▶ **New in 2023/2024**

For your automation solutions

PILZ

THE SPIRIT OF SAFETY

▶ What's new in 2023/2024 for your automation solutions

Pilz supplies automation solutions for plant and machinery: complete and simple. From sensor technology to control and drive technology – safety and automation included. Various software tools enable simple operation and make commissioning easier. Benefit from short downtimes and high plant availability due to extensive diagnostic options. Here we present our product innovations for 2023/2024 for your safe automation. Further information is available on our homepage at www.pilz.com. Simply enter the webcode listed on the following pages.

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www.pilz.com/linkedin   www.pilz.com/x

▶ Safety locking device PSENmlock mini – small and strong

NEW

With its compact design of just 30 x 30 x 159 mm, you'll always find enough room for the safety switch PSENmlock mini, even in space-critical applications. It efficiently protects safeguards such as flaps and covers, for example. This small safety locking device has a holding force F_{ZH} of 1 950 N (F_{1max}: 3 900 N), providing safe guard locking for personnel protection applications up to PL d, Category 3 (EN ISO 13849-1).

The PSENmlock mini can be quickly and easily secured with just two screws. Installation can be performed inside or outside the safeguard. Also, the actuator offers a high level of flexibility, as it can be attached from the right, left and front. So swing gates and sliding gates can also be easily protected. The dual-channel operation of the solenoid and the bistable guard locking principle guarantee a high level of safety. In the event of a power failure, the last state is maintained and the gate is closed. The RFID safety switch offers a high level of manipulation protection with optimum economy. An auxiliary release is integrated on two sides.

Your benefits at a glance

▶ Significant space-saving: 60 % smaller than the PSENmlock
▶ Strong holding force F_{ZH} up to 1 950 N (F_{1max}: 3 900 N)
▶ Flexible actuator can be installed inside and outside the safeguard and can be attached from the right, left and front
▶ High level of safety due to dual-channel operation of the solenoid
▶ Bistable guard locking principle ensures safe operation even in the event of a power failure and reduces energy consumption
▶ High degree of manipulation protection in accordance with EN ISO 14119, coding freely selectable

Safety locking device PSENmlock mini

PSEN mlm
sa 1.1 switch

PSEN mlm
actuator a

PSEN mlm
ba 1.1 unit b

Type	Technical features	Order number
▶ Safety switch		
PSEN mlm ba 1.1 switch	Coded, M12 8-pin, single connection	6K000001
PSEN mlm ba 2.1 switch	Fully coded, M12 8-pin, single connection	6K000002
PSEN mlm ba 2.2 switch	Uniquely coded, M12 8-pin, single connection	6K000003
PSEN mlm sa 1.1 switch	Coded, M12 12-pin, series connection	6K000004
PSEN mlm sa 2.1 switch	Fully coded, M12 12-pin, series connection	6K000005
PSEN mlm sa 2.2 switch	Uniquely coded, M12 12-pin, series connection	6K000006
▶ Actuator		
PSEN mlm actuator a	Actuator a for external installation	6K000007
PSEN mlm actuator b	Actuator b for internal installation	6K000008
▶ Units		
PSEN mlm ba 1.1 unit a	Safety switch coded, single connection, actuator a	6K000009
PSEN mlm ba 2.1 unit a	Safety switch fully coded, single connection, actuator a	6K000010
PSEN mlm ba 2.2 unit a	Safety switch uniquely coded, single connection, actuator a	6K000011
PSEN mlm sa 1.1 unit a	Safety switch coded, series connection, actuator a	6K000012
PSEN mlm sa 2.1 unit a	Safety switch fully coded, series connection, actuator a	6K000013
PSEN mlm sa 2.2 unit a	Safety switch uniquely coded, series connection, actuator a	6K000014
PSEN mlm ba 1.1 unit b	Safety switch coded, single connection, actuator b	6K000015
PSEN mlm ba 2.1 unit b	Safety switch fully coded, single connection, actuator b	6K000016
PSEN mlm ba 2.2 unit b	Safety switch uniquely coded, single connection, actuator b	6K000017
PSEN mlm sa 1.1 unit b	Safety switch coded, series connection, actuator b	6K000018
PSEN mlm sa 2.1 unit b	Safety switch fully coded, series connection, actuator b	6K000019
PSEN mlm sa 2.2 unit b	Safety switch uniquely coded, series connection, actuator b	6K000020
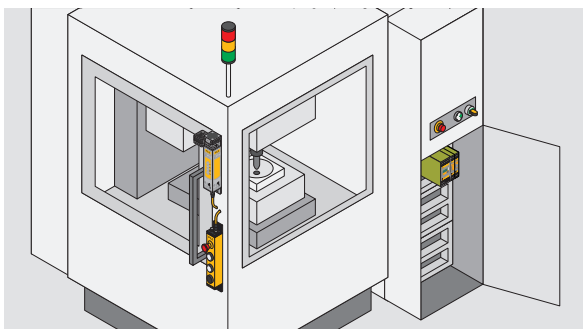
Safety
locking devices
PSENmlock mini:

Webcode:
web150409

Online information
at www.pilz.com

In combination with the control unit PITgatebox with integrated access system, the intelligent diagnostic system SDD and the safe small controller PNOZmulti 2, the result is a complete solution for safeguarding your safety gate.

▶ Safety locking device PSENslock 2 – more productivity through robust guard locking

NEW

The new generation of the safety locking device PSENslock 2 is suitable for universal use for safety gate monitoring in process protection up to PL e, Cat. 4 (EN ISO 13849). For applications that require safe guard locking for personnel protection, for the first time there is also a version available that offers this feature. In all versions, the RFID safety switches offer a high level of manipulation protection for maximum safety.

With the high holding force F_{1max} of optionally 1 000 or 2 000 N, the PSENslock 2 is suitable for both large gates and small flaps. Any tolerances that occur due to safety gate misalignment or vibration are reliably offset by PSENslock 2, thus guaranteeing high availability. With the available RFID tags, the latching force can be set quickly and simply in stages – to suit your plant and the size of the safety gate. Also suitable for use under rugged operating conditions, PSENslock 2 with protection type IP67/IP6K9K is insensitive to dust and water.

The design prevents dust and dirt deposits. For hygiene-critical applications, there are also versions with stainless steel components.

Your benefits at a glance

▶ Resistant even in tough ambient conditions
▶ Flexibly mounted actuator with large contact surfaces offsets tolerances even with safety gate misalignment
▶ High degree of manipulation protection prevents unwanted production interruptions, coding freely selectable
▶ Convenient diagnostics via 4 LEDs for simple status messages
▶ Can be adapted to individual requirements through adjustable latching force via RFID tag or SDD
▶ Intelligent diagnostics in series connection via SDD (Safety Device Diagnostics)
▶ Long service life through non-contact, magnetic guard locking device
▶ Safe series connection up to PL e can be implemented quickly and simply

Safety switch with magnetic guard locking device PSENslock 2

PSEN sl2-DM1-P
switch

PSEN sl2-DL3-P
switch

PSEN sl2-M-AL
actuator

PSEN sl2-L-VA
actuator

Type	Technical features	Order number
▸ Safety switch for process protection: Holding force: 1 000 N		
PSEN sl2-DM1-P switch	M12 8-pin, coded, series connection	6N000001
PSEN sl2-DM2-P switch	M12 8-pin, fully coded, series connection	6N000002
PSEN sl2-DM3-P switch	M12 8-pin, uniquely coded, series connection	6N000003
PSEN sl2-DM1-N switch	M12 5-pin, coded	6N000013
PSEN sl2-DM2-N switch	M12 5-pin, fully coded	6N000014
PSEN sl2-DM3-N switch	M12 5-pin, uniquely coded	6N000015
PSEN sl2-IM1-P switch	M12 8-pin, coded, series connection, safety outputs independent of guard locking	6N000019
PSEN sl2-IM2-P switch	M12 8-pin, fully coded, series connection, safety outputs independent of guard locking	6N000020
PSEN sl2-IM3-P switch	M12 8-pin, uniquely coded, series connection, safety outputs independent of guard locking	6N000021
▸ Safety switch for process protection: Holding force: 2 000 N		
PSEN sl2-DL1-P switch	M12 8-pin, coded, series connection	6N000004
PSEN sl2-DL2-P switch	M12 8-pin, fully coded, series connection	6N000005
PSEN sl2-DL3-P switch	M12 8-pin, uniquely coded, series connection	6N000006
PSEN sl2-DL1-N switch	M12 5-pin, coded	6N000016
PSEN sl2-DL2-N switch	M12 5-pin, fully coded	6N000017
PSEN sl2-DL3-N switch	M12 5-pin, uniquely coded	6N000018
PSEN sl2-IL1-P switch	M12 8-pin, coded, series connection, safety outputs independent of guard locking	6N000022
PSEN sl2-IL2-P switch	M12 8-pin, fully coded, series connection, safety outputs independent of guard locking	6N000023
PSEN sl2-IL3-P switch	M12 8-pin, uniquely coded, series connection, safety outputs independent of guard locking	6N000024
▸ Safety switch for personnel protection: Holding force: 2 000 N		
PSEN sl2-GL1-S switch	M12 12-pin, coded, series connection	6N000007
PSEN sl2-GL2-S switch	M12 12-pin, fully coded, series connection	6N000008
PSEN sl2-GL3-S switch	M12 12-pin, uniquely coded, series connection	6N000009
PSEN sl2-GL1-P switch	M12 8-pin, coded	6N000010
PSEN sl2-GL2-P switch	M12 8-pin, fully coded	6N000011
PSEN sl2-GL3-P switch	M12 8-pin, uniquely coded	6N000012
▸ Actuator		
PSEN sl2-M-AL actuator	Holding force: 1 000 N, material: Al	6N000025
PSEN sl2-L-AL actuator	Holding force: 2 000 N, material: Al	6N000026
PSEN sl2-M-VA actuator	Holding force: 1 000 N, material: VA	6N000028
PSEN sl2-L-VA actuator	Holding force: 2 000 N, material: VA	6N000027
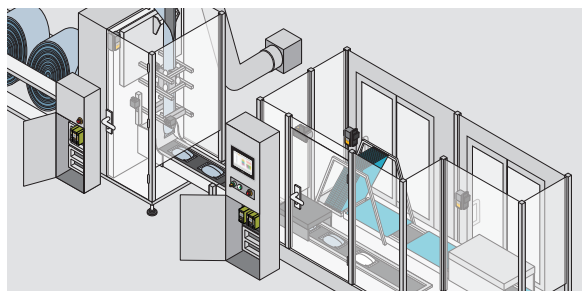
The robust design enables safe process guarding even in hygiene-critical applications such as in the packaging industry.

Safety locking devices PSENslock 2:

Webcode: web150408

Online information at www.pilz.com

▶ PSENradar with expanded field of vision and secure data transfer via FSoE

NEW

Safety over
EtherCAT.

More viewing angles for increased productivity

Two new radar sensors offer new possibilities in the field of safe protection zone monitoring: PSEN rd1.2 sensor F-FOV with a detection range of 0 to 5 metres and PSEN rd1.2 sensor F-FOV LR with a range of 0 to 9 metres. In addition to the symmetrical viewing angle, both sensors enable the configuration of asymmetrical as well as corridor-shaped viewing angles. You can now integrate the radar sensors even more flexibly into your production environment. With cramped conditions in particular, where machines are located within close proximity to one another or walkways run directly past machinery, you benefit from increased productivity.

Safe data transfer with FSoE

PSENradar together with the configurable small controllers PNOZmulti 2 offers a safe complete solution for protection zone monitoring – even for safe data transfer with FSoE in the EtherCAT communication system. The newly available evaluation device PSEN rd1.x SD I/O FSoE analysing unit enables the FSoE functionality in accordance with IEC 61508 for safety applications up to SIL 3. Together with the safe small controller PNOZmulti 2 as FSoE-Master, you can easily implement safety-related networking with the safe radar system as a one-cable solution – with minimum wiring effort.

Your benefits at a glance

▶ More flexibility in production and optimum workplace design through asymmetrical and corridor-shaped fields of vision

▶ Range up to 9 metres creates more opportunities for efficient safeguarding, even of mobile applications

▶ Safe data transfer with FSoE in the EtherCAT communication system

▶ Complete solution with PNOZmulti 2 as FSoE-Master and PSENradar with evaluation device PSEN rd1.x SD I/O FSoE analysing unit

▶ One-cable solution reduces the wiring effort and saves costs

PSENradar – advanced options for the field of vision

PSEN rd1.1 sensor

PSEN rd1.2 sensor

| Type	Technical features	Order number
PSEN rd1.1 sensor	▸ Symmetrical field of vision ▸ Opening angle: 110° horizontal, 30° vertical (wide) or 50° horizontal, 15° vertical (narrow) ▸ Operating range: 4 m	6B000002
PSEN rd1.2 sensor	▸ Symmetrical field of vision ▸ Opening angle: 10 – 100° horizontal, 20° vertical, configurable in 10° steps ▸ Operating range: 5 m	6B000003
PSEN rd1.2 sensor F-FOV	▸ Symmetrical, asymmetrical and corridor-shaped field of vision ▸ Opening angle: 10 – 100° horizontal, 20° vertical, configurable in 10° steps ▸ Operating range: 5 m	6B000009
PSEN rd1.2 sensor F-FOV LR	▸ Symmetrical, asymmetrical and corridor-shaped field of vision ▸ Opening angle: 10 – 100° horizontal (from 0 to 5 m)/ 10 – 40° (from 5 to 9 m), 20° vertical, configurable in 10° steps ▸ Operating range: 9 m	6B000015

PSENradar – safe data transfer via FSoE

PSEN rd1.x SD I/O
FSoE analysing unit

PNOZ m EF
EtherCAT FSoE

Type	Technical features	Order number
PSEN rd1.x SD I/O FSoE analysing unit	▸ Series connection: up to 6 sensors ▸ Zone sets: up to 32 ▸ 4 OSSD outputs & FSoE ▸ Reaction time: max. 100 ms ▸ Connection type: USB ▸ Integrated SD card as exchangeable storage medium ▸ Dimensions (H x W x D) in mm: 103 x 105 x 58	6B000007
PNOZ m EF EtherCAT FSoE	Safe communication module for connection to the communication system EtherCAT in combination with the safe protocol Safety-over-EtherCAT FSoE (= Fail-Safe over EtherCAT) together with the base unit PNOZ m B1	▸ PNOZ m EF EtherCAT FSoE: 772123 ▸ PNOZ m B1: 772101
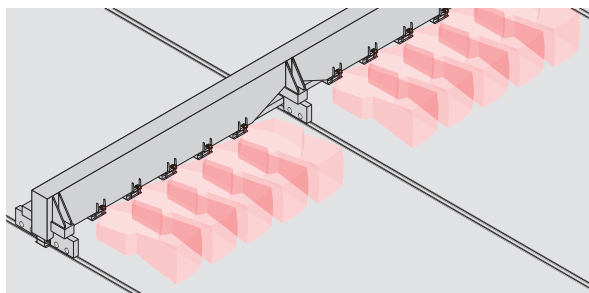
With the range of 9 m, mobile applications with large areas such as cranes, for example, can be productively safeguarded.
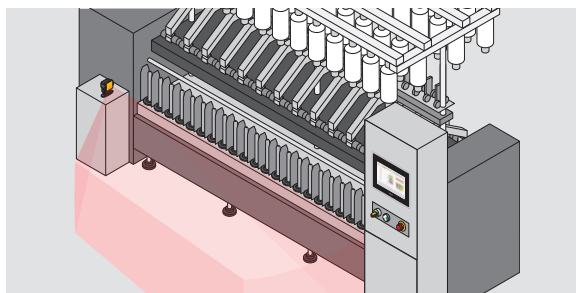
Applications that have open access points and are located directly at walkways can be efficiently safeguarded with the expanded field of vision.

Safe radar systems PSENradar:

Webcode: web199925

Online information at www.pilz.com

▶ Safe small controllers PNOZmulti 2 – flexible architectures with EtherCAT FSoE

NEW

For efficient production, it should be possible to seamlessly integrate the safety concept into the machine concept. The open communication system EtherCAT in combination with the safe protocol Safety-over-Ether-CAT FSoE (= Fail-Safe over EtherCAT) that is supported from software version 11.3 by the safe configurable small controller PNOZmulti 2 makes a major contribution to the transfer of control and safety-related information. A new safe fieldbus module is available that you can use in your plant and machinery both as the FSoE-Master as well as the FSoE-Slave, but also as the EtherCAT-Slave – depending on the requirement – in combination with the base unit PNOZ m B1. Perform the configuration in the software tool PNOZmulti Configurator, where up to 4 Master-Master and up to 60 Master-Slave connections are available to you. With PNOZmulti 2 as FSoE-Master, it is easy to implement safety-related networking with the safe radar sensor PSENradar and safe drive technology PMC – both with FSoE functionality. You can flexibly implement safe plant structures with a "one-cable solution" on the fieldbus level. This minimises your wiring effort and saves costs. Comprehensive diagnostic options also ensure minimal downtimes.

Your benefits at a glance
- ▶ Seamless integration of the safety concept into the machine concept
- ▶ Flexible expansion options of the safety-related plant structure
- ▶ Ready-made, certified safety solutions for a high level of safety
- ▶ Numerous diagnostic options
- ▶ "One-cable solution" with safe sensor and drive technology from Pilz

Configurable safe small controllers PNOZmulti 2 – PNOZ m EF EtherCAT FSoE

PNOZ m EF
EtherCAT FSoE

PNOZ

PNOZmulti
Configurator

PSENradar

PMC SC6/SI6

Type	Technical features	Order number

PNOZ m EF EtherCAT FSoE	Safe communication module for connection to the communication system EtherCAT in combination with the safe protocol Safety-over-EtherCAT FSoE (= Fail-Safe over EtherCAT) together with the base unit PNOZ m B1
	
	▸ Use possible as EtherCAT-FSoE-Master, EtherCAT-FSoE-Slave, EtherCAT-Slave
	▸ Up to 4 Master-Master and up to 60 Master-Slave connections
	▸ In total max. 512 bit data exchange with subscriber (Master or Slaves)
	▸ Safety-related data: 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 115
	▸ Certifications: CE, EAC (Eurasia), TÜV, UKCA
		▸ PNOZ m EF EtherCAT FSoE: 772123
		  - Plug-in spring-loaded terminals: 783542
		  - Plug-in screw terminals: 793542
		▸ PNOZ m B1: 772101
		  - Plug-in spring-loaded terminals: 751016
		  - Plug-in screw terminals: 750016

Software tool PNOZmulti Configurator, from version 11.3	▸ Import of ESI files ▸ Fieldbus configuration via ESI files ▸ Definition of slaves in one catalogue (list view)	Basic software is free of licensing costs, information at www.pilz.com/pnozmulti-tools
PSENradar	Evaluation unit PSEN rd1.x SD I/O FSoE analysing unit and 4 sensors to choose from; Additional information in the PSENradar flyer	▸ Evaluation unit: 6B000007 ▸ Sensors: 6B000002, 6B000003, 6B000015, 6B000009
PMC SC6/SI6	Single or double-axis controller for synchronous, servo and asynchronous motors ▸ Drive-integrated safety functions STO and SS1 via FSoE to PL e ▸ Integrated EtherCAT or PROFINET communication ▸ Integrated brake control ▸ Number of digital inputs: 8 ▸ Dimensions (H x W x D) in mm: From 45 x 343 x 265 ▸ Certifications: CE, UKCA, UL Listed	▸ PMC SC6A162R/EC 2x 10A: 8C000071 ▸ PMC SI6A261Z/EC 1x 22A: 8C000043 ▸ And more, see E-Shop

Control and operation level

EtherCAT-Master   PMIvisu   PNOZmulti 2 FSoE-Master

EtherCAT.   Safety over **EtherCAT.**   **PNOZ**

Field level

PMC SI6   PSENradar   PMC SC6   PNOZmulti 2

PNOZmulti 2
communication
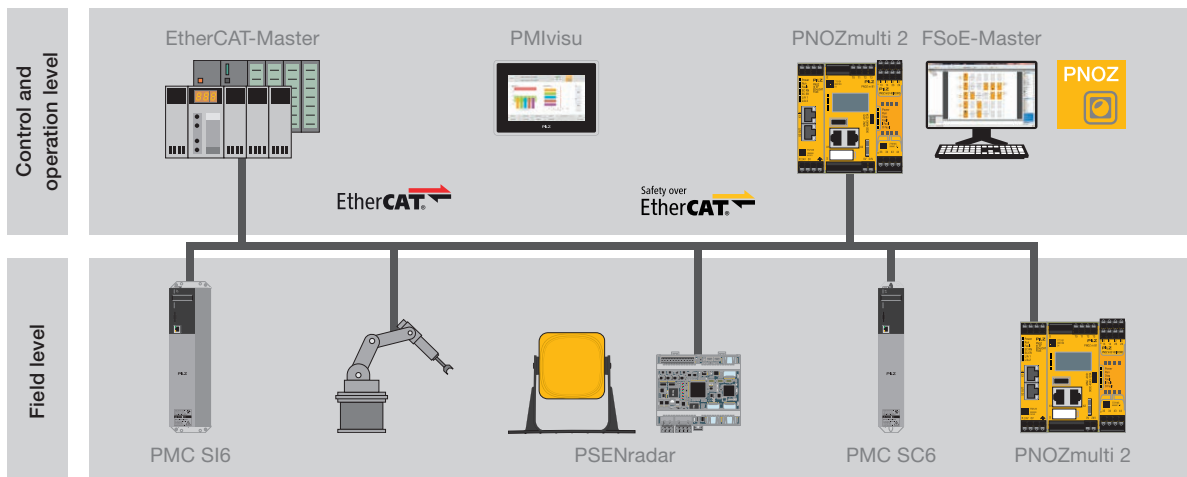modules:

Webcode:
web225353

PSENradar:

Webcode:
web199925

Drive technology
PMC:

Webcode:
web227756

Online information
at www.pilz.com

▶ Safe small controllers PNOZmulti 2 – stand-alone base unit PNOZ m C0

NEW

Small, but packs a punch! The new stand-alone base unit from the safe small controllers PNOZmulti 2 product range offers plenty of functions in a compact housing. 8 safe inputs and 4 safe semiconductor outputs over a width of 22.5 mm monitor safety functions on small machines. Depending on the application, you can reach PL e or SIL CL 3. Create your safety circuit using the software tool PNOZmulti Configurator. There are no licence costs to pay and it gives you access to a whole bundle of approved software blocks. Whether emergency stop, safety gate monitoring, light curtain or two-hand operation, see for yourself how the software tool PNOZmulti Configurator realises your safety requirements simply, flexibly and intuitively. The safety configuration only takes a few clicks. You can use PNOZmulti regardless of the machine type, plant type, country or industry sector. If the number of safety functions on your machine rises, you can migrate to the modular expandable base units: PNOZ m B0, PNOZ m B0.1 or PNOZ m B1. Even after 20 years on the market, you can still say "Many functions – One solution!"
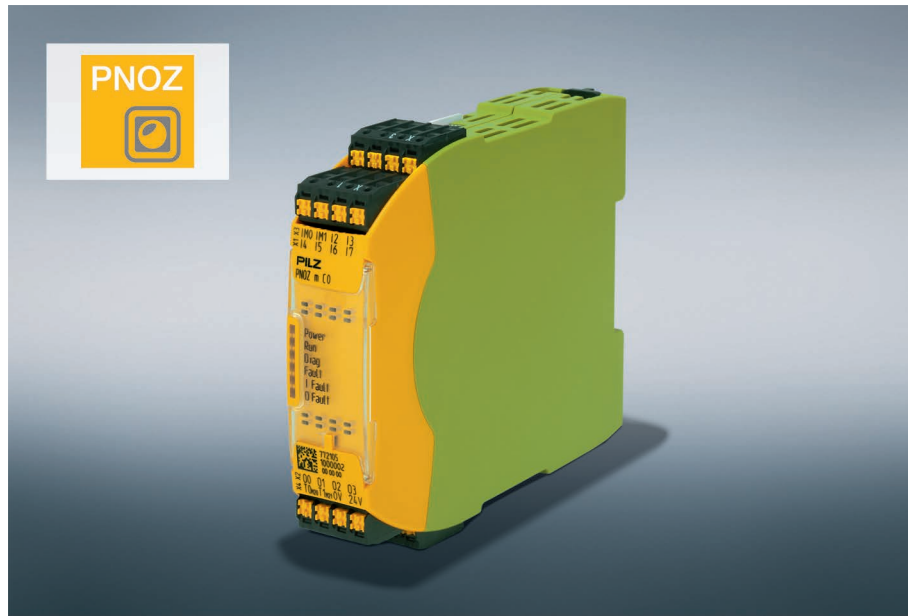
Your benefits at a glance
▶ Maximum flexibility: Inputs and outputs can be freely configured in the software tool PNOZmulti Configurator
▶ Large bundle of software blocks for monitoring safety functions up to PL e/SIL CL 3
▶ Optimised costs: as narrow as a safety relay, as powerful as a safety controller
▶ Create safety architecture and use it independently of the controller
▶ Saves a lot of space in the control cabinet due to its compact design

Configurable safe small controllers PNOZmulti 2 – stand-alone base unit PNOZ m C0

PNOZ m C0

PNOZ m C0
Detail

PNOZ m C0
Cable

PNOZmulti
Configurator

Technical features	
	▸ Stand-alone base unit, not modular and expandable
	▸ Can be configured in PNOZmulti Configurator from version 11.1
	▸ 8 safe inputs, up to 2 can be configured as auxiliary outputs
	▸ For the connection of safe sensors PSEN, E-STOP pushbuttons, two-hand pushbuttons, safety gate limit switches, start buttons, light curtains, scanners, enabling switches, operating mode selector switches, and many more
	▸ 4 safe semiconductor outputs, depending on the application up to PL e and SIL CL 3
	▸ 2 test pulse outputs, both of which can be configured as standard outputs
	▸ LED display for: error messages, diagnostics, supply voltage, output circuits, input circuits
	▸ Monitoring of shorts across contacts by means of test pulse outputs at the inputs
	▸ Monitoring of shorts between the safety outputs
	▸ Supply voltage: 24 V DC
	▸ Safety circuit can be transferred directly to the unit via a USB cable and stored directly there, or alternatively on the chip card
	▸ Safety-related characteristic data: Depending on the application, up to PL e of EN ISO 13849-1 and up to SIL CL 3 of EN IEC 62061
	▸ Certifications: CE, TÜV, UKCA, cULus Listed; others in progress (EAC (Eurasia), KOSHA)
	▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120

Order number		
	PNOZ m C0	772105
	▸ Plug-in spring-loaded terminals	751004
	▸ Plug-in screw terminals	750004
	Optional accessories	
	▸ Cable/XX/USB-ASMX/MIN-BAMX/U/003/Q009/SH, Mini-USB cable, type Mini B, 3 m	772300
	▸ Chip card (1x)	
	- 8 kByte	779201
	- 32 kByte	779211

Safe small controllers PNOZmulti 2 – overview of base units

PNOZ m C0 – the compact device	PNOZ m B0 – the universal option	PNOZ m B0.1 – for small to medium-sized applications	PNOZ m B1 – for large projects	PNOZ m B1 Burner – for industrial burner management
8 inputs, 4 semiconductor outputs, not modular and expandable	20 inputs, 4 semiconductor outputs, can be expanded with max. 6 I/O modules	As PNOZ m B0, can be expanded with max. 1 I/O module	Can be expanded by max. 12 safe I/O modules and up to 6 standard output modules	As PNOZ m B1, additional special burner management function block
-	Can be expanded with safe link modules, communication and fieldbus modules. For further technical details please refer to the PNOZmulti technical catalogue.			

PNOZmulti 2 base units:

Webcode: web225351

Online information at www.pilz.com

▶ Safe small controllers PNOZmulti 2 – modular for simple applications

NEW

Do you need to monitor a moderate number of safety functions on your machine? The new base unit PNOZ m B0.1 can be used as a stand-alone or modularly expanded with max. one I/O module. For expansion on the right side, it is possible to select from these I/O modules: PNOZ m EF 16DI or PNOZ m EF 8DI4DO or PNOZ m EF 8DI2DOT or PNOZ m EF 4DI4DOR or PNOZ m EF 4DI4DORD or the new relay output module PNOZ m EF 2DOR. This is a compatible successor to the compact controllers PNOZmulti Mini. Existing PNOZmulti Mini projects can be easily migrated to the PNOZ m B0.1 from version 11.0 of the software tool PNOZmulti Configurator. To the left, link modules for the connection of decentralised input modules PDP or for the networking of several PNOZmulti 2 systems can be used. Fieldbus modules are used for the connection of a higher level PLC. This results in a cost-optimised system for the safety of your machinery.

Your benefits at a glance

▶ Safe operation due to certified hardware and convenient, intuitive software tool

▶ Tailored costs: Adapted exactly to your application, ideal for small and medium-sized machines

▶ Cost-effective and sustainable: Worldwide safety standard for many automation environments and communication systems

▶ Just one system from planning to maintenance

▶ Maximum flexibility: inputs and outputs are freely configurable

▶ Reduced downtimes thanks to user-friendly diagnostics with plain text display

Configurable safe small controllers PNOZmulti 2 – PNOZ m B0.1 and PNOZ m EF 2DOR
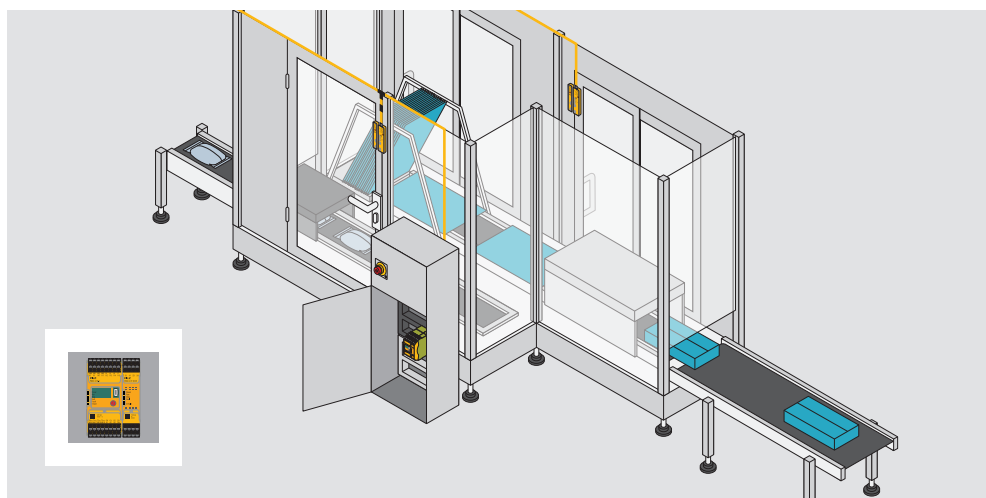
PNOZ m B0.1

PNOZ m EF 2DOR

PNOZ

PNOZmulti
Configurator

Technical features	▶ PNOZ m B0.1: base unit, can be expanded to the right with one module
	- 20 safe inputs, up to 8 can be configured as auxiliary outputs
	- 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 standard outputs
	- Right side max. 1 safe expansion module: PNOZ m EF 16DI or
	PNOZ m EF 8DI4DO or PNOZ m EF 8DI2DOT or PNOZ m EF 4DI4DOR
	or PNOZ m EF 4DI4DORD or PNOZ m EF 2DOR
	- On the left: Max. 4 safe connection modules PNOZ m EF Multi Link
	and/or PDP Link: Max. 1 fieldbus module;
	max. 1 communication module PNOZ m EF ETH or RS232
	- Display with backlighting to indicate the status of the supply voltage
	and the inputs and outputs
	- Rotary knob for menu control
	- Chip card as storage medium (not supplied with device)
	- Dimensions (H x W x D) in mm: 101.4/98 [1] x 45 x 120
	▶ PNOZ m EF 2DOR: Safe relay output module
	- 2 safe relay 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
	▶ Certifications: CE, TÜV, cULus Listed, EAC (Eurasia), KOSHA
	▶ Can be configured using the software tool PNOZmulti Configurator
	from version 11.0

Order number	**PNOZ m B0.1**	772104
	▶ Plug-in spring-loaded terminals	751008
	▶ Plug-in screw terminals	750008
	▶ Mini USB cable	
	- 3 m	312992
	- 5 m	312993
	▶ Chip card 8 kByte	
	- 1 piece	779201
	▶ Chip card 32 kByte	
	- 1 piece	779211
	PNOZ m EF 2DOR	772146
	▶ Plug-in spring-loaded terminals	751004
	▶ Plug-in screw terminals	750004

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

PNOZmulti 2
base units:

Webcode:
web225351

PNOZmulti 2
expansion
modules:

Webcode:
web225352

PNOZmulti
Configurator:

Webcode:
web225344

Online information
at www.pilz.com

By selecting the appropriate expansion modules and thanks to the simple configuration, you can expand your application easily and economically. If your application is larger than planned, it is possible to easily migrate from PNOZ m B0.1 to PNOZ m B0 or B1.

▶ Safe small controllers PNOZmulti Configurator – What's new in version 11.3

NEW

The software tool PNOZmulti Configurator is used to create and edit projects with the configurable safe small controller PNOZmulti 2.

Laser scanners: The zone selection function block enables productive solutions for stationary and mobile danger zone safeguarding in conjunction with the safety laser scanner PSENscan, used to monitor 2D zones. In this way, for example, it is possible to monitor open robot cells safely, or also guarantee efficient processes in a logistics or production environment.

Motion monitoring software blocks: New software blocks such as safe synchronisation monitoring plus three others for safe position monitoring (Safe Position Comparison, Safe Position Range and Safe Position Monitoring) are available for monitoring automated guided vehicle systems (AGVS). Safe detection of anomalies in the synchronisation of two axes protects human and machine.

Your benefits at a glance

▶ Safe solutions for stationary and mobile danger zone safeguarding with the laser scanner PSENscan
▶ Parameters for motion monitoring safety functions are easily set via software, for the safe monitoring of automated guided vehicle systems (AGVS)
▶ Safe data transfer with Safety-over-EtherCAT
▶ Decentralised input and output modules PDP67 for easy connection of sensor technology
▶ Software tool can be used free of licensing costs

Hardware: Optimally tailored to the application: The communication module PNOZ m EF EtherCAT FSoE enables safe data transfer with Safety-over-EtherCAT in conjunction with the base unit PNOZ m B1.

An input module has 16 digital inputs and monitors standard applications. Decentralised input and output modules PDP67 forward signals from the connected sensors to the safe small controller PNOZmulti 2.

Software tool PNOZmulti Configurator – version 11.3

PNOZmulti Configurator

PNOZ m EF EtherCAT FSoE

PNOZ m ES 16DI

PDP67 F 10DI4DO 5/8 ION

Type	Features	Order number

Software tool PNOZmulti Configurator	▸ Create, open, edit PNOZmulti 2 projects
	▸ Contains all PNOZmulti 2 hardware
	
	New in version 11.3
	▸ Laser scanner function blocks for zone selection on laser scanners: The zone parameter file of a laser scanner is read into PNOZmulti 2.
	The output to the laser scanner of zone specifications defined on the laser scanner is determined from the motion monitoring information or from the plant monitoring parameters.
	▸ Motion monitoring blocks to monitor the following functions:
	  - Safe synchronisation monitoring/safe speed comparison of two axes – comparison with regard to less than, greater than, equal to
	  - Safe position comparison of two axes
	  - Safe position monitoring of one axis
	  - Safe position range monitoring of one axis
		Basic software is free of licensing costs
		
		Information at www.pilz.com/pnozmulti-tools

Version 10.14.XX "long-term-supported" version	▸ For configuration of the product ranges PNOZmulti Classic and PNOZmulti Mini ▸ Version can be used to migrate PNOZmulti Classic or Mini projects to PNOZmulti 2 ▸ Create, open, edit PNOZmulti Classic/Mini projects ▸ New hardware PNOZmulti 2 is supported from version 11.0 and above	Basic Licence: 773010B and more
PNOZ m EF EtherCAT FSoE	Safe communication module EtherCAT, Safety-over-EtherCAT FSoE in combination with base unit PNOZ m B1 Additional information in the flyer Small controllers PNOZmulti 2 – flexible architectures with FSoE	▸ 772123 ▸ Plug-in spring-loaded terminals: 783542 ▸ Plug-in screw terminals: 793542
PNOZ m ES 16DI	Input module for standard applications ▸ 16 digital inputs For the connection of buttons and other digital sensors ▸ Dimensions (H x W x D) in mm: 101.4 x 22.5 x 120 ▸ Certifications: CE	▸ 772182 ▸ Plug-in spring-loaded terminals: 751004 ▸ Plug-in screw terminals: 750004
PDP67 F 10DI4DO 5/8 ION (VA)	Decentralised input and output modules for use with the small controllers PNOZmulti 2, connection via link module PNOZ m EF PDP-Link, protection type IP67 ▸ 10 safe digital inputs, 4 safe semiconductor outputs ▸ Connections 2 x M12 5-pin and 2 x M12 8-pin, e.g. for connection of the modular safety gate system PSENmlock ▸ PDP67 F 10DI4DO 5/8 ION (VA): Version with stainless steel screw connection, e.g. for use in the food industry ▸ Safety-related data: Up to PL e/SIL CL 3 ▸ Dimensions (H x W x D) in mm: 160 x 60 x 20 ▸ Certifications: CE, EAC (Eurasia), TÜV, UKCA	▸ PDP67 F 10DI4DO 5/8 ION: 772610 ▸ PDP67 F 10DI4DO 5/8 ION (VA): 772611 ▸ PNOZ m EF PDP Link: 772121

PNOZmulti Configurator:

Webcode: web225344

PNOZmulti 2 communication modules:

Webcode: web225353

PNOZmulti 2 base units:

Webcode: web225351

PNOZmulti 2 expansion modules:

Webcode: web225352

PDP67:

Webcode: web150450

Online information at www.pilz.com

▶ Safe small controllers PNOZmulti Configurator – What's new in version 11.2

NEW

The software tool PNOZmulti Configurator is used to create PNOZmulti 2 projects or to edit existing projects. Version 11.2 offers new features for even more flexibility in the monitoring of your machinery.

Stand-alone base unit PNOZ m C0 with security key: The planned new Machinery Regulation requires security mechanisms that prevent access to device data. This is already in place in the PNOZ m C0, making it well equipped for the future.

"Key-in-pocket" maintenance safeguarding: Together with PNOZmulti 2 and PITreader, new function elements in the software tool enable safe protection against unauthorised restarting of machinery. The key remains with the user and thus prevents manipulation while the blind spot element requires a check of areas with no visibility before restarting is possible. Logging in and out is possible at every gate, thereby saving time – particularly on large plants.

Your benefits at a glance
▶ Higher performance due to new software architecture, compatible with Windows 64-bit
▶ Software tool can be used free of licensing costs
▶ Equipped for safe automation of the future with the PNOZmulti 2 product range

Monitoring analogue values safely: Two new function elements are available for the safe analogue input module PNOZ m EF 4AI. The differentiation element detects a change of the analogue value over a specific time. The "ramp" element is used if you wish to monitor whether a value moves within defined lower and upper limits. Your processes are safe when monitoring fill level, temperature, pressure, speed etc.

Up to 84 standard outputs on the base unit PNOZ m B1: You can connect up to 6 output modules PNOZ m ES 14DO to the base unit PNOZ m B1. Doing so economically activates indicators, signal lamps, button illumination and much more.
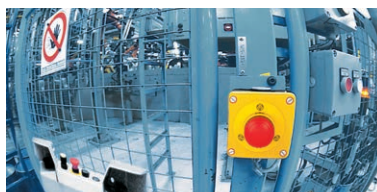
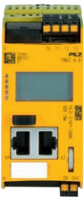## Software tool PNOZmulti Configurator – version 11.2

PNOZ m C0

PNOZ m EF 4AI

PNOZ m ES 14DO

PNOZ m B1

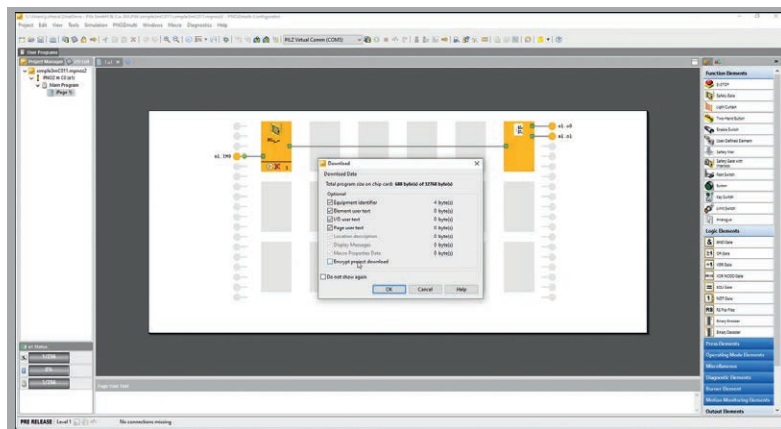|	
Technical features	**Version 11.2.0** ▸ Create, open, edit PNOZmulti 2 projects ▸ Basic software is free of licensing costs ▸ Contains all PNOZmulti 2 hardware **New in version 11.2.0** ▸ 3 Key-in-pocket function elements: Safe access and restart management for plant and machinery. Several PITreaders with RFID technology can be combined with the small controller PNOZmulti 2. Logging in and out of up to 20 personalised keys is possible at every PITreader on the plant ▸ Stand-alone base unit PNOZ m C0 security-key: Security mechanisms that prevent access to device data ▸ Differentiation and ramp: new elements for the module program of the safe analogue input module PNOZ m EF 4AI for safe processes ▸ Up to 6 output modules for standard applications PNOZ m ES 14DO can be connected to the base unit PNOZ m B1 **Version 10.14.XX "long-term-supported" version –** for configuration of the product ranges PNOZmulti Classic and PNOZmulti Mini ▸ This version can be used to migrate PNOZmulti Classic or Mini projects to PNOZmulti 2 ▸ Open, edit, create PNOZmulti Classic/Mini projects ▸ The new hardware PNOZmulti 2 is supported from version 11.0 and above

Order number	**PNOZ m C0**	772105
	▸ Plug-in spring-loaded terminals	751004
	▸ Plug-in screw terminals	750004
	PNOZ m EF 4AI	772160
	▸ Plug-in spring-loaded terminals	751004
	▸ Plug-in screw terminals	750004
	PNOZ m ES 14DO	772181
	▸ Plug-in spring-loaded terminals	751004
	▸ Plug-in screw terminals	750004
	PNOZ m B1	772101
	▸ Plug-in spring-loaded terminals	751016
	▸ Plug-in screw terminals	750016

PNOZ

PNOZmulti Configurator

PNOZmulti Configurator:

Webcode: web225344

Key-in-pocket maintenance safeguarding:

Webcode: web235182

PNOZmulti 2 base units:

Webcode: web225351

Online information at www.pilz.com

Encryption of the data on the stand-alone base unit PNOZ m C0.

▶ Dynamic zone switching for your mobile application

NEW

For freely navigating mobile platforms (AMR), Pilz offers a **comprehensive safety solution in accordance with ISO 3691-4** that consists of the safe small controller PNOZmulti 2 with new functions for synchronisation monitoring and the safety laser scanners PSENscan for productive area monitoring. The firewall SecurityBridge and PITmode for operating mode selection, consisting of PITreader with software block in PNOZmulti for operating mode selection, also offer greater safety by preventing unauthorised access.

Dynamic zone switching for higher flexibility for your application

You can use the new PNOZmulti Configurator function block in the field of motion monitoring for synchronisation monitoring of the axes of your platform. This program function compares the encoder values of the two axes, enabling conclusions to be drawn about the mobile platform's direction of movement. With this information, the safe zone switching required in the standards can be implemented dynamically in the laser scanner PSENscan. This is made possible by the new PSENscan function block in the PNOZmulti

Intralogistics Solutions by Pilz

Your benefits at a glance
▶ Safe automation solutions and services in accordance with ISO 3691-4
▶ Dynamic zone switching for the use of mobile platforms
▶ Software functions with easy parameter setting for safe monitoring of automated guided vehicles and AGV systems
▶ Overall safety assessment of the mobile applications: From safety concepts in the design phase through to commissioning

Configurator: You can dynamically adapt up to 70 configurable zone sets using the zone selection function. The zone sets created with PSENscan Configurator can then be imported into the navigation computer of the automated guided vehicle system.

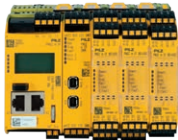PSENscan provides the distance data for localisation and navigation of the

mobile application. Open interfaces for data transfer make it simple to create maps of the environment for navigation.

Safety solution for mobile applications

PSENscan
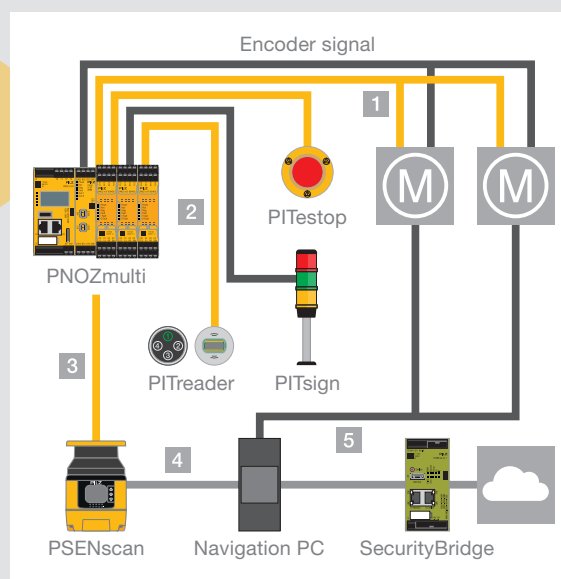
PNOZmulti 2

SecurityBridge

PITreader

PITestop/PITsign

Type	Features	Order number
PSENscan	**Safety laser scanner PSEN sc** Master, 17-pin, 70 configurable zone sets, 5.5 m safety zone, reference marks, measurement data output (UDP), optionally up to 3 subscribers	▶ 6D000019 ▶ 6D000021
PNOZmulti 2	**Safe small controller PNOZmulti base unit** **with motion monitoring module and I/O modules** **PNOZmulti Configurator version 11.3** **function block for safe zone selection** Reading in the zone parameter file of a laser scanner into PNOZmulti 2, automatic selection of zones defined in laser scanner PSENscan **Motion monitoring block for safe** **synchronisation monitoring of the axes** **and for safe speed comparison**	▶ 772101 ▶ 772171 ▶ 772142 x 3
SecurityBridge	**Firewall PCOM sec br1** SecurityBridge, VPN server for establishment of a VPN tunnel, supports X.509 certificates	311501
PITreader	**Access permission system PITreader** RFID authentication system with PITreader keys or RFID-capable cards PITreader card/PITreader sticker	▶ 402255/402308 ▶ 402320/402321
PITestop/PITsign	**Control and signal devices** Optional E-STOP pushbutton PITestop, IP65 Optional indicator light unit PITsign, IP65	▶ 400131 ▶ 581190
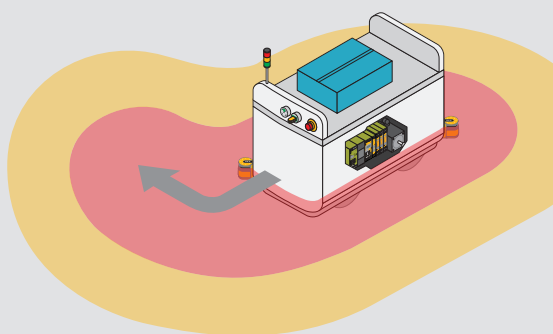
Example of a differential drive

1 STO (safe torque off)
2 Operating mode selection
3 Dynamic zone switching, based on
  encoder data
4 Provision of the navigation data via UDP
  (C++ library, ROS modules)
5 Drive commands to the wheels

Encoder signal

PNOZmulti

PITestop

PITreader   PITsign

PSENscan   Navigation PC   SecurityBridge

Safe dynamic zone switching of freely navigating mobile applications.

Webcode:
web232104

Online information
at www.pilz.com

▶ Validation – the right level to suit every requirement

NEW

In a machine's lifecycle, the topic of validation plays a major role in safety – for both manufacturers and operators alike. After all, following a safety inspection, the question arises as to whether all safety-related risks have been taken into account and solved with the right measures. Validation is the only way of finding out whether the necessary risk reduction measures have been correctly implemented and whether the machinery therefore demonstrably complies with the relevant standards and regulations!

But what depth of validation is necessary and useful?

Pilz has adapted its portfolio of validation as a service to efficiently validate your machinery using a structured method in the categories of machinery safety, risk minimisation, functional safety and other legal requirements. Accordingly, as a machine manufacturer or operator, you can choose between three levels of validation service, precisely tailored to the project and requirements.

Your benefits at a glance
▶ Customised validation thanks to three different validation levels
▶ Customised validation intensity and level of detail according to your individual requirements and needs
▶ Cost-efficient validation methods and expertise from Pilz
▶ Guarantee of compliance with standards and specifications
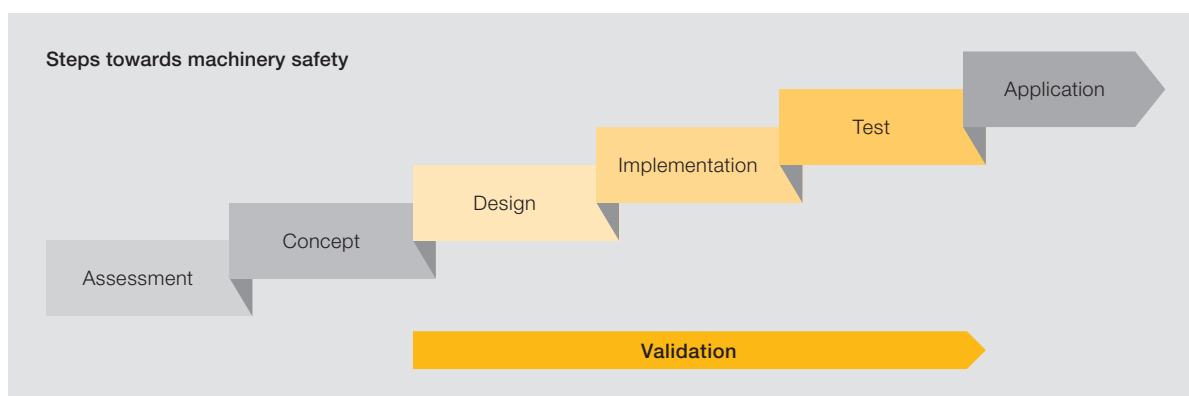▶ Safety and protection due to a safe working environment

Validation method	Level 1	Level 2	Level 3
Machinery safety	◆	◆◆	◆◆◆
Risk reduction		◆	◆◆◆
Functional safety	◆	◆◆	◆◆◆
Other legal regulations			◆

Case examples	Level 1	Level 2	Level 3
CE marking, conformity assessment procedure			◆◆◆
Complex installation that requires detailed testing			◆◆◆
Testing by Pilz as a neutral body		◆◆	
Minor changes to previously validated machinery		◆◆	
Validation against similar machinery		◆◆	
Moving existing machinery to a new location	◆		
Re-inspection of previously validated machinery	◆		

Depth of testing: ◆ Basic, ◆◆ Detailed, ◆◆◆ Comprehensive

Details of the scope of services

Level 1	Level 2	Level 3
▶ Basic machinery safety inspection ▶ Evaluation of the measures implemented ▶ Random function test ▶ Assessment of the applied safety principles	▶ Detailed machinery safety inspection ▶ Evaluation of the measures implemented ▶ Evaluation of the 5 main risks ▶ Safety functions test ▶ Check that the safety functions and components are correctly installed ▶ Inspection of the specified PL implementation (PL ≥ PL$_r$)	▶ Inspection of machinery safety legislation ▶ Inspection of compliance with the product standard ▶ Evaluation of the measures implemented ▶ Inspection of implementation of risk reduction ▶ Safety functions test ▶ Check that the safety functions and components are correctly installed ▶ Fault simulation ▶ Inspection of the specified PL implementation (PL ≥ PL$_r$) ▶ Evaluation of the achieved PL (PL ≥ PL$_r$) ▶ Inspection of: - Safety requirements specification - Safety-related software - Electrical safety - EMC/RA requirements - Noise emission - Pressure vessel requirements

Steps towards machinery safety

Assessment → Concept → Design → Implementation → Test → Application

Validation

Webcode: web226031

Online information at www.pilz.com

▶ CESA – Certified Expert for Security in Automation

NEW

Expert

Threats in the form of cyber attacks on the industrial environment of businesses are constantly on the rise, presenting a major challenge for so-called Industrial Security. This describes the protection of the machine from people, e.g. through cyber attacks, manipulation or even incorrect operation. It is becoming more and more important to not only take into account the Safety but also the Security of plants and machinery. It was specifically for these challenges that we designed the "CESA – Certified Expert for Security in Automation" qualification.

TÜV NORD

Your benefits at a glance

▶ The qualification teaches comprehensive specialist knowledge of normative requirements, the basics of risk assessment and technical and organisational security measures in the industrial environment.

▶ You will learn the correct application and implementation of the standard IEC 62443 and which requirements machinery must fulfil to meet modern Industrial Security standards.

▶ We'll show you how you can assess and optimise your machinery in terms of cyber security.

▶ Deepen your knowledge of the management of security risks arising from the networking and application of IT and industrial machinery in the production hall.

▶ The compact design of the course and content built on prior knowledge enables certification within just two days.

▶ When you pass the test, you will receive the globally recognised TÜV NORD "CESA – Certified Expert for Security in Automation" certificate that verifies your qualification.

CESA – Certified Expert for Security in Automation

Contents	**Basic knowledge of security in automation**
	▶ Introduction
	▶ Motivation for cyber security in industrial automation
	▶ Safety and Security
	▶ Difference between IT and OT (operational technology)
	Fundamentals of Industrial Security on the machine
	▶ Analysis of different attack targets
	▶ Possible threat scenarios
	▶ Structure of cyber security (defence in depth)
	Legislation and normative requirements
	▶ IT security laws
	▶ Machinery Directive
	▶ Overview of standards
	▶ Foundations of IEC 62443
	▶ Roles in security
	▶ Information Security Management System (ISMS)
	▶ Security Level and Security Requirements
	Risk analysis
	▶ Basic procedure
	▶ Risk analyses according to IEC 62443-3-2
	▶ Documentation of the risk analysis
	Security process
	▶ Technical measures
	▶ Security Level
	▶ Organisational safety measures
	▶ Maturity Level
	▶ Security Program Rating
Target groups	The CESA qualification is aimed in particular at manufacturers, integrators and users of industrial automation systems and at:
	▶ Plant engineers
	▶ Design engineers
	▶ Project engineers
	▶ System integrators
	▶ CISO (Chief Information Security Officer)

Your best path to qualification

CESA is the highest level of our international qualification programme, the expert level. With the relevant professional experience or participation in training courses from the previous levels, you have a structure for building your expert knowledge. Depending on your professional experience and level of knowledge, we therefore recommend attending the training courses listed on the right in order. Just jump in at the appropriate level.

Introduction: Introduction to Machinery Safety

Fundamental: Fundamentals of Machinery Safety

Advanced: Design of Safety Control Systems according to ISO 13849 and IEC 62061

Expert: CESA – Certified Expert for Security in Automation

Webcode:
web229378

Online information at www.pilz.com

▶ Support

Technical support is available from Pilz round the clock.

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

BLUeCOMPETENCE
Alliance Member
Partner of the Engineering Industry Sustainability Initiative

German Standards
BRAND OF THE CENTURY
2022

Quality Management
ISO 9001:2015
REG. NO. 2462

Environmental Management
ISO 14001
REG. NO. 2462

Energy Management
ISO 50001
REG. NO. 2462

75 1948 2023
VALUES.
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FUTURE.

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PILZ
THE SPIRIT OF SAFETY