



GREATER EFFICIENCY AND SAFETY IN SHUNTING AREAS

Trackguard Cargo MSR32 RaStw

SIEMENS

Automation of shunting operations with the MSR32 system

Trackguard Cargo MSR32 – intelligent rail automation through a modular system concept

The Trackguard Cargo MSR32 RaStw is a module of the MSR32 system for the automation of train formation yards.

With Trackguard Cargo MSR32 RaStw, optimized marshaling operations with a high level of efficiency are possible. This marshaling yard interlocking type is used in shunting areas without a hump. Examples are:

- Secondary areas in stations
- Arrival and departure zones in sorting yards
- Stabling sidings for empty passenger trains
- Tracks inside sheds and service depots

Marshaling operations are dispatched and controlled from a central operator console (MMI) and performed using protected shunting routes. Depending on the operational tasks, this MMI may be located with the dispatcher of the shunting area, the signalman (central operator) or at some other appropriate site.

Trackguard Cargo MSR32 RaStw can be combined with the Yard Management System (YMS), Switchguard DPC and the MSR32 hump control system for complex sorting yards. Interfacing options exist to systems for dispatching, control and status monitoring (doors, in-track equipment) and adjacent interlocking systems for cross-interface operation.

Benefits of the MSR32 system family

- Modular, open microcomputer system for a wide variety of shunting tasks and yard configurations
- Implementation of all operating processes in shunting areas and all shunting processes in sorting yards
- Various shunting areas with different operating and shunting processes, thanks to a standardized system platform
- Step-by-step extendibility to meet growing requirements
- High economic efficiency owing to a reduction in marshaling costs per wagon
- High performance due to shortening of the rolling stock transfer times
- Very high marshaling quality through reliable implementation of shunting processes
- Integration into modern transport chains (cargo management system)
- Installation, modification and commissioning work on systems while in service without any significant operational disruptions (no track possessions)
- Low maintenance and repair requirements
- Individual or turnkey technical solutions from planning to implementation

Based on these benefits, the Trackguard Cargo MSR32* RaStw marshaling yard interlocking system component offers an optimal basis for automation in all shunting areas.

*Approved in line with AK4 / SIL 2 (EN 50126, EN 50128, EN 50129)



Modern operations management in train formation yards and shunting areas with a high level of efficiency and safety is made possible by optimal technical solutions based on extensive experience in the automation and protection of rail operations. Highly available technical equipment such as point machines, signaling systems, control and display equipment and a microcomputer system configurable to specific requirements are the basis for success. The MSR32 system family from Siemens permits economical operations management with a high level of reliability and safety.

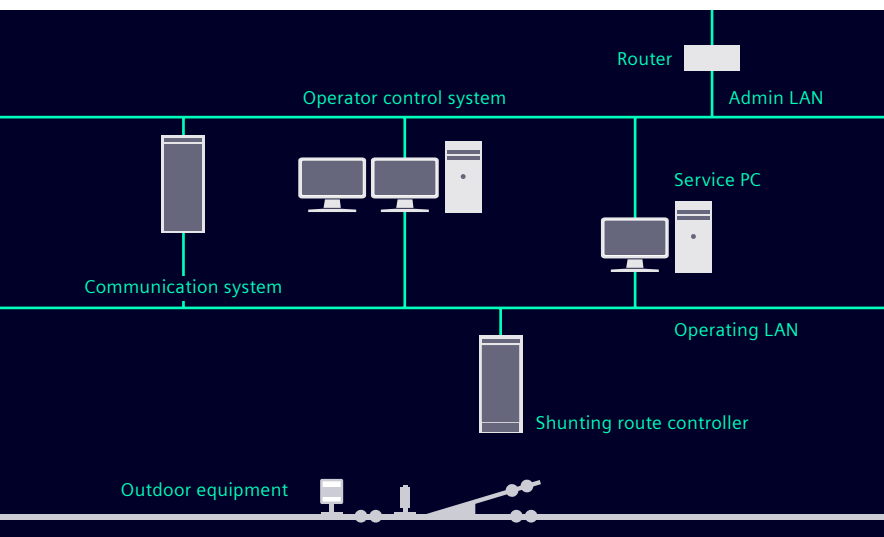
Trackguard Cargo MSR32 RaStw marshaling yard interlocking

Functionality and design to a high industrial standard

The Trackguard Cargo MSR32 RaStw marshaling yard interlocking is based on the MSR32 microcomputer system for marshaling equipment. It has a modular control platform and is designed for the diverse tasks in marshaling operations.

The major features are:

- Consistent system architecture with the fullest possible application of standard technology modules from industrial automation
- Modular structure with networking via a field bus
- Installation of the indoor equipment in a module building or existing buildings (accommodation in a module building enables in-factory prefabrication)
- Arrangement of the computer controller and interface modules for points, signals and wheel detectors in control cabinets of the indoor equipment
- Cable termination with lightning protection modules for electronic circuit boards, lightning and overvoltage protection against induced overvoltages from the outdoor equipment
- Uninterruptible power supply
- Ergonomic MMI with a Windows-based graphical user interface (mouse control), window for messages and special operator actions, support by means of online help functions
- Archiving – all the data generated by the process (process signals, operator actions and responses) is stored in a logging system with the date and time, so that all the activities of the controllers can be re-examined later and preventive maintenance work performed
- Service and diagnostic PC for displaying the process messages online, editing and displaying the archived data and outputting statistics (this is usually installed in the computer room and can also serve as an emergency MMI for the interlocking)
- Integration into the overall network as a controller for marshaling operations as part of operations management by means of interfaces to dispatching systems and adjacent interlockings via configurable interfacing options
- Integration and monitoring of peripheral components and systems, such as doors, outdoor cleaning facilities, train stops, etc. via configured reaction-free interfaces and circuits
- Use of standard rail automation components (point machines, signals, wheel detectors) for the outdoor equipment



Economically efficient rail operations with Trackguard Cargo MSR32 RaStw

Efficient, safe and flexible

Functions of Trackguard Cargo MSR32 RaStw

Basic functions

- Signaled working in shunting areas using protected shunting routes
- Track vacancy detection by means of axle counting circuits
- Protection against conflicting shunting movements by means of flank protection points and monitored signals at danger
- Signal protection by means of color light signals for shunting movements
- Derailers to provide additional protection in particular areas
- Selection and setting of shunting routes on an MMI for marshaling yard interlockings through object oriented operator control by computer mouse
- Reverse moves with remainder route release
- Relief operator actions in the event of a fault

Extended standard functions

- Local area and route interfacing to adjacent interlockings
- Integration and monitoring of other technologies, such as train stops, door controllers, etc.
- Integration of train describer systems for entering and stepping train numbers
- Complete and long-term logging and archiving of all operating and incident data
- Analysis of the archive data by remote diagnostics to assist maintenance and repair
- Emergency operator control on the service PC



Control and display equipment

Operator control of the interlocking is from a central MMI. This generally comprises an operator PC with one monitor each for the track diagram and an overview with the input options and message window.

Depending on the yard topography, the MMI can be equipped with additional monitors for displaying the track layout.

All the standard and relief operator actions are performed on the central MMI. The shunting routes are set in the track diagram very simply using a mouse (object-oriented operator control). Special states are also indicated by audible alarms.

The MMI can be freely positioned in line with operational requirements. The installation of local control consoles, from which, for example, permission can be granted for specific actions, is also possible.

Shunting route controller

The shunting route controller, together with the communication computer, forms the heart of the interlocking. This is where all the functions are executed and monitored. The basic version is implemented using individual computers. To provide increased availability as a dual-computer system, a variant featuring redundancy is also available.

Controllers for points, signals and wheel detectors

Points, signals and wheel detectors are controlled without any interaction via the elements downstream of the shunting route controller.

For connection to the shunting route controller, a field bus is used. The field element controllers are standardized and modular in design and can, if necessary, be installed at a separate location from the shunting route controller.

Service

An optimal operational disturbance management facility offers the operator and maintenance staff a complete overview of the entire state of the yard. The maintenance staff can obtain additional information and perform inputs. The service PC can also be used as an emergency console in the event of a failure. In addition, remote interrogation and remote diagnostics are possible on the service PC.



Planning – construction – service

Reliable partnership from the word go

Our services:

- Interactive analysis of demands and local consultation
- Operation simulation with suggestions for optimization, detection of problem locations, optimization of locomotive deployment, wagon dispatching, operations control and maintenance staff
- Professional project management
- Customization and extensions based on individual demands
- Training
- Assembly and pretesting of the interlocking in Braunschweig (testing using operation simulators)
- Installation and commissioning
- Operations support in the start-up phase
- Servicing / maintenance / support (hotline and remote diagnostic PC) operations management

Our success factors:

- Customer proximity
- Technical competence for more than three decades in the implementation of marshaling yards
- High degree of flexibility

- Outstanding quality to DIN ISO 9001
- Mature technology (used in many marshaling yards in Europe)

Its wide functionality and flexibility, excellent quality, expert service, and presence in the world market are factors that show that MSR32 is a powerful, reliable control system for automating shunting areas and marshaling yards.

Our many decades of experience in the field of train formation have played a major role in development of the Trackguard Cargo MSR32 RaStw marshaling yard interlocking.

The entire control system has been proven in the field and is currently being used in various variants by a wide range of railway authorities throughout Europe.

As a result of the great flexibility of the Trackguard Cargo MSR32 control system, there are no limits to its application worldwide. The economic efficiency and performance of the facilities in use testify to the successful application of this system under harsh marshaling yard conditions.



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