Get on track for Rail 4.0

PILZ
THE SPIRIT OF SAFETY

Solutions for railway infrastructure

▶ Safe.
▶ Flexible.
▶ Networkable.

Railway Solutions by Pilz

> " The advantage of the automation system PSS 4000-R from Pilz is that modernising measures don't have to be implemented all at once but instead can be introduced step by step and on a modular basis. Even in combination with relay technology that is still in operation. Furthermore, all of the PSS 4000-R modules that we have deployed for tough everyday use have proven to be extremely reliable. "

Roland Balimann, Technical Director, Intelis SA

Railway
Solutions by Pilz

▶ The heart of our solutions

Automation system PSS 4000-R

The automation system PSS 4000-R is used in a number of railway applications. In combination with decentralised I/O systems, an optimum structuring and networking of systems extended over long distances is possible. Transfer is not sensitive to interference due to the use of fibreoptic cables.

Your benefits at a glance:

▶ **Safe**
PSS 4000-R is certified in accordance with CENELEC and satisfies fire protection requirements to EN 45545. It stands out thanks to its particularly robust design and thus meets the high requirements of the railway sector.

▶ **Flexible**
From a wide range of I/O modules, you can choose those that are necessary for your design. We offer you safe and non-safe I/O modules, both analogue and digital. A subsequent expansion to include additional input and output modules can be performed quickly and easily thanks to the modular design!

▶ **Networkable**
You can easily integrate the automation system into existing systems. Various interfaces are available to you in this regard, which ensures that even with our solution you still remain independent of us as a manufacturer. The automation system PSS 4000-R allows you to connect to the protocols SafetyNet p, ProfiNET, Frauscher Safe Ethernet (FSE) and RaSTA (in preparation).
The usual RJ-45 Ethernet connectors or robust M12 connectors are available as network connection technology.

Webcode:
web196136

Additional information at
www.pilz.com/railway

+ Automation system PSS 4000-R as object controller
The decentralised signal box works with object controllers, meaning that the actuation is situated directly at the track element that is to be controlled. All that is required here is connecting Ethernet and supply voltage to the array elements. Extensive wiring over several kilometres is not necessary. Our system monitors the same safety functions with this application as with a centralised signal box without object controller.

> "We were looking for a powerful and safe yet easy-to-use solution to be able to implement the diverse requirements from Bombardier in an efficient and cost-effective way. We found this solution with the automation system PSS 4000-R!"

Thomas Koch, Product Manager Radio Systems at Schweizer Electronic

+ Retrofit of a signal box

The PLC controller of the automation system PSS 4000-R controls and monitors the active track elements (switches, signals etc.) in a signal box. The safety-related functions include: End position monitoring of the switches, electrical switch locking device, checking signal technology, train detection, train protection system and display of the elements.

+ Securing level crossings

Our solution for railway automation monitors the signal technology of a level crossing, such as the level crossing monitoring signal as well as the signal encoder for road traffic. This guarantees that both the train driver and the car drivers are given a signal that the level crossing is secured. If this is not the case, the train must be stopped.

Railway Solutions by Pilz

You can find an overview of the applications at www.pilz.com/railway

Maintenance and repair
Our portfolio ranges from safe sensor technology for access control and zone monitoring to configurable and programmable safe controllers and on to complete solutions including standard-compliant documentation and commissioning, e.g. for track monitoring. Our service also includes the independent risk evaluation of your plant and machinery in accordance with the applicable standards.

Safe data transfer via block adapter
The block adapter connects two different signal boxes to one another. The role of the automation system PSS 4000-R here is to ensure that the statuses of one signal box are safely transmitted to the other signal box. To do so, it monitors switches and signals in the signal box.

Monitoring of electric locally operated points (LOP)
Our automation system monitors the end position of the switch – using switch position indicators – to ensure that the end position of the switch is correctly displayed for the train driver at the switch position indicator. Our automation solution also ensures that the electric LOP cannot be adjusted as long as there is still a rail vehicle near the electric LOP.

▶ A selection of our references

▶ Safe operation of shunting and main routes

The Swiss railway technology pioneer Intelis SA developed a module for safe processing of shunting traffic. The hybrid signal box for small and medium-sized stations is based on the automation system PSS 4000-R from Pilz. It ensures safe operation with shunting and main tracks.

▶ All signals to green!

Together with VPS Verkehrsbetriebe Peine-Salzgitter GmbH, Pilz implemented a unique remote control solution. The automation system PSS 4000-R was integrated into the existing control infrastructure during ongoing operation. Rail traffic was not affected.

▶ Modernisation of movable railway bridges

ProRail commissioned RailCom with the modernisation of the technical systems of thirteen railway bridges in the Netherlands. Pilz provided support with its comprehensive knowledge and experience, including in the field of engineering and the creation of the required technical documentation.

▶ Safety under high voltage

Following a detailed risk analysis, including validation process, Pilz set up an access control system with RFID badges for testing cages under high voltage. An emergency stop and the coded safety switches PSENcode in combination with PSS 4000-R ensure that the cage is disconnected from the power supply in an emergency.

▶ Trailblazing point setting

Various types of points are now switching safely at the Dolderbahn, operated by Zurich Public Transport (VBZ), and Rigi-Bahnen AG. A complete package that, in the opinion of the client VT AG, Pilz produced highly professionally, with profound specialist knowledge and in a short time.

Railway
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66 Pilz has covered the entire spectrum – from planning, software programming and implementation to final commissioning and approval – in a very professional manner and from a single source. The cooperation was always open and constructive; we felt that we were well looked after. 99

Dietmar Reinecke, Head of Signal Technology, VPS Verkehrsbetriebe Peine-Salzgitter GmbH

> " We have been maintaining a close partnership with Pilz for years. The company has an excellent reputation, and not just in Swiss rail circles. With the rail modules of the automation system PSS 4000-R, Pilz also offers "off-the-shelf" components that have proven themselves in practical railway application. "

Daniel Rufener, Project Manager, VT AG

▶ We are your partner for

Safety experts

Safety is our core competency. No matter whether public transport or private railway, transportation of passengers or cargo – as a customer from the safety-related railway sector you will benefit from over 70 years of experience that we have in safe automation technology. Our solutions have proven themselves in industry and are tried and tested in railway applications. We offer you an approved and reliable safety solution for applications in rail transport that require up to SIL4. Our solution complies with CENELEC standards EN 50121, EN 50126, EN 50128, EN 50129, EN 50155 and EN 45545.
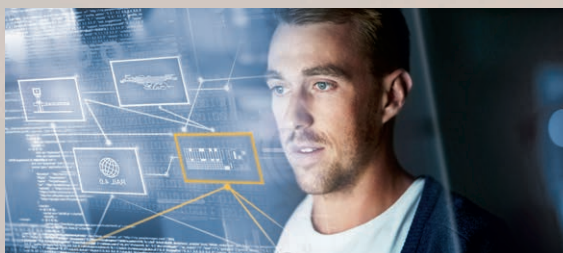
Railway *Solutions* by Pilz

safe railway technology

Solution supplier

Whether you require an individual hardware component or an entire safety solution:
We support you in project planning and engineering. Our flexible automation system is also an ideal basis for new applications of multi-modal transport and in maintenance, e.g. for monitoring of cranes, access controls for company premises or safe control tasks in repair workshops. We offer practical solutions for even complex safety issues in rail transport or rail-related applications. We work with you to create your customised safety concept.

Digitiser

We are one of the trailblazers in the industrial digitisation offensive Industrie 4.0 and incorporate this experience in our solutions for railway automation. In standard applications such as level crossings and as replacement for obsolete relay technology, but also in completely new applications for which you still don't have a solution. Our solutions are flexible and network-able, meaning they can be adapted precisely to your needs.
We support the work of EULYNX, an organisation of European railway infrastructure managers that has taken on the task of developing and providing uniform standards for new modular signal box technology.

▶ Support

Technical support is available from Pilz round the clock.

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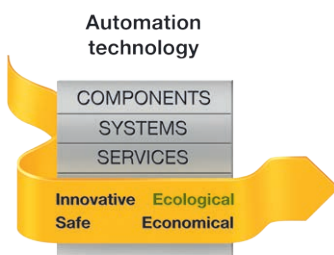**Turkey**
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Pilz develops environmentally-friendly products using ecological materials and energy-saving technologies. Offices and production facilities are ecologically designed, environmentally-aware and energy-saving. So Pilz offers sustainability,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

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Automation technology

COMPONENTS
SYSTEMS
SERVICES

Innovative Ecological
Safe Economical

BLUeCOMPETENCE
Alliance Member
Partner of the Engineering Industry
Sustainability Initiative

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