 9
	▸ SD card to store the device project and configuration data
	▸ Ethernet/IP adapter for automation functions
	▸ International safety standards:
	  - EN/IEC 61508 up to SIL CL 3
	  - EN ISO 13849 up to PL e

Order number	▸ PSSu H PLC1 FS SN SD 312 070 ▸ PSSu H PLC1 FS SN SD-T 314 070

The "Ethernet/IP" function is available in the software platform PAS4000. Existing hardware can also perform the new function using a firmware update from the Pilz homepage.

Module bus <-> IP connections:

Module bus I/O data is provided directly to the Ethernet/IP interface (register) – without a user program being necessary. The performance of the overall system is increased as a result.
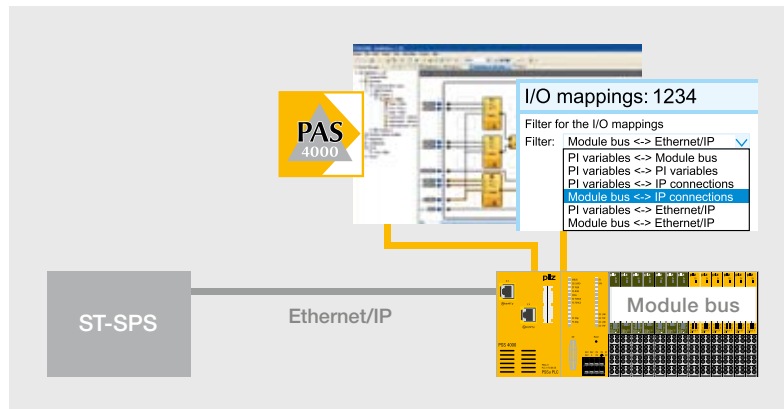
Simple management for setting communication parameters: The variables of the application program that are not required for local functions can be directly assigned to the fieldbus variables. This results in a bypass function.
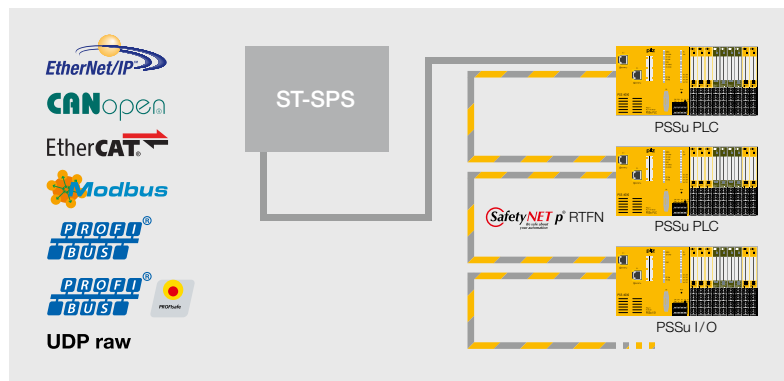
Open system for enhanced flexibility and standardised solutions.

Webcode 9980

Online information at www.pilz.com

▸ Editor PAS LD – "Ladder Diagram" for safety and automation

NEW

In the automation system PSS 4000 it is now possible to create safety-related and automation programs for the control systems PSSuniversal PLC using the Editor "Ladder Diagram" in accordance with EN/IEC 61131-3. With PAS LD, another editor is now available alongside the established editors PAS STL (Structured Text), PAS IL (Instruction List) and the graphics Program Editor PASmulti.

The editors are uniformly based on the software platform PAS4000 and therefore guarantee standardised operation. The programming languages PAS LD, PAS STL and PAS IL can be combined quite simply with the Program Editor PASmulti. Complex programs can thus be simply and clearly designed.

Your benefits at a glance
- ▸ Safety and automation in one tool, in one hardware and in one system
- ▸ Wide selection of editors – you decide how you want to program
- ▸ Simple combination of PLC programming languages with PASmulti enables structured working and clear programs
- ▸ Simple, standardised handling for complex functions
- ▸ Comprehensive library of failsafe and automation blocks

Control system PSSuniversal PLC – Programmable with PAS LD (Ladder Diagram)

PSSu H PLC1 FS SN SD

PSSu H PLC1 FS DP SN SD

Technical features	**Various versions of the control systems PSSuniversal PLC are available:** **PSSu H PLC1 FS SN SD/PSSu H PLC1 FS SN SD-T** ▸ Communications interface: SafetyNETp ▸ Programming via Ethernet TCP/IP ▸ The Ethernet/IP adapter for automation functions (function "Ethernet/IP" is available in the software platform PAS4000) ▸ Connection to CANopen and EtherCAT networks via protocol converter **PSSu H PLC1 FS DP SN SD** ▸ Communications interface: SafetyNETp, Profibus DP ▸ Programming via Ethernet TCP/IP ▸ Connection to CANopen and EtherCAT networks via protocol converter
	Programming: ▸ Programming languages PAS STL (Structured Text), PAS IL (Instruction List), PAS LD (Ladder Diagram) in accordance with EN/IEC 61131-3 ▸ Program Editor PASmulti
Order number	▸ PSSu H PLC1 FS SN SD 312 070 ▸ PSSu H PLC1 FS SN SD-T 314 070 ▸ PSSu H PLC1 FS DP SN SD 312 071 Gateways CANopen/EtherCAT ▸ PSSnet GW1 MOD-CAN 311 602 ▸ PSSnet GW1 MOD-EtherCAT 311 601

A pool of the widest range of I/O modules is available for the most diverse applications. Whether you need analogue modules or digital, relay or semiconductor, failsafe or not safety-related – you can put together the right combination to suit your requirement. The variety of I/O modules can be found on the Internet at www.pilz.com, **webcode 5502**
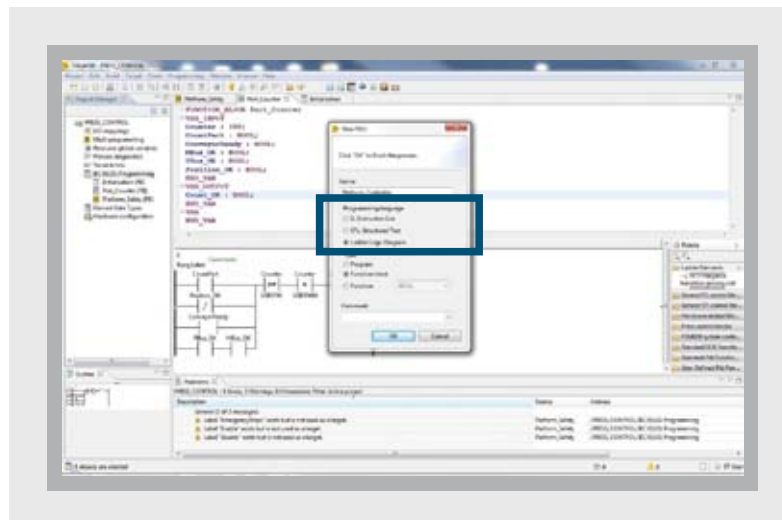
Several editors are available for programming/configuration.

Online information at www.pilz.com

▶ Servo motors PMCtendo SZ – for your safe drive solution

NEW

With the servo motors PMCtendo SZ, you'll find the right motor for each individual application. Whether the focus is on dimensions, dynamics, controllability or feedback systems. Thanks to their high power density, PMCtendo SZ have an extremely short overall length and are also lightweight. As a result they are particularly suitable for on-board axes and cramped conditions. Precise motor synchronisation, due to low cogging torques, provides constantly high process quality.

Your benefits at a glance

▶ High power density due to the very short overall length
▶ Maximum cycle rate/machine output thanks to the highest dynamics
▶ Extremely quiet operation and high process quality due to the low cogging torques
▶ Best heat dissipation generates permanently high performance
▶ High resolution absolute value encoder systems for highest performance and absolute positioning
▶ Ideal for use with on-board axes and in cramped conditions
▶ Energy saving class exceeds IE4 due to high efficiency factor

Servo motors PMCtendo SZ

PMCtendo SZ3

Technical features	
	▶ Extremely short overall length
	▶ Smooth shaft
	▶ High dynamics due to low inertia
	▶ speedtec connector
	▶ Thermal winding protection PTC
	▶ Protection type: up to IP66
	▶ Black matt surface to RAL 9005
	▶ EnDat absolute encoder single or multi-turn
	Options:
	▶ Holding brake 24 VDC
	▶ Increased inertia
	▶ IP44 forced air fan to IC416 (PMCtendo SZ4 ... 8)
	▶ A-side motor flange water cooling (PMCtendo SZ4 ... 8)
	▶ UL and CSA approval for the motor insulation system

Selection guide – Servo motors PMCtendo SZ

Type	Convection standstill torque M_0 in Nm	Forced air fan standstill torque M_0 in Nm	Water cooling standstill torque M_0 in Nm	Rated speed n_N in rpm	Flange in mm
PMCtendo SZ3x	0.95 to 2.25	–	–	3,000; 6,000	60
PMCtendo SZ4x	2.8 to 8.6	3.5 to 11.2	3.35 to 11.3	3,000; 6,000	95
PMCtendo SZ5x	4.4 to 16.0	5.7 to 23.4	5.55 to 21.5	3,000; 4,500	110
PMCtendo SZ7x	7.9 to 30.2	10.2 to 41.8	10.4 to 39.4	3,000; 4,500	130
PMCtendo SZ8x	34.5 to 66.1	47.4 to 94.0	46.9 to 90.1	2,000; 3,000; 4,500	180

On request Pilz also offers special motors such as hollow shaft motors.

Type code

Type/Order number	Size	Brake	Feedback	Design	Connection	Cooling	Voltage	Speed	Option
PMCtendo SZ	_ _	_	_	_	_	_	_	_ _	_ _

Dimensions/length	
PMCtendo SZ3x	3x
PMCtendo SZ4x	4x
PMCtendo SZ5x	5x
PMCtendo SZ7x	7x
PMCtendo SZ8x	8x

Without brake	0
With brake	1
Without brake/increased inertia	2
With brake/increased inertia	3

EnDat 2.2 inductive single-turn ECI 1118 [1]	1
EnDat 2.2 optical multi-turn EQN 1135 [2]	2

B5, smooth shaft	2

00	Standard

20	2,000 rpm
30	3,000 rpm
45	4,500 rpm
60	6,000 rpm

H	400 V

K	Convection-cooled
F	Forced air
Pr	Water-cooled

7	Angled swivel connector for motor and feedback

[1] EnDat 2.2 inductive single-turn: Resolution of 18 bits per revolution

[2] EnDat 2.2 optical multi-turn: Resolution of 23 bits per revolution with 12 bits each

Webcode 5285

Online information at www.pilz.com

▶ 5-Series PMI operator terminals – diagnostics made simple

NEW

With the operator terminals PMI (Pilz Machine Interface), you operate and observe your technical processes. The new generation of devices offers a resistive touch display in various sizes: from a 6.5" VGA display and a 7" widescreen WVGA to the PMI 538 with 15" XGA display. All devices are based on the newly developed processor module with 1 GHz ARM CPU. In combination with 256 MB RAM, 512 MB Flash and the Windows® CE 6.0 Professional operating system, this results in an economical but very powerful platform for your applications. PVIS OPC tools are also available from Pilz. As a plant/machine operator you can use these with the PMI operator terminals in conjunction with Pilz control systems to create a system that enables rapid troubleshooting when production faults occur.
Any standard HMI software can be used for visualisation. In addition, the operator terminals PMI from Pilz naturally also work together with numerous applications for Win CE 6 (ARM).

HMI with PMI!

Your benefits at a glance
▶ Higher performance thanks to enhanced processors: 1 GHz ARM
▶ Reduced energy requirement
▶ Longer service life thanks to LED backlight
▶ Fast data transfer thanks to Ethernet interface
▶ Made in Germany: designed, developed, built, manufactured – Quality product from Germany!

In combination with PVIS and Pilz control systems
▶ Rapid configuration thanks to pre-configured system messages
▶ Plant and machinery can be restarted quickly
   - Concrete, plain-text fault descriptions
   - Step-by-step solution proposals
   - Definition of responsibilities
   - Unambiguous information about the fault location

Operator terminals PMI

PMI 516

PMI 518

PMI 526

PMI 531

PMI 538

Technical features	**PMI 516** ▸ Display diagonal: 6.5"/160 mm ▸ Resolution: 640 x 480 pixels (VGA)	▸ Dimensions incl. front panel (H x W x D) in mm: 165 x 212 x 62.5 ▸ Power consumption: 6.5 W
	PMI 518 – widescreen ▸ Display diagonal: 7"/180 mm ▸ Resolution: 800 x 480 pixels (WVGA)	▸ Dimensions incl. front panel (H x W x D) in mm: 160 x 232 x 62.5 ▸ Power consumption: 5.8 W
	PMI 526 ▸ Display diagonal: 10.4"/260 mm ▸ Resolution: 800 x 600 pixels (SVGA)	▸ Dimensions incl. front panel (H x W x D) in mm: 243 x 317 x 62.5 ▸ Power consumption: 6.3 W
	PMI 531 ▸ Display diagonal: 12.1"/310 mm ▸ Resolution: 800 x 600 pixels (SVGA)	▸ Dimensions incl. front panel (H x W x D) in mm: 276 x 352 x 63.3 ▸ Power consumption: 8.9 W
	PMI 538 ▸ Display diagonal: 15"/380 mm ▸ Resolution: 1024 x 768 pixels (XGA)	▸ Dimensions incl. front panel (H x W x D) in mm: 332 x 412 x 63.3 ▸ Power consumption: 11 W

Common features
- ▸ Display: Graphic colour TFT, 65536 colours, LED backlight
- ▸ Operation: Analogue resistive touchscreen
- ▸ Interfaces:
  - 1 x RS232
  - 1 x Ethernet
  - 2 x USB host
  - 1 x USB slave
  - 1 x Audio Out
- ▸ Mobile memory: USB stick, SD card
- ▸ Processor: RISC 1 GHz, ARM
- ▸ Operating system: Windows® CE 6 Professional
- ▸ Memory: 256 MByte RAM, 512 MByte Flash
- ▸ Supply voltage: 24 VDC
- ▸ Protection type: IP65 front, IP20 back
- ▸ Real-time clock: Battery-buffered real-time clock
- ▸ Environment:
  - Operating temperature: 0 … 50 °C
  - Storage: -25 … +60 °C
  - Climatic suitability: Max. 93 % r.h. at +40 °C
- ▸ Graphics software
  (please order licence separately): PVIS OPC-Tools[1]; zenon Operator[2]

Order number	▸ PMI 516	264 516
	▸ PMI 518	264 518
	▸ PMI 526	264 526
	▸ PMI 531	264 531
	▸ PMI 538	264 538
	▸ PVIS OPC Tools (CD-ROM)	261 904
	[1] PVIS OPC Server licences for PMI	
	▸ PtoP licence: (point-to-point connection, one PVIS OPC Server and one display unit)	261 905
	▸ 8con licence: (eightfold connection, e.g. one PVIS OPC Server and seven display units)	261 906
	[2] zenon Operator licences	
	▸ zenon Operator Dev 1024: Editor for projects up to 1024 tags	265 010
	▸ zenon Operator RT PMI: Runtime Windows® CE for PMI projects up to 1024 tags	265 210

CE

PVIS®
Professional diagnostic solution

Scan the QR code to find out more about operator terminals PMI.

Webcode 5582

Online information at www.pilz.com

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