



Trackguard Simis IS

The Standard for Individual Operating Conditions

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SIEMENS

For Increased Railway Requirements

Increasing traffic volumes and shorter headways are imposing new requirements on interlocking systems. Safety, availability, degree of automation, remote-controllability and networkability are a few keywords in this connection.

With Trackguard Simis® IS, Siemens offers a compact electronic interlocking with a modular structure which meets state-of-the-art requirements and makes operations management considerably more efficient.



Control centre

For mainline and regional traffic

The Simis IS electronic interlocking is a cost-effective solution for mainline and regional traffic.

Modular structure

Its modular structure enables this new interlocking generation to be adjusted to local conditions and the operational requirements of the respective railway company both simply and fast.

Flexible and cost-effective

In the design of Simis IS, specific attention has been paid to flexible interfaces to both existing and future systems and components.

Thanks to the smart combination of standardised interfaces with flexible software, the interlocking can be exactly tailored to existing requirements by means of parameters. This means that control and monitoring tasks are performed cost-effectively and with a low level of equipment.

Universally operable

Irrespective of whether electric or diesel traction is involved, Simis IS is independent of the type of traction and can be operated under a wide range of very different climatic conditions.

Fail-safe and proven

Simis IS operates according to the proven and fail-safe Simis principle (fail-safe microcomputer system from Siemens). Electronic interlockings equipped with Simis computers have been successfully produced by Siemens for over 20 years.

To date, considerably more than 300 interlockings with Simis computers have been commissioned. Simis IS has been developed according to the highest-level safety requirements stipulated by the European CENELEC standards for railway applications.

Diverse benefits

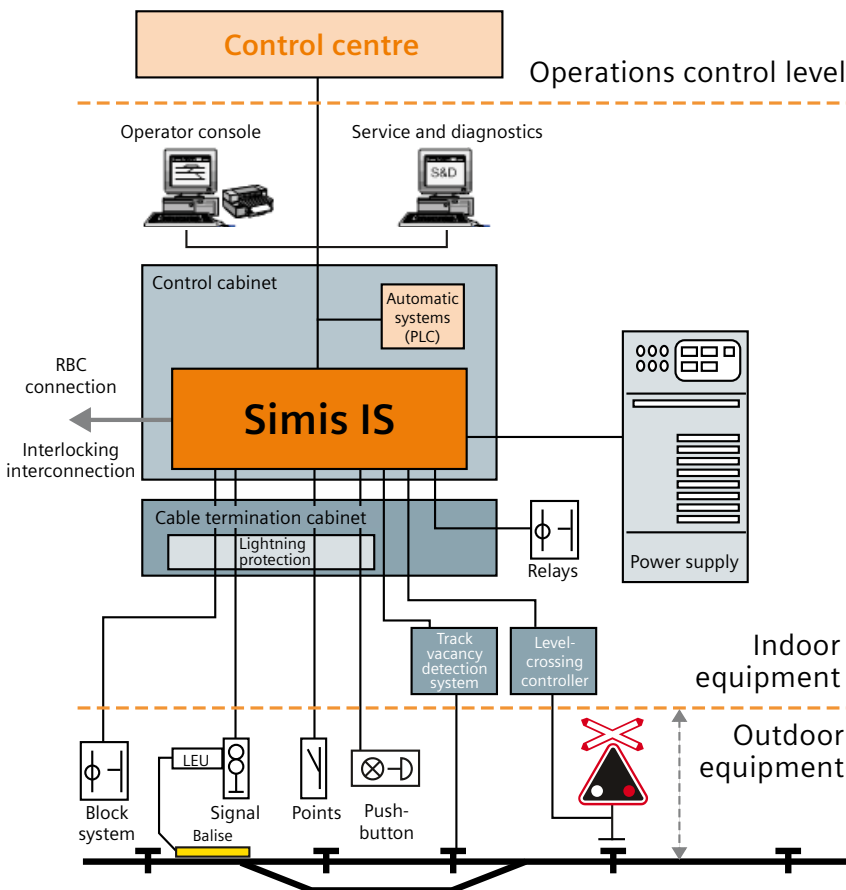
- maximum safety (SIL 4 according to CENELEC)
- high level of availability
- automated operations
- low space requirements
- flexible system interfaces
- low-maintenance hardware
- rapid diagnostics and repairs
- online and remote diagnostics
- ETCS-capable
- generic type approval



LED signal

Eurobalise S21

Simis IS interlocking system



Low space requirements

Simis IS interlockings need little space since they are housed in compact 19" cabinets. This ensures a high level of operator safety and, at the same time, protects components against external impact (e.g. electromagnetic interference). The cabinets are accommodated in existing buildings.

Expandable

Its interface concept means that Simis IS can be altered and extended without difficulty. Hardware and software modifications are possible during short out-of-service periods without interrupting railway operations for long periods of time.

Open for the future

Thanks to the modular design of its computers, the system is optimally prepared for technical refinements and, at the same time, enables existing operational systems to be connected.

The very different systems can be connected to the interlocking computer either directly or via interface converters. For example:

- track vacancy detection systems
- train control systems
- coded track circuits
- block systems
- level-crossing protection systems
- command button cases
- signals and points
- LEUs with Eurobalises
- MSTT Signal with Eurobalise
- RBC (Radio Block Center)
- and much more



Simis IS operator console



State-of-the-art Simis IS technology in daily application in Filisur, Rhetian Railway

Committed to Operational Efficiency

If you compare purchase, operating and maintenance costs, Trackguard Simis IS with its ultra-low values gains top marks. And if you also consider user-friendliness, service life and future-proof application, you will discover that Simis IS combines optimum performance with a high level of operational efficiency – in every respect.

Good features are taken over

Existing components or systems from the indoor and outdoor equipment can largely be taken over.

Low purchase costs

The interlocking can be rapidly installed and cabled. Due to the fact that point machines and signal lamps are switched in the computer, this permits direct cabling between the peripheral boards and the cable termination rack.

Simis IS peripheral boards



Minimum life-cycle costs

A small number of board types incurs lower spare parts and maintenance costs.

High cost-effectiveness

In short, there are different reasons for the high level of cost-effectiveness featured by the Simis IS interlocking:

- cost reduction due to the usage of a standardised system platform
- low space requirements due to a compact design
- minimum stocking of spare parts due to a limited number of boards
- minimised hardware outlay due to the use of integrated peripheral boards
- efficient operation thanks to route coupling interconnection and partial route release



High Level of Convenience in Everyday Operations

With the full range of its benefits being used, the state-of-the-art technology featured by Trackguard Simis IS results in simpler and more convenient operations management.

Flexible and universal

The integration of operating rules and regulations via software parameters ensures short project durations and minimum servicing costs. Later modifications to the interlocking functions can be implemented in next to no time at all. The interlocking table system as a basis for routes – with the possibility of setting up special links to other system elements – offers a high degree of flexibility in implementing your operating rules and regulations.

Fast and efficient for modifications

Existing interlockings of the Simis IS type are particularly efficient when it comes to extensions and alterations. During configuration, modifications can be drawn up at the factory, tested on a test installation and then approved. Innovations are documented and printed out as hardcopies for purposes of review. Modifications to the Simis IS structure can be prepared and rapidly implemented during the alteration phase. Adjustments to the cable system are performed at an early stage. Additional element operating modules or interface boards can be simply inserted into the operational computer.

Expandability

The functionality of Simis IS can be expanded or modified quite easily. Implementation, testing and approval are effected within a short period of time.

If required, new components or systems are connected to the interface board via an interface converter so that no modifications to existing interfaces are required.

Maintenance without problems

Using high-reliability hardware, maintenance work can be kept to a low level. Boards can be withdrawn and reinserted with the power on. This means that the interlocking computer does not need to be switched off and restarted.

Simis IS is supported by an optional PC-based service and diagnostic system. This provides user-prompted online diagnostics and thus enables fast, target-driven troubleshooting on site.

High-performance Standardised Boards

The state-of-the-art compact hardware forms the basis of Trackguard Simis IS. Even for customised solutions, only a few standardised components are required. With regard to the renewal of partial systems, particular importance is attached to compatibility with existing equipment.



Structure and configuration

The main components of Simis IS are the element operating module (EOM) ECCs (Element Control Computer) and the Simis PC system. The EOM ECCs contain the peripheral boards for control of the outdoor components. The hardware core of the EOM ECC works on the basis of the well-proven Simis principle. This hardware core is connected to the Simis PC which is the sequential platform for compute-intensive signalling applications.

Element operating module ECC

The ECC consists of three levels: the power supply frame, the base frame and the extension frame.

- **Power supply frame**

The power supply frame accommodates the power supply boards. Depending on the computer configuration, the power supply frame accommodates two or three power supply boards, each of these boards being responsible for powering one processor board.

- **Base frame**

The base frame contains the hardware core and can accommodate peripheral boards, interface boards or a mixture of the two.

- **Extension frame**

With an extension frame, additional peripheral or interface boards can be used. The base frame and extension frame are linked by connecting cables at the rear.

Hardware core

The processor boards are fitted with powerful, high-speed 32 bit processors. Each ECC has at least two processor boards, which process the same information with clock synchronism. In order to increase availability, an additional processor board can be added to the hardware core to create a 2-out-of-3 configuration. Simis IS continues to operate without interruption in the event of a failure of the processor board.

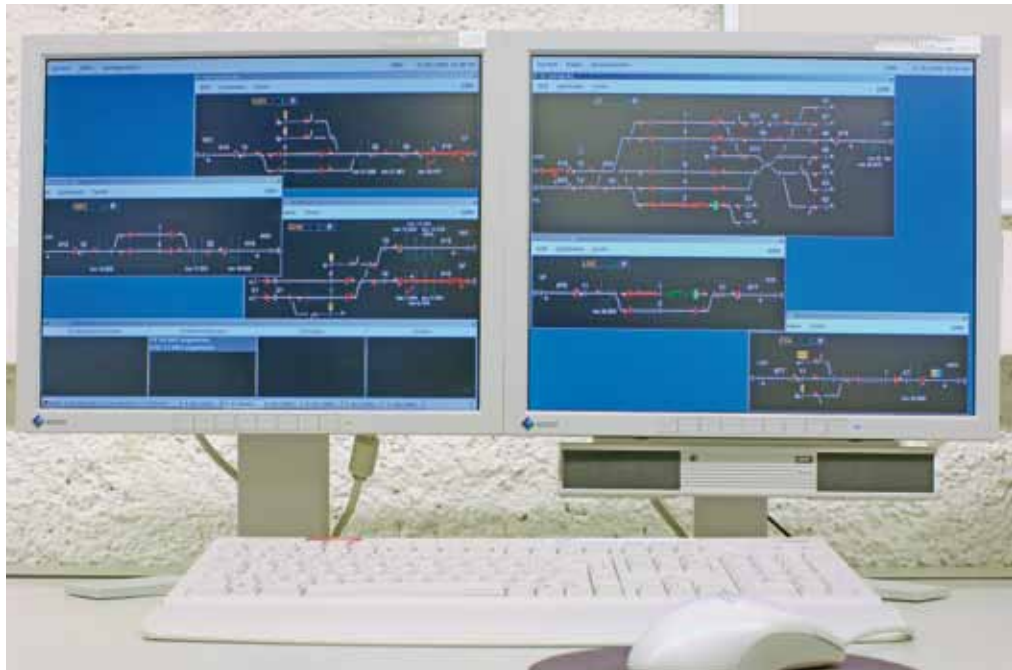
Communications

The communication boards link the individual interlocking computers for the exchange of information. The fail-safety of the interlocking bus is ensured by an error detection procedure. The bus is duplicated for redundancy to increase availability.

Peripheral boards

For the control and detection of points and signals, integrated peripheral boards are used. The power for the connected element is switched on these boards and passed directly to the lamp or point machine.

The signal operating module (Som) is used to activate steady and flashing signal aspects. Main / auxiliary filament switchover is performed by an external circuit directly at the signal. Point machines are controlled and detected by the point operating module (Pom).



Local operator console

Interface boards

The digital input/output operating module (Inom) and the universal input/output operating module (Unom) enable external components or systems to be connected, such as track vacancy detection equipment, block systems, level crossings and numerous other facilities.

Interlocking interconnection

Depending on the interlocking type involved, Simis IS is connected to adjacent interlockings either via a block interface or via a route coupling interface. This route interface is implemented using Profibus or Ethernet. Several Simis IS can be interconnected and installed either centrally or in decentralised mode.

Technical Informationen

Field of application of Simis IS

Railways with AC, DC and diesel traction

EOM ECC

Boards: processor, power supply and peripheral boards such as Pom, Som, Inom and Unom

Simis PC

2x2-out-of-2 computer system based on industrial PCs of diverse design

Simis IS operation area

Stations for mainline and regional traffic with a control distance of max. 6.5 km. With MSTT-Signal System distance up to 10 km are possible.

Computer cabinet

0.6 m x 0.6 m x 2.2 m (or 1.6 m), if required trackside outdoor cabinet; 19" mounting frames, EMC protection

Interfaces

Compliant with Profibus or Ethernet industry standard

Safety

Safety integrity level SIL 4 in line with CENELEC standard

The benefits of Trackguard Simis IS at a glance:

compact, flexible and universally applicable

permits customised solutions

meets your functional and technical requirements cost-effectively

implements interlocking functions in line with the interlocking table principle

simple links to other system elements

operation of future systems and extensions via flexible interfaces

power is switched directly in the computer by compact electronic peripheral boards for point machines and signals

short configuration, installation and testing times reduce purchase costs

connection of a wide range of different operator control systems

trend-setting product combined with reliable partnership

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Bestell-Nr.: A 19100-V010-B050-X-7600 HTS 9041/210

Subject to change

