

# Automation technology Components - Systems - Services



# Product overview

- ▶ Sensor technology ▶ Relays ▶ Small controllers
- ▶ Controllers ▶ Drive technology
- ▶ Operating and monitoring ▶ Software ▶ Services











We automate. Safely.





#### Pilz is a leading, innovative automation technology company.

As experts in the safety of human, machine and the environment, Pilz provides worldwide, customer-oriented solutions for all industries.

These include innovative products and comprehensive services from the areas of sensor, control and drive technology.

We pursue clearly defined goals. Our focus is to complete our safe automation range with safe sensor and actuator technology and dovetail this core competency with the expansion of solutions for standard automation. This way we can transfer our experience and knowledge from safety technology to the requirements of general control technology. The benefits for you: Tailored, one-stop automation solutions.

Pilz USA provides solutions for your automation functions that are safe, economical and reliable. We offer first-class components, which you can use individually or combine to form a system. Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Our offices and production facilities are ecologically designed, environmentally-aware and energy-saving.

Based on our 30 years of industry experience, we are a trusted provider of safety services to leading national and international industrial companies. By providing viable solutions to the most complex safety issues, we help companies apply best manufacturing practices to optimize the availability and productivity of their plants worldwide.



Pilz is your solution supplier for all automation tasks. Including standard control functions. Pilz developments protect man, machine and the environment. Pilz has a tradition as a family-run company stretching back over 60 years. Real proximity to customers is visible in all areas, instilling confidence through individual consultation, total flexibility and reliable service. Worldwide, round the clock, in 42 subsidiaries and branches, as well as 27 sales partners on every continent.

More than 2200 staff, each one of them an ambassador for safety, make sure that your staff – your company's most valuable asset – can work safely and free from injury.









Automation solutions from Pilz – at home in every industry.

# **Services:**

# Consulting, engineering and training

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





#### Training

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



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



#### Machinery safety

#### Risk Assessment

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

#### Safety Concept

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

### Safety Design

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

### System Implementation

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

#### Validation

In the validation, the risk assessment and safety concept are mirrored and inspected by competent, specialist staff.

And we perform collision measurement for human-robot applications in accordance with the limit values from ISO/TS 15066.



#### International compliance

#### **CE Marking**

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

#### NR-12

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



## Workplace safety

#### Plant Assessment

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

### **Lockout Tagout System**

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

#### Inspection of Safeguarding Devices

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



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



Online information at www.pilz.us

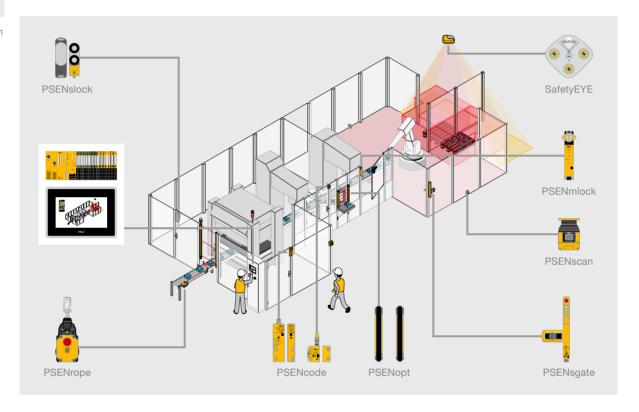
# Safe sensor technology

Reach the right product with just one click – the Pilz product finder:

Webcode: web150521

Online information at www.pilz.us

Pilz sensors, PSEN, guarantee that complex plants and machinery can be used efficiently while still complying with standards intended to protect man and machine. The versatile portfolio provides individual solutions for every requirement: from position monitoring to three-dimensional zone monitoring.



# Numerous options for your application

Overall solutions and complete systems, in conjunction with safe control technology, offer ample potential for savings with your automation solution. And there are no limits. Whether it's a small machine or a complex system or a complex system, Pilz sensor technology will slot perfectly into your system environment. Thanks to its compatibility and suitability for connection in series with other sensors, you always obtain an economical solution.

While high plant efficiency is a requirement in an industrial environment, it's important not to neglect the protection of man, machine and the environment: from commissioning to high availability during operation. Pilz sensors, PSEN, provide a safe, flexible solution.

### Your benefits at a glance

- Economical solutions:
  Sensors from the various
  product ranges are compatible
  and can be connected in series
- Investment protection:
  Incorporated optimally into
  the system environment,
  easy to retrofit
- Potential saving: In the project planning, design, documentation, procurement and assembly stages thanks to ready-to-install systems and comprehensive solutions



# Safety switches, PSENmag and PSENcode

- different designs and operating principles: magnetic and coded safety switches offer economical series connection and a very high standard of manipulation protection (PSENcode).

Webcode web150413, web150412



# Safety switches, PSENmech and safety bolt PSENbolt

- the mechanical alternative for safety gate monitoring for personnel and processes. The safety bolt represents a complete solution of a safety switch, handle and bolt.

Webcode web150414, web150411



PSENslock PSENsgate

# Safety gate systems, PSENslock, PSENmlock and PSENsgate

Webcode web150524

- all the safety functions for monitoring safety gates in the smallest possible space: safe position monitoring and safe guard locking in a single system mechanical or magnetic.

The safe complete solution: sensor technology plus controller

Comprehensive range of accessories available in our E-Shop.



# Optoelectronic sensors, **PSENopt and PSENscan**

Webcode web150525

- the light curtains, PSENopt, offer finger, hand and body protection, along with extended functionalities such as muting, blanking and cascading. The safety laser scanners PSENscan are suitable for 2D area monitoring.



# Safe camera systems, SafetyEYE and PSENvip

- use SafetyEYE for 3D zone monitoring and the camera-based protection system PSENvip for monitoring and controlling press brakes.





Safety Device Diagnostics

#### Safety Device Diagnostics

- use Safety Device Diagnostics to access advanced diagnostic data from Pilz safety devices. Thanks to the use of SDD, service deployments are avoided and downtimes reduced.

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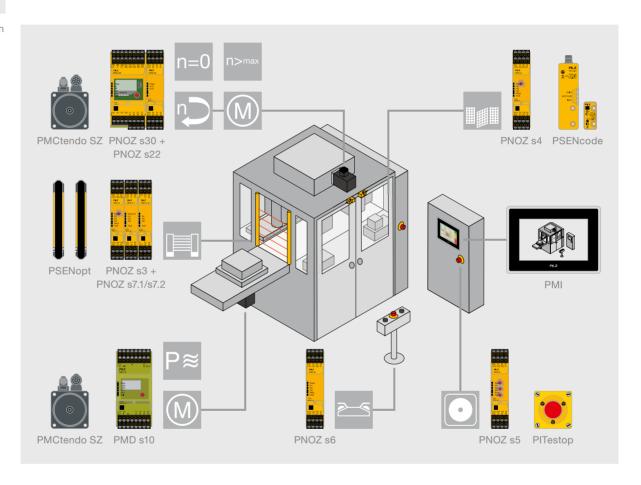
# Relays

Reach the right product with just one click – the Pilz product finder:

Webcode: web150079

Online information at www.pilz.us

The aim of Pilz relays is to keep the risk to man and machine as low as possible. Pilz relays provide the right solution for every application, with an ideal cost/performance ratio that has been proven in the market millions of times over. Choose one of the leading brands in automation technology – a brand with many years of experience and outstanding service.



For reliable monitoring of functional safety, we offer you the safety relays, PNOZ. Monitor electrical safety with the electronic monitoring relays, PMD. For safe line inspection we offer you PLIDdys. Brake control devices are used to monitor safety brakes or holding brakes. Devices for safe speed monitoring complete the range of innovative relays. Our products comply with international standards and regulations. Reliable devices guarantee you highly economical operation as well as a long service life for machinery and plant – see for yourself!

### Your benefits at a glance

- The reassurance of a leading brand
- Doptimum cost/performance ratio
- Rapid instrument-based commissioning
- ▶ High availability of products
- Certified safe, because international standards and regulations are met



# Safety relay, PNOZ

for monitoring machinery
 with up to three safety functions
 (e.g. E-STOP, safety gates etc.).
 There are different product ranges
 depending on the requirement.

Webcode web150093



**PMDsigma** 

# Electronic monitoring relays, PMD

 for monitoring electrical variables such as voltage or true power.

Webcode web150105



# Line inspection devices, PLIDdys

 provide safe power-up on two-wire connections, for maximum safety on long cable routes.

range of accessories available in our E-Shop.

Comprehensive

Relays from Pilz – the optimum

safety solution

Webcode web150902



PNOZ s50

# Brake control devices, PNOZ s50

 suitable for safe brake control and monitoring of holding brakes or safety brakes.



PNOZ s30

# Speed monitoring devices, PNOZ s30

- suitable for safe monitoring of standstill, position and direction as well as monitoring of speed range and shear pin breakage.

Webcode web150117

Webcode web150619

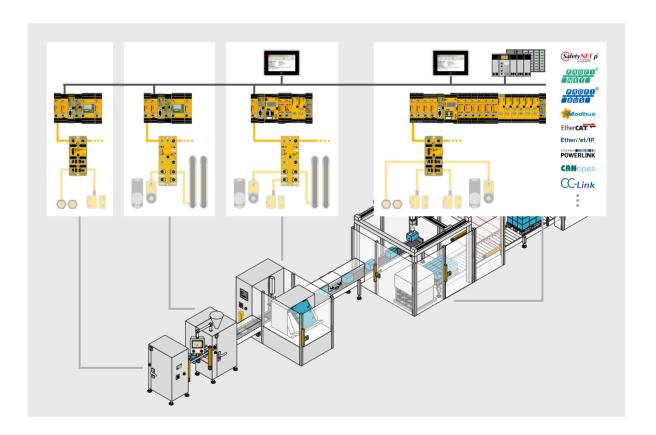
# Configurable, safe small controllers

Reach the right product with just one click – the Pilz product finder:



Online information at www.pilz.com

Safe small controllers bridge the gap between classic safety relays and large programmable control systems. Use the configurable small controllers PNOZmulti to implement multiple safety functions. Functional safety to protect man and machine is, thus, achievable both simply and flexibly, with just a few clicks in the software tool, PNOZmulti Configurator. On small machines, the small controllers PNOZmulti also perform automation tasks. Easy diagnostics and visualization are possible with the web-based visualization software PASvisu – for high plant availability and low downtimes.



### Many functions - one solution

The software tool, PNOZmulti Configurator, will impress you with its simple operation: install, open, work intuitively. The wide range of fieldbus and communications options is a big plus with PNOZmulti, because the safety system can be used independently of the higher-level operational control. PNOZmulti is the worldwide standard for many automation environments and communication systems. A wide selection of expansion modules ensures maximum flexibility and safety for your application. Input and output modules, motion monitoring modules and link modules are available.

## Your benefits at a glance

- Cost-effective and long-lasting:
- worldwide safety standard for many automation environments and communication systems
- ▶ Flexible: configuration using certified software blocks, simple adjustment and adaptation



# Configurable, safe small controllers, PNOZmulti 2

- PNOZmulti 2 gives you all the advantages of the latest generation. The full function range of the "classic" PNOZmulti base units has been made available in an overall width of 45 mm, complete with an illuminated display and modular expansion.

Webcode web150500



PNOZ m1p ETH

# Configurable, safe small controllers, PNOZmulti

- PNOZmulti is the classic safety system. The system is characterized by a diverse range of base units, expansion modules and communication options.

Webcode web150497



PNOZ mm0.1p

# Configurable, safe compact controllers, PNOZmulti Mini

- PNOZmulti Mini gives you four base units to choose from, plus a small number of expansion modules. Additional output contacts are possible using the contact expansion modules from the product group PNOZsigma.

Comprehensive range of accessories available in our E-Shop.

Small controllers PNOZmulti many functions,

one solution!

Webcode web150501



PNOZmulti Configurator

# Software tool, **PNOZmulti Configurator**

- the graphic tool helps with configuring and parameter setting for the safe small controllers, PNOZmulti, including documentation and commissioning.



PASvisu

### Visualization software, PASvisu

- optimally linked: Control project and visualization. The web-based visualization software PASvisu enables simple configuration and visualization.





PDP67 F 8DI ION PT PDP20 F 4 mag

### Decentralised modules, PDP

- to assist you with economically decentralizing your application. Integrated in dirt and water-repellent housings.

Webcode web150399 Webcode web150430

Webcode web150510

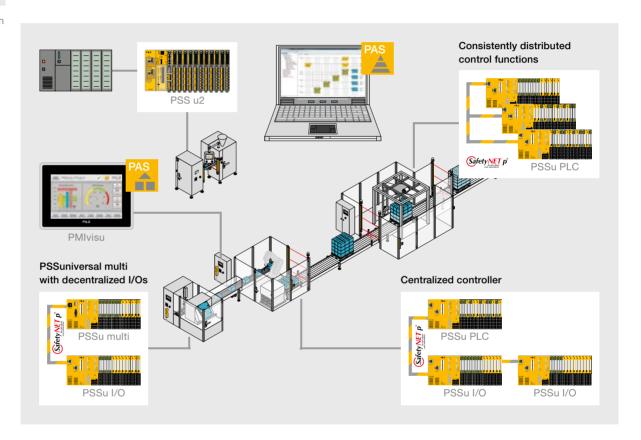
# Controllers

Reach the right product with just one click – the Pilz product finder:

Webcode: web150509

Online information at www.pilz.us

You can use controllers and decentralized I/O systems from Pilz to easily and flexibly implement safety and automation applications of any size: machines with an elementary function range, machines with multiple axes, interlinked plant and machinery. High availability and productivity, as well as maximum safety, are thus guaranteed for your plant and machinery.



# Simple programming of large plants!

- Processing of safety and automation functions
- ▶ Can be used as a stand-alone controller or as part of a network
- Intuitive programming of complex functions
- ▶ High level of flexibility thanks to modular system structure
- Extensive selection of modules to meet your specific requirements

#### System for third-party controllers

- Communication with the controller takes place via common fieldbus protocols
- Functions for safety and automation are processed decentrally at field level
- Quick commissioning and easy configuration thanks to the independent periphery test
- ▶ High level of flexibility thanks to modular system structure

# Your benefits at a glance

▶ High flexibility:

The appropriate solution for each application

- High plant availability: low downtimes for your plant or
- low downtimes for your plant or machinery thanks to convenient diagnostics
- Faster commissioning:e.g. thanks to units with plug-in terminals or simple

software solutions



# Control and I/O systems of the automation system, PSS 4000

- the automation system PSS 4000 is scalable and can be used industry-wide thanks to the various controllers and I/O systems, coupled with the configuration and programming software.

Webcode web151340



# PSSuniversal decentralized I/O systems

- the decentralized I/O systems PSSuniversal can be tailored for use as remote I/Os at field level. Connection to a higher-level thirdparty controller is via common industrial communication protocols.

Webcode web150509



# **PSSuniversal 2** remote I/O system

- the remote I/O system permits customized, granular solutions. It consists of communication modules with PROFINET and EtherNet/IP interfaces and a selection of I/O modules.

Comprehensive range of accessories available in our E-Shop.

Pilz control technology for safety and

automation

Webcode web150509



## Software platform, PAS4000

- contains several editors and blocks. The tools for configuration, programming, commissioning and operation are closely compatible.



PASvisu

## Visualization software, PASvisu

- for control projects and visualization. The web-based visualization software PASvisu enables simple configuration and visualization. You can link your PAS4000 control project directly to the PASvisu Builder project.



PSS67

## PSS67 modules

- the modules with protection type IP67 (water and dust resistant) can be used decentrally in the field. With a connection to SafetyNET p, they can be integrated into the automation system, PSS 4000.

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PILZ I 15

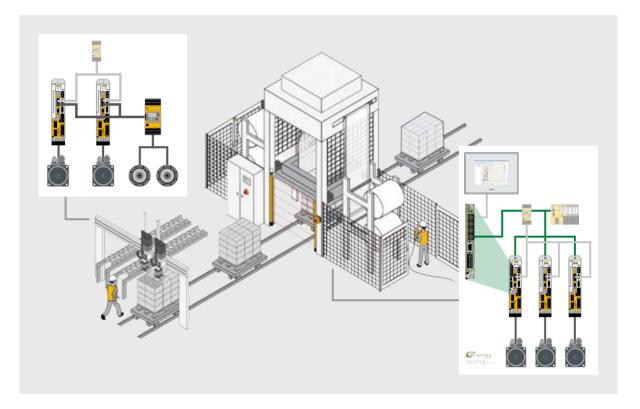
# Drive technology

Reach the right product with just one click – the Pilz product finder:

Webcode: web150506

Online information at www.pilz.us

Pilz Motion Control provides overall and energy-efficient solutions for your machine automation. The portfolio spans complete solutions from motion control systems and servo amplifiers to servo motors, including all safety aspects. Individual components are also available to you. Pilz drive technology is embedded into the relevant system environment – whether a new structure or a retrofit – and is open for a variety of interfaces and functionalities.



# Capable all-rounder

Drive technology, PMC, is available to you for a wide range of applications: The safe motion solution is suitable for servo presses, for example. Functions such as "Safely Limited Speed" in set-up mode, "Safe Direction" during the light curtain's muting phase and "Safe Brake Control" on vertical axes enable operators to work safely within the danger zone.

Intelligent motion control enables you to reap the rewards of short cycle times and optimally synchronized motion sequences. The intuitively operated software, PMCtools, supports you with simple parameter setting and diagnostics.

# Your benefits at a glance

- ▶ Safe: up to PL e for each piece of feedback
- ▶ Energy efficient: high energy savings thanks to efficient servo technology
- Open: highly flexible because various fieldbus and feedback systems and functionalities can be used
- Productive: short cycle times pave the way for high performance, e.g. by drive bus EtherCAT



PMCprimo DriveP

# Control systems, PMCprimo

- they are based on PLC and motion technology and are suitable for use in control and motion tasks.

Webcode web150507





PMCtendo DD5 PMCprotego D

# Servo amplifiers, PMCtendo DD5 and PMCprotego D

- these are used as drive controllers for a very wide range of motor technologies: from the servomotor to the asynchronous and linear motor.

Webcode web150508



PMCtendo SZ

### Servomotors, PMCtendo SZ

- you will find the most suitable motor for your requirements here, depending on the priorities: dimensions, dynamics, controllability, connection variants or feedback systems.

Comprehensive range of accessories available in our E-Shop.

Pilz drive technology safe, energy efficient, open,

productive

Webcode web150528



PMCprotego DS

- this consists of a combination of safety card, PMCprotego S and servo amplifier PMCprotego D.

Safe functions keep setup times down, minimize maintenance costs

and increase productivity.

Safe Torque Off (STO)



Safe Direction (SDI)



Safe Stop 1 (SS1)



Safely Limited Position (SLP)



Safe Stop 2 (SS2)



Safely Limited Increment (SLI)



Safe Operating Stop (SOS)



Safe Brake Control (SBC)



Safely Limited Speed (SLS)



Safe Brake Test (SBT)





Safe Speed Range (SSR)

Webcode web150389

Safe motion



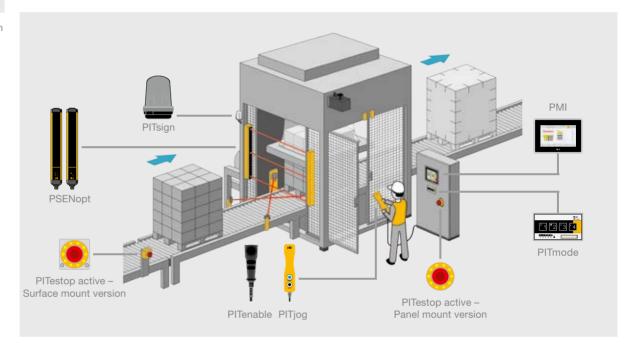
# Operating and monitoring

Reach the right product with just one click – the Pilz product finder:

Webcode: web150559

Online information at www.pilz.us

Operating and monitoring enable short reaction times through control and signal devices, as well as rapid diagnostics via visualization systems. As the ideal supplement for other Pilz products, your plant is completed reliably and in compliance with the standards.



### Control and signal devices PIT - safe all round

Selection of the correct control and signal devices is a key factor for the safety of man and machine. Rely on a safe solution with Pilz compliant emergency stop pushbuttons, muting lamps, and manually operated control devices and operating mode selector switches.

#### Operator terminals, PMI - professional and simple

Systems for process visualization and interaction between man and machine form the link between operator and machine. When an error occurs, diagnostics on the plant and machinery have a special role to play. Good visualization and diagnostics also mean shorter downtimes and therefore increased cost effectiveness.

### Your benefits at a glance

- Control and signal devices
- Simple and quick mounting: with push-in technology
- Increased operational safety: thanks to contact block with monitoring
- Operator terminals
  - Flexible to use: variety of hardware and software, numerous display sizes
  - Complete tools: for diagnostics, visualization and control



PITestop active

### E-STOP pushbutton, PITestop

different versions,
e.g. illuminated or with key,
ensure the safety of man and
machine in emergency stop
equipment.

Webcode web150436



PITsign

# Muting lamps, PITsign

 indicate that electrosensitive protective equipment is also suspended in accordance with IEC 61496-1, even during muting.

Webcode web150441



PITjog

# Manually operated control devices, PITjog

 are used if the effect of safety equipment has to be completely or partially suspended (two-hand operation).

Comprehensive range of accessories available in our E-Shop.

Professional operating and monitoring with Pilz

Webcode web150437



# Enabling switches, PITenable

 are used as manually operated control devices for working with an open safety gate (one-handed operation).



PITmode

# Operating mode selector switches. PITmode

 offer two functions: selection of operating mode and authorisation control for machine access.



#### PMI

# Operator terminals, PMI

 are equipped with a resistive touch display from 3.5" to 15" for operation and monitoring of technical processes.

Webcode web150439

Webcode web150778

Webcode web150440

# Software



Online information at www.pilz.us

Design, programming, configuration and commissioning can be achieved quickly and simply using Pilz automation software. The easy, user-friendly diagnostics of our automation software guarantee a high level of plant availability. Product-independent tools for use in interactive products are also available to you.







Online information at www.pilz.us

# Calculation software for verifying functional safety

The PAScal Safety Calculator calculates the PL (Performance Level) and SIL (Safety Integrity Level) achievable for safety functions on plant and machinery depending on the components used. The result is verified with the required PL in accordance with EN ISO 13849-1 or SIL in accordance with EN/IEC 62061 and any actions that are required are listed. PAScal supports the VDMA-66413 and Sistema library format. This guarantees that data is displayed in a standardized format across a range of manufacturers. PAScal® has been certified by TÜV SÜD.







### Lockout/tagout documentation software, PASloto

Lockout tagout (LoTo) is concerned with enabling energy and safety-relevant interlocks on the various energy supplies on machines. The software, PASloto, provides support as you document your lockout tagout procedures. PASloto helps you to draw up job descriptions for powering down in the LoTo procedure. You can also document your whole plant simply and quickly with regard to LoTo. With this regulated procedure in the lockout tagout process you save time, money and, last but not least, guarantee higher occupational safety.





Online information at www.pilz.us









Online information at www.pilz.us

# HMI software, PASvisu, for web-based visualization – an overview of all your automation!

PASvisu enables you to perform easy configuration and optimum visualization of your automation projects. So you can achieve a convenient, comprehensive overview of your plant locally and via remote access! PASvisu displays your automation projects in a way that's visually attractive thanks to the most diverse range of style sheets.

# As unique as your requirements: Pilz industry expe

Pilz offers unique industry know-how, built up over decades and still continuously expanded today, that virtually no other company in the world is able to match. Whatever industry you are in, we support you with our structured project management, safety expertise and know-how.



# Robotics – human-robot collaboration. Safety guaranteed!

Pilz helps you to implement safe human-robot applications, using solutions that are tailored to the individual life phases of a robot system.



# Packaging technology – economical and flexible solutions

In practice it comes down to the harmonization of safety and automation, particularly when the machine needs to be fitted or maintained. It's essential to have a safety concept for your packaging machines and to select the right safe sensors, controllers and drives, including the appropriate software for machine diagnostics and maintenance.



# Metalworking/presses – safety-related equipment, upgrade and operation of presses

Reliable safety technology for presses should not only be flexible and powerful, but economical too. We can help you to equip and retrofit your presses safely and guarantee safe operation. As an experienced partner we are there to support you throughout the redesign and retrofit, for the entire life cycle of the machine.

# rtise



# Automobile – safe solutions for the automotive industry

We guarantee the high availability and efficiency of your plants through integrated machinery safety. Our experts will advise you on each individual step of the production process. Whether pressing, body shell manufacturing, paint system or the assembly line.

Pilz has extensive expertise in a wide range of applications. Talk to us about your individual situation.



# Rail and transport technology – industrial safety technology to rail standards

As a company that operates internationally as a technology leader, Pilz has many decades of experience in the field of safe automation. The highly sensitive and heavily safety-relevant railway sector benefits from precisely this experience thanks to the use of proven industrial automation products.



# Wind power -

### safe, efficient automation of wind turbines

Pilz offers solutions for monitoring all the relevant safety functions on wind turbines. Even on a wind turbine, the protection of man and machine is absolutely indispensable. We provide solutions for safe speed monitoring on the rotor and generator shaft, for example.



# Food & Beverage – machinery safety in the food & beverage industry

You need flexible systems in order to produce a wide range of products. That means you need a strong safety partner by your side. We support you in the integration of additional equipment or the upgrading of an existing machine taking all aspects of safety into account.



#### Pilz automation solutions

Pilz offers everything that you need for the automation of your plant and machinery: Innovative components and systems in which safety and automation are merged within hardware and software.

From sensor and control technology to drive technology, the ease of commissioning, operation and diagnostics plays an important role for all components and systems from Pilz.

You benefit from flexible solutions for machines with an elementary function range through to large interlinked plants. With us you can standardize your safety, implement safety and automation in one periphery or find solutions for complete automation.

Pilz solutions are embedded into the relevant system environment – whether a new structure or a retrofit – and are open for a variety of interfaces and functionalities.

# The perfect combination:

# Control technology from Pilz offers numerous application options, including monitoring of electrical



and functional safety, through to complete machine control.

Safe sensors and decentralized modules from Pilz guarantee the efficient, compliant use of plant and machinery in combination with various control systems. Our turnkey systems and universally compatible solutions offer a high savings potential.

#### Drive technology from Pilz

is characterized by drive-integrated safety functions, safe logic functions and the connection of visualization, sensor and actuator technology.

Operator and visualization systems from Pilz complete your plant and machinery.

#### Automation software from Pilz

allows you to quickly and easily implement your planning, programming, configuration, commissioning, diagnostics and visualization.

Pilz offers you automation solutions for the safety of man, machine and the environment.



### AT Pilz Ges.m.b.H. Sichere Automation Modecenterstraße 14 1030 Wien Austria Telephone: +43 1 7986263-0 +43 1 7986264 Telefax: F-Mail pilz@pilz.at Internet: www.pilz.at ΑU Pilz Australia Safe Automation Unit 1, 12-14 Miles Street Mulgrave Victoria 3170 Australia Telephone: +61 3 95600621 Telefax: +61 3 95749035 E-Mail: safety@pilz.com.au Internet: www.pilz.com.au BE, LU Pilz Belgium Safe Automation Bijenstraat 4 9051 Gent (Sint-Denijs-Westrem) Belgium Telephone: +32 9 3217570 Telefax: ±32 9 3217571 E-Mail: info@pilz.be

# BR Pilz do Brasil Automação Segura Av. Piraporinha, 521 Bairro: Planalto São Bernardo do Campo - SP CEP: 09891-000 Brazil

www.pilz.be

Telephone: +55 11 4126-7290 Telefax: +55 11 4942-7002 F-Mail nilz@nilz.com.br Internet: www.pilz.com.br

### CA Pilz Automation Safety Canada L.P.

Internet:

250 Bayview Drive Barrie, Ontario Canada, L4N 4Y8 Telephone: +1 705 481-7459 +1 705 481-7469 Telefax: E-Mail: info@pilz.ca

www.pilz.ca

# CH

Pilz Industrieelektronik GmbH Gewerbepark Hintermättli 5506 Mägenwil Switzerland

Telephone: +41 62 88979-30 Telefax: +41 62 88979-40 pilz@pilz.ch E-Mail: Internet: www.pilz.ch

### CN

Pilz Industrial Automation Trading (Shanghai) Co., Ltd. Rm. 1702-1704

Yongda International Tower No. 2277 Long Yang Road Shanghai 201204 China

Telephone: +86 21 60880878 Telefax: +86 21 60880870 F-Mail: sales@pilz.com.cn Internet: www.pilz.com.cn

### CZ

Pilz Czech s.r.o Safe Automation Zelený pruh 1560/99 140 00 Praha 4 Czech Republic

Telephone: +420 222 135353 Telefax: +420 296 374788 E-Mail: info@pilz.cz Internet: www.pilz.cz

#### DF

Pilz GmbH & Co. KG Felix-Wankel-Straße 2 73760 Ostfildern Germany

Telephone: +49 711 3409-0 +49 711 3409-133 Telefax: E-Mail: info@pilz.de

www.pilz.de

Internet:

Pilz Skandinavien K/S Safe Automation Ellegaardvej 25 L 6400 Sonderborg Denmark

Telephone: +45 74436332 Telefax: +45 74436342 pilz@pilz.dk E-Mail: Internet: www.pilz.dk

#### ES

Pilz Industrieelektronik S.L. Safe Automation Camí Ral 130 Polígono Industrial Palou Nord

08401 Granollers

Spain

Telephone: +34 938497433 Telefax: +34 938497544 E-Mail: pilz@pilz.es Internet: www.pilz.es

Pilz Skandinavien K/S Safe Automation Nuijamiestentie 7 00400 Helsinki Finland

Telephone: +358 10 3224030 Telefax: +358 9 27093709 F-Mail: pilz.fi@pilz.dk

www.pilz.fi

#### FR

Internet:

Pilz France Electronic 1, rue Jacob Mayer CS 80012 67037 Strasbourg Cedex 2 Telephone: +33 3 88104000

Telefay: ±33.3.88108000 E-Mail: siege@pilz-france.fr Internet: www.pilz.fr

#### GB

Pilz Automation Ltd Pilz House Little Colliers Field Corby, Northants NN18 8T.I United Kingdom

Telephone: +44 1536 460766 Telefax: +44 1536 460866 E-Mail: sales@pilz.co.uk Internet: www.pilz.co.uk

#### ID

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0 +65 6839 292-1 Telefax: sales@pilz.sg E-Mail: Internet: www.pilz.sg

#### ΙE

Pilz Ireland Industrial Automation Cork Business and Technology Park Model Farm Road

Cork Ireland

Telephone: +353 21 4346535 +353 21 4804994 Telefax: F-Mail: sales@nilz ie Internet: www.pilz.ie

#### IN

Pilz India Pvt Ltd. Office No 202, Delite Square Near Aranyeshwar Temple Sahakar Nagar No 1 Pune 411009 India

Telephone: +91 20 2421399-4/-5 Telefax: +91 20 2421399-6 E-Mail: info@pilz.in Internet: www.pilz.in

### IT, MT Pilz Italia S.r.I. Automazione sicura Via Gran Sasso n 1

20823 Lentate sul Seveso (MB)

Italy

Telephone: +39 0362 1826711 Telefax: +39 0362 1826755 info@pilz.it E-Mail: Internet: www.pilz.it

#### JP

Pilz Japan Co., Ltd. Safe Automation Ichigo Shin-Yokohama Bldg. 4F 3-17-5 Shin-Yokohama

Kohoku-ku 222-0033 Yokohama

Japan

Telephone: +81 45 471-2281 Telefax: +81 45 471-2283 E-Mail: pilz@pilz.co.jp Internet: www.pilz.jp

#### KH

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0 Telefax: +65 6839 292-1 sales@pilz.sg E-Mail: Internet: www.pilz.sg

#### Headquarters:

Internet:

Pilz GmbH & Co. KG, Felix-Wankel-Straße 2, 73760 Ostfildern, Germany Telephone: +49 711 3409-0, Telefax: +49 711 3409-133, E-Mail: info@pilz.de, Internet: www.pilz.com

#### KR

Pilz Korea Ltd.
Safe Automation
4FL, Elentec bldg.,
17 Pangyoro-228 Bundang-gu
Seongnam-si
Gyunggi-do
South Korea 13487
Telephone: +82 31 778 3300
Telefax: +82 31 778 3399
E-Mail: info@pilzkorea.co.kr

www.pilz.co.kr

#### LA

Internet:

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore Telephone: +65 6839 292-0

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

#### MX

Pilz de México, S. de R.L. de C.V. Automatización Segura Convento de Actopan 36 Jardines de Santa Mónica Tlalnepantla, Méx. 54050 Mexico

Telephone: +52 55 5572 1300
Telefax: +52 55 5572 1300
E-Mail: info@pilz.com.mx
Internet: www.pilz.mx

# MY

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

#### NL

Pilz Nederland Veilige automatisering Havenweg 22 4131 NM Vianen Netherlands

Telephone: +31 347 320477
Telefax: +31 347 320485
E-Mail: info@pilz.nl
Internet: www.pilz.nl

### ΝZ

Pilz New Zealand Safe Automation Unit 4, 12 Laidlaw Way East Tamaki Auckland 2016 New Zealand Telephone: +64 9 6345350

# ΡН

Telefay:

E-Mail:

Internet:

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

+64 9 6345352

office@pilz.co.nz

www.pilz.co.nz

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

### PL, BY, UA

Pilz Polska Sp. z o.o. Safe Automation ul. Ruchliwa 15 02-182 Warszawa Poland

Telephone: +48 22 8847100
Telefax: +48 22 8847109
E-Mail: info@pilz.pl
Internet: www.pilz.pl

#### PT

Pilz Industrieelektronik S.L. R. Eng Duarte Pacheco, 120 4 Andar Sala 21 4470-174 Maia Portugal

Telephone: +351 229407594 E-Mail: pilz@pilz.pt Internet: www.pilz.pt

#### Rι

Internet:

Pilz RUS OOO
Ugreshskaya street, 2,
bldg. 11, office 16 (1st floor)
115088 Moskau
Russian Federation
Telephone: +7 495 665 4993
E-Mail: pilz@pilzrussia.ru

www.pilzrussia.ru

#### SE

Pilz Skandinavien K/S Safe Automation Smörhålevägen 3 43442 Kungsbacka

Sweden Telephone

 Telephone:
 +46 300 13990

 Telefax:
 +46 300 30740

 E-Mail:
 pilz.se@pilz.dk

 Internet:
 www.pilz.se

#### SG

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

#### SK

Pilz Slovakia s.r.o. Štúrova 101 05921 Svit Slovakia

Telephone: +421 52 7152601 E-Mail: info@pilzslovakia.sk Internet: www.pilzslovakia.sk

# TH

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

### TR

Pilz Emniyet Otomasyon Ürünleri ve Hizmetleri Tic. Ltd. Şti. Kayışdağı Mahallesi Dudullu Yolu Cad. Mecnun Sok. Duru Plaza No:7 34755 Ataşehir/İstanbul

Turkey

Telephone: +90 216 5775550
Telefax: +90 216 5775549
E-Mail: info@pilz.com.tr
Internet: www.pilz.com.tr

#### TW

Pilz Taiwan Ltd. 7F.-3, No. 146, Songjiang Rd. Zhongshan Dist., Taipei City 104 Taiwan

Telephone: +886 2 2568 1680
Telefax: +886 2 2568 1600
E-Mail: info@pilz.tw
Internet: www.pilz.tw

### US

Pilz Automation Safety L.P. 7150 Commerce Boulevard Canton

Michigan 48187 USA

Telephone: +1 734 354 0272
Telefax: +1 734 354 3355
E-Mail: info@pilzusa.com

E-Mail: info@pilzusa. Internet: www.pilz.us

### VN

Pilz South East Asia Pte. Ltd. 25 International Business Park #04-56 German Centre Singapore 609916 Singapore

Telephone: +65 6839 292-0
Telefax: +65 6839 292-1
E-Mail: sales@pilz.sg
Internet: www.pilz.sg

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Americas	
Brazil	
+55 11 97569-2804	
Canada	
+1 888-315-PILZ (315-7459)	
Mexico	
+52 55 5572 1300	
USA (toll-free)	

+1 877-PILZUSA (745-9872)

Asia
China

+86 21 60880878-216

Japan +81 45 471-2281 South Korea +82 31 778 3300

#### Australia

+61 3 95600621

# Europe

Austria +43 1 7986263-0

Belgium, Luxembourg

+32 9 3217575

France

+33 3 88104000

Germany

+49 711 3409-444

Ireland

+353 21 4804983

Italy, Malta

+39 0362 1826711

Scandinavia +45 74436332

Spain

+34 938497433

Switzerland

+41 62 88979-30

The Netherlands

+31 347 320477

Turkey

+90 216 5775552

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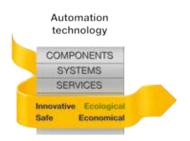
+44 1536 462203

# You can reach our international hotline on:

+49 711 3409-444 support@pilz.com







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