Safe automation for the railway industry

Certified PLC technology for economical solutions
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 29 subsidiaries and branches, as well as 17 sales partners on every continent.

More than 1,700 staff, each one of them an ambassador for safety, make sure that your company’s most valuable asset – your staff – can work safely and free from injury.

Further information: www.pilz.com + Webcode 0837
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Further information:
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Automation solutions from Pilz – at home in every industry.
Industrial safety technology on railways.
Safe automation for the railway industry

Pilz is the right partner for standardised, safe industrial components and systems in railway technology! Many railway applications have already been implemented internationally using Pilz components and systems.

Contents

- Pilz safety solutions – international and proven
- Safety-related applications, solved using automation technology from Pilz
- Safety at level crossings
- Modern control systems support control and safety engineering
- Automation system PSS 4000-R – modules with approval for the railway sector
- Pilz – your safety expert
- A company with over 60 years' experience
- Pilz – a company with tradition

Scan the QR code with your smartphone to find out more about Pilz safety solutions for the railway industry.
Pilz safety solutions –
international and proven

Solutions for the railway industry, especially for signal and control engineering in rail traffic, have been largely of proprietary origin up to now. In other words, the technology has been designed, developed and manufactured specifically for use in rail traffic.

The benefits of standardised, safe automation components that have already proven themselves in industry for decades and their use in safety-related areas for railways are therefore obvious:

- Use has been proven, many times
- Reduced investment and operating costs
- Maintaining the railway’s customary high safety standards
- Tried and tested components and software
- Rapid diagnosis of possible faults
- Low development costs
- Forward-looking and upgradable concepts

Please get in touch with us if you would like more information on this subject.
railwayindustry@pilz.de
Safety-related applications, solved using automation technology from Pilz

Today, Pilz components and control system are used internationally in a variety of applications for the railway industry:

- Signalling systems
- Switchpoint controllers
- Level crossing protection systems
- Track building and maintenance machinery
- Platform door systems
- Control of safety functions on railway vehicles
- Workshops for train maintenance
- Points heaters
Safety at level crossings

Safety has the highest priority in public transport by rail. This applies particularly to level crossings in which railway lines and roads cross. Many level crossings are given technical means for added security because of this.

**Economic modernisation**

Large investments are necessary to provide new level crossing equipment and overhaul the technology on older systems. Modern, economical control systems are therefore in demand as the basis for applications in the railway industry.

Standardised industrial components lower the high investment costs and bring a high degree of reusability by employing modern hardware and powerful software.

**Control and monitoring of:**

- Switching on of flashing lights
- Acoustic warning signals
- Barrier drives
- Control and indicator lamps
- End stops of the barriers
- Switch-on times
- Train detection
- Space monitoring
- Mains and battery voltages
Modern control systems support control and safety engineering

Safety has priority in all signal systems for local and long-distance rail traffic – this applies especially to passenger transport.

Safe and economical
To preserve safety but nevertheless be able to use economical systems, an increasing number of manufacturers of control and safety technology as well as operators of infrastructure systems are installing secure programmable logic controller (PLC) solutions such as the PSS 4000-R.

Wide range of application options
Automation systems from Pilz are employed in applications for tracks and in depots. They are used especially for the secure control of points and signal systems, communication between several railway stations or the coupling of interlockings.

An optimum structuring of systems extending over a large area is possible when combined with decentralised I/O systems. The data transmission is insensitive to interference because of the fibre optic cables (FOC). The automation system is characterised by its adaptability to new safety systems as well as easy integration into existing systems.
Automation system PSS 4000-R – modules with approval for the railway sector

Previous safety solutions in the railway sector have largely used proprietary, specialist technology. The new PSS 4000-R modules with approval in accordance with CENELEC present a real alternative.

Secure use in harsh environments
The modules with -R in the type description are characterised by a particularly robust design, meeting the increased requirements from the railway sector. Additional benefits include intuitive programming with standardised EN/IEC 61131-3 Editors and secure Ethernet-based communication.

Meets the requirements for:
- Ambient temperature: -40°C … +70°C on rolling stock (Class TX in accordance with EN 50155) and in signalling and telecommunications apparatus (Class T1 and T2 in accordance with EN 50125-3)
- Mechanical load due to vibration or shock on rolling stock (Category 1, Class A and B in accordance with EN 61373) and in signalling and telecommunications apparatus (track area 1-3 m in accordance with EN 50125-3)
- Electromagnetic compatibility (EMC) on rolling stock (EN 50121-3) and in signalling and telecommunication apparatus (EN 50121-4)
Pilz – your safety expert

The correct application of standards and directives is absolutely essential today. Operating personnel and users are permanently surrounded by complex technology and simple and safe handling has therefore to be guaranteed to protect people, machines and the environment.

Pilz is a certified and accredited company that has made a name for itself as a safety expert – in part due to its involvement in international standards committees.

A selection of the most important certificates and accreditations:
• Quality Management DIN EN ISO 9001:2008
• Functional safety PSSuniversal TÜV-Süd, Germany
• Functional safety PSS 4000, SafetyNET p TÜV-Süd, Germany
• Functional safety PAS4000 TÜV-Süd, Germany
• GOST; UL
• TÜV Nord certificate for manufacturing sites
• FSM certificate for development
• EMC test laboratory accreditation
• TÜV Süd certificate PSS 4000-R (SIL 4)
• Safe Ethernet, TÜV Austria

The type approval from Germany’s Federal Railway Authority (EBA) for use of the automation system PSS 4000-R in an interlocking connection from Thales as part of the “SPZA” project is pending.

The modular programmable control system PSS 3000 is part of the generic platform for the DB block, which has been granted type approval by the Federal Railway Authority (EBA).
A company with over 60 years' experience

- **1948 – 1959**
  - Founding of a glass blowing workshop in Esslingen
  - Manufacture of mercury switches for industrial applications
  - Development of electronic control systems and low-voltage control gear

- **1960 – 1969**
  - Focal points of product development: relays, control systems and timers

- **1970 – 1979**
  - One of the first German PLC systems

- **1980 – 1989**
  - Market launch of the PNOZ, which quickly became the world’s most widely-used safety relay

- **1990 – 1999**
  - First programmable safety and control system PSS 3000
  - Implementation of the first railway applications using Pilz products

- **2000 – 2009**
  - Freely configurable, modular safety controller PNOZmulti
  - The automation system PSS 4000 consists of hardware and software components, plus the real-time Ethernet SafetyNET p and corresponding network components.

- **2010 to the present**
  - Member of the German Railway Industry Association (VDB)
  - Further development of the automation system for railway applications: PSS 4000-R
  - TÜV approval for railway applications up to SIL 4 (CENELEC)

“Our core competence for over 60 years has been safe automation technology”. Our know-how and our products specially developed for the railway sector and its requirements help us to consolidate our position also in this market. The trust of our clients is our greatest asset.”

Renate Pilz, Managing Partner
Pilz – a company with tradition

Pilz is a leading, industrial automation technology company. As an expert for the safety of man, machine and the environment, Pilz offers customer-oriented solutions for all industries in over 50 countries.

Pilz stands for:

- Competence and expertise
- Personal commitment from our staff
- Flexibility and quality of components, systems and services
- And has done for over 60 years

The heavily safety-relevant railway sector can benefit from the experience of safety experts and from the use of proven industrial automation products. This allows overall economic solutions to be implemented. Safe automation components from Pilz are in international use today in many railway applications.

Pilz products are already being used successfully in applications wherever safety plays an important role:

- Cable cars
- Conveyors
- Amusement parks
- Pressing and forming
- Wind energy
- Packaging technology
- Production plants for the semiconductor industry
- Systems in the steel and aluminium industries
- Robot automation
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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.