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Trackguard Simis W electronic interlocking

Safe and economical

Trackguard Simis W offers you innovative solutions

Interlockings have to meet ever increasing demands

The demands being placed on passenger and freight transport by rail are very high today. The railways must run quickly, safely, punctually and economically.
To cope with these demands, the railways require interlocking technology

- which ensures safe operation on the open line and in stations,
- which is so reliable that it guarantees a high degree of punctuality,
- and which operates in an automated way and has a compact design, so that the railways can manage with fewer operating and maintenance staff.

The Trackguard Simis® W (fail-safe microcomputer system made by Siemens for the world market) interlocking system is highly reliable, safe and very powerful. It is at your service as a railway operator in competition with other transport companies.

All the more reason for you to lay the foundation now for successful railway operation in the future – with state-of-the-art, high-performance interlocking technology made by Siemens. Because we know what you expect from a modern interlocking:

- high reliability and availability
- little maintenance requirement
- technology adaptable to future needs
- easy extension and conversion
- low operating costs

Our answer to your demands:
Profit from the advantages of our mature, innovative system which has proven its worth all over the world.

Trackguard Simis W guarantees

- maximum safety (SIL 4)
- high availability (2-out-of-3 configuration)
- high degree of economic efficiency thanks to tailor-made solutions for every s ituation
- problem-free compliance with all railway operator regulations
- greater control distances with distributed equipment
- easy integration of existing subsystems and elements of the outdoor equipment
- the latest technology for all subcomponents
- almost maintenance-free hardware
- compact design
- online and remote diagnostics
- openness to innovations and therefore a secure investment for the future

Safety is a matter of trust

Siemens – your systems partner

Wherever the operation and whatever the operating conditions, railway operators all over the world value the combination of proven and innovative solutions and the know-how of our staff.

You, too, can profit from

- their expertise,
- their experience,
- their innovativeness,
- and our multitude of experts working all over the world in the field of signaling, safety and control systems.

We have been putting our experience to work for your success for decades now – from first beginnings in the field of interlocking technology to our subsequent innovative and consistent developments and, ultimately, to today's pioneering systems. Among them are such modern, high-performance and economical interlocking systems such as Trackguard Simis W – one of the foundation stones for attractive and competitive railway operation.

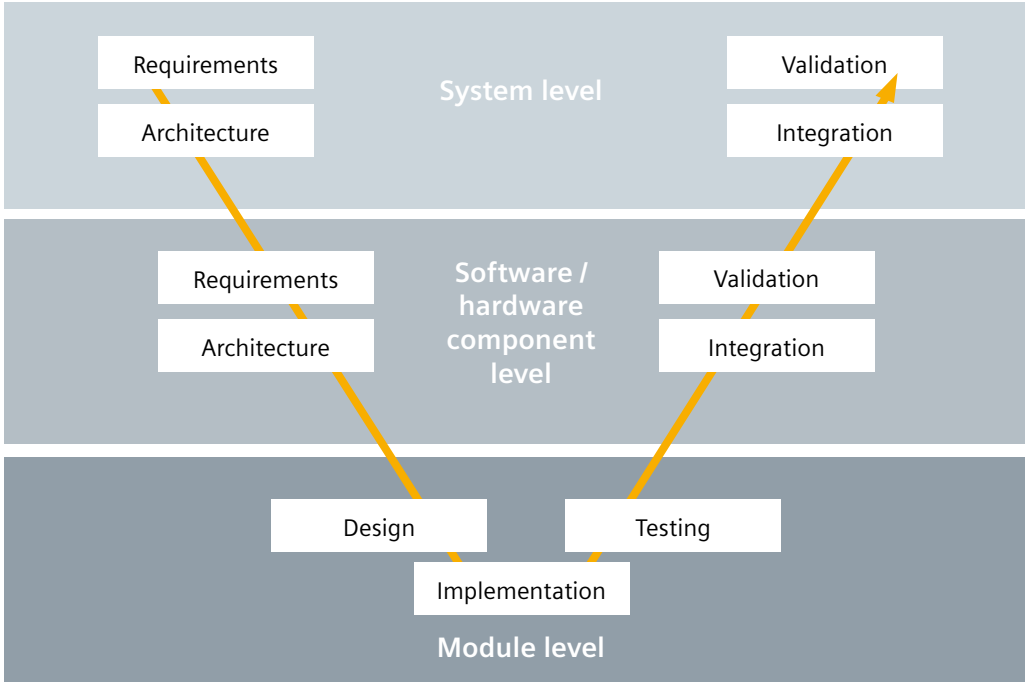
Safety has top priority

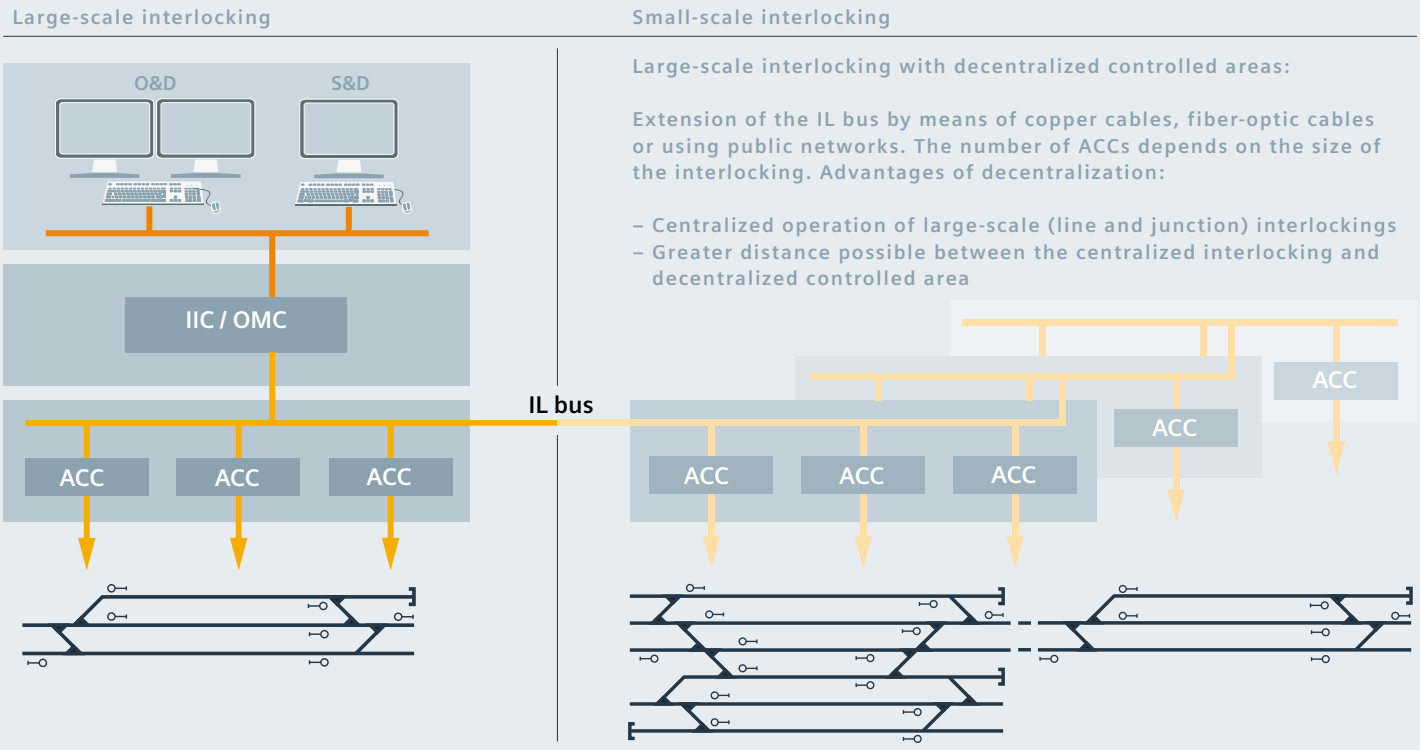
Process and product quality right from the beginning

CENELEC
Having the highest safety integrity level (SIL 4) in accordance with the CENELEC standards, Trackguard Simis W complies with all safety requirements. A documented safety process accompanies the whole life cycle of a product – from the very beginning.

During development of the software, the hardware and the systems, all the process events comply with the relevant CENELEC regulations and standards. A V-shaped phase model is used to illustrate the validated, verifiable and checkable stages of the safety process.

The Simis principle
The basis of all Simis W computers which process fail-safe information (ACC and IIC/OMC functions) is the Simis principle in a 2-out-of-3 configuration.They comprise three identically programmed microcomputers, set up identically, with instruction-controlled synchronism, but independent of one another, whose processing results are compared with one another.





Optimum solutions for every situation

Big or small

Thanks to the modular hardware and software structure of Trackguard Simis W, interlockings – from the smallest interlocking to the largest junction or line interlocking – can be implemented made-to-measure. The only thing that varies is the number of computers for connecting the existing controlled elements.

If necessary, the computers can be placed at a non-central location in order to increase the distance between the interlocking and controlled elements, for example, or to minimize the cost of laying signaling cables.

O&D
Operation and display

S&D
Service and diagnostics

IIC
(interlocking & interface component)
Central interlocking functions

OMC
(overhead management component)
Central interlocking functions

IL bus
Interlocking bus

ACC (area control component)
Signaling logic/control and monitoring

An especially positive feature of Trackguard Simis W is its modular hardware basis (Simis ECC) with the low number of board types.

The outdoor elements can be connected to the ACC via peripheral boards, Ethernet components (Sinet) or ISDN components. Peripheral boards are integrated element operating modules via which the outdoor elements are connected directly to the ACC. If Ethernet or ISDN is used, modular element operating modules located in the outdoor equipment are connected to the field elements.

ECC base frame
(ACC functions)

Hardware optimization with Simis ECC boards

Less is more

Well-packaged: the Simis ECC
Trackguard Simis W uses the Simis ECC in a 2-out-of-3 configuration as a fail-safe computer for both the ACC and IIC/OMC functions.

IIC/OMC computer
The IIC/OMC computer comprises three central ECC-CU boards and two mezzanine module baseboard communication boards. These can be configured for PROFIBUS, IL bus or Ethernet.

ACC computer
The ACC computer comprises three central ECC-CU boards and two communication boards (M modules). Depending on requirements, the other slots of the base frame can be fitted with peripheral boards.

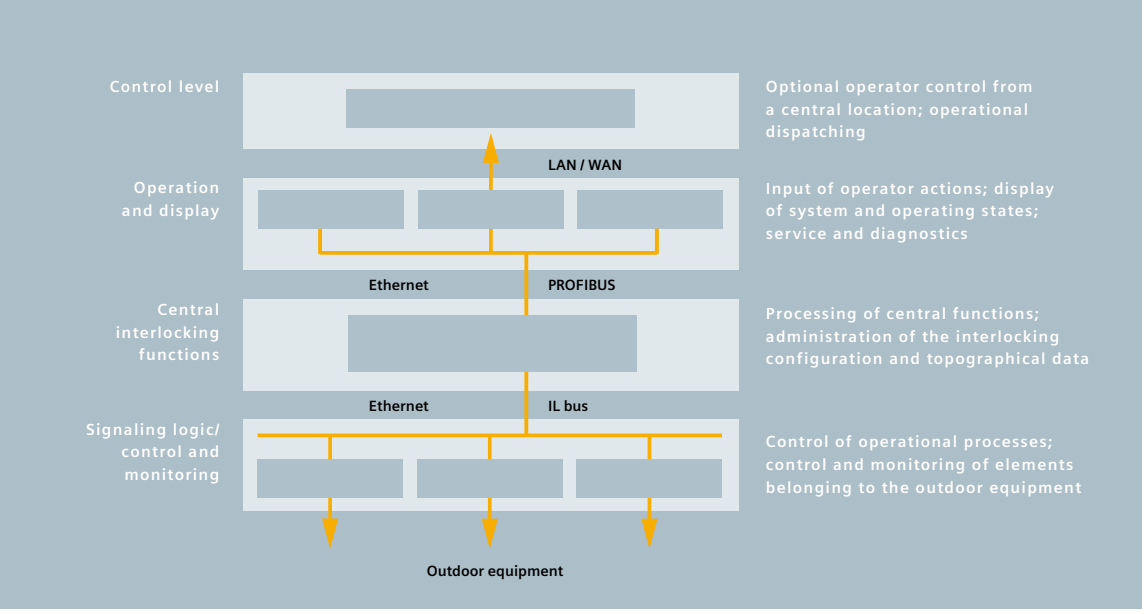
- Inom to connect components within the interlocking building
- Unom to connect components of the outdoor equipment
- Pom for points
- Som for signals

Ucom-I and Ucom-E for connecting decentralized element operating modules such as

- MSTT-Signal/SCM for signals and train control systems
- Trackguard Simis DTS for the transmission of general interlocking information
- Wayguard LCM 200 for level crossings

An extension frame for peripheral boards can be attached to the base frame.

ECC extension frame
(ACC functions)



Structuring of the functions

Simple, clear and easy to understand

Principal functions of the Trackguard Simis W interlocking are central interlocking functions (IIC / OMC) and signaling logic / control and monitoring (ACC). The outdoor equipment elements are controlled and monitored via integrated or modular element operating modules. The interlocking can be operated locally or centrally from an operations control center.

Trackguard Simis W uses standardized interfaces for communication:

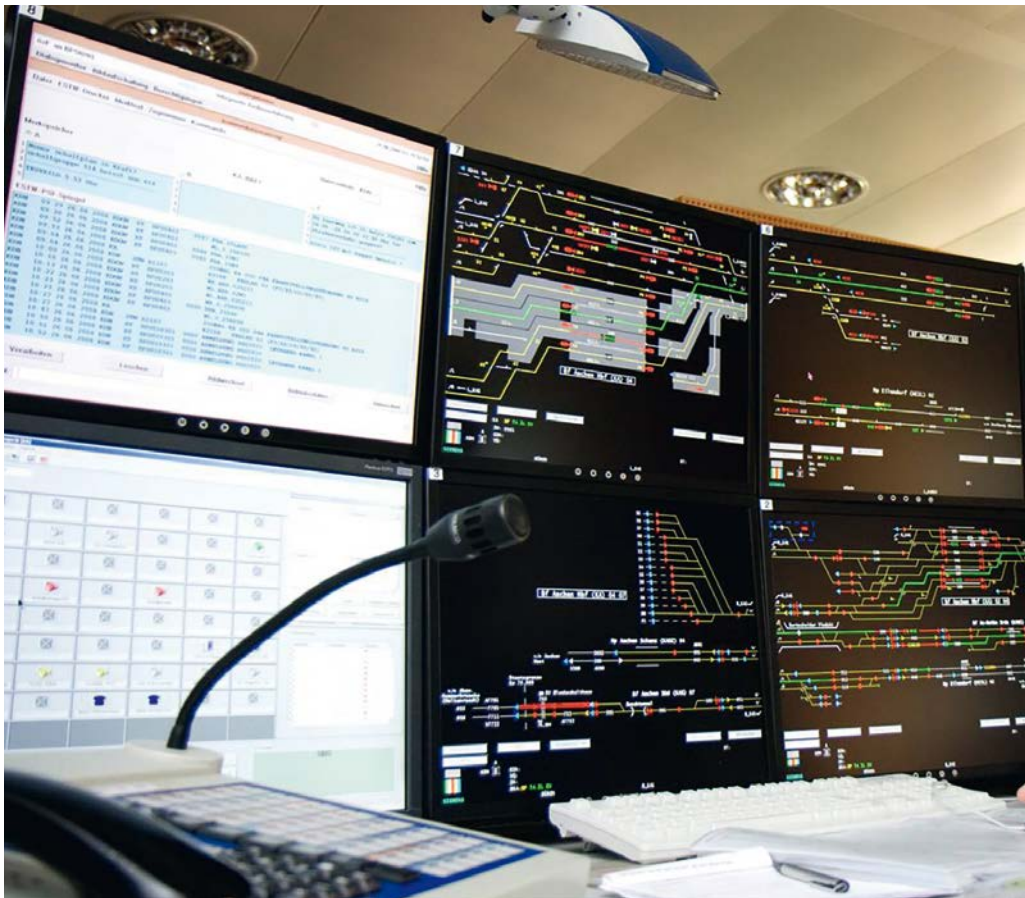
- PROFIBUS or Ethernet connects the IIC / OMC computer to the MMI PCs.
- IIC / OMC and ACC are interconnected via the IL bus and Ethernet. Decentralized ACC computers are connected to the "extended" interlocking bus (copper cable, fiber-optic cable or public networks).

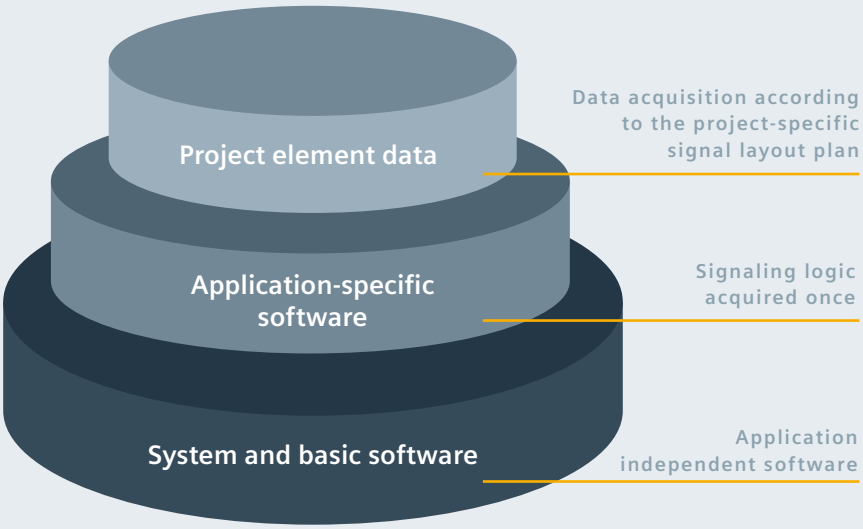
Communication with the RBCs is realized via Ethernet. Coupling of interlockings can be realized via either PROFIBUS or Ethernet.

Simple and easy to use
Trackguard Simis W can work with all kinds of control and MMI systems which have a PROFIBUS or Ethernet connection and can handle the corresponding interface protocols, e. g. Controlguide Vicos® OC 101/111 and Controlguide Iltis.

MMI systems without a PROFIBUS connection can also be connected by means of a protocol converter.

Already existing control systems (also from non-Siemens manufacturers) can be easily connected via the communication interface.

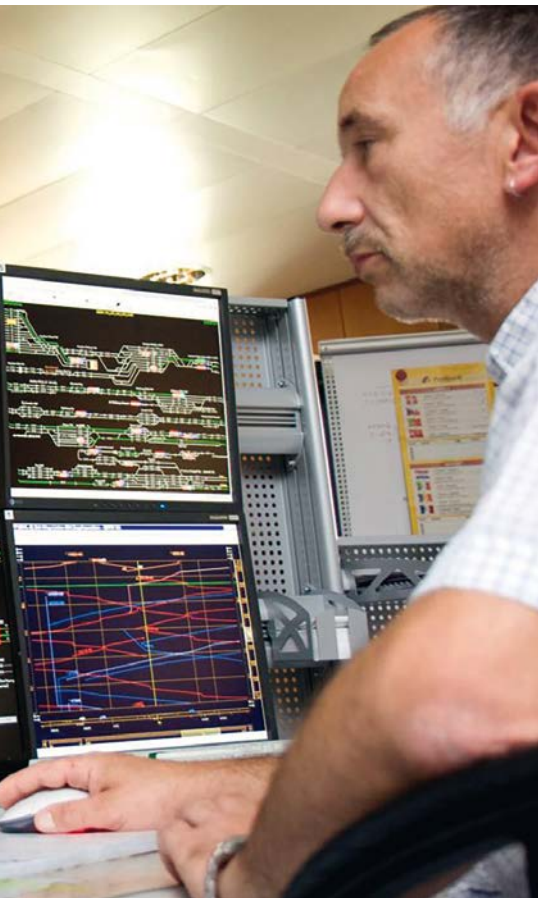




Cost savings with modern tools

Software@Simis W

The Trackguard Simis W software is divided into non-application-specific software (system software and basic software) and the application-specific software to be specially programmed and project element data. This separation of modules means that processing costs for the individual systems can be kept to a minimum.



The application-specific software comprises the railway-specific signaling logic, which is acquired once. Once the signaling logic has been acquired, the individual stations are configured. This provides project element data which describes the topography of the station and the characteristics and adjacent element relationships of the individual components.

References

- Compania Nationala de Cai Ferate (CN CFR), Bucharest, Romania
- HSL Zuid Projectorganisatie, Utrecht, The Netherlands
- Ministry of Railways, Peking, China
- Polskie Koleje Panstwowe (PKP), Warsaw, Poland
- Network Rail, London, United Kingdom
- Schweizerische Bundesbahnen (SBB), Bern, Switzerland
- Slovenske Zeleznice (SZ), Ljubljana, Slovenia
- Zeleznice Slovenskej Republiky (ZSR), Bratislava, Slovakia
- Zeleznice Srbije (ZS), Belgrad, Serbia
- Société Nationale des Transports Ferroviaires (SNTF), Algiers, Algeria
- Transports publics fribourgeois SA (tpf), Fribourg, Switzerland
- Schweizerische Südostbahn AG (SOB), St. Gallen, Switzerland
- ProRail, Utrecht, Netherlands
  DB RegioNetz Verkehrs GmbH (RNI), Chemnitz, Germany
- German Railways (DB AG), Berlin, Germany

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Printed in Germany
PPG032 PA09140.5
Dispo 01000
Order No.: A19100-V100-B988-X-7600

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