SIEMENS

Clearguard ACM 200 Axle Counting System

Smart Track Vacany Detection for Cost-effective Rail Services

Clearguard ZP D 43 (track)

Terminal Box (track)

The Clearguard ACM 200 electronic axle counting system is based on the tried-and-tested Trackguard Simis (fail-safe microcomputer system from Siemens) safety principle and has been issued with a system-independent approval.

This axle counting system has been developed in line with the European CENELEC and is based on current hardware and software standards.

Applications

- Main and branch lines, station areas, switches
- Single- and multiple-track lines
- All types of traction
- All common car types
- Track sections at any length
- Train speeds up to 400 km/h (250 mph)

System Benefits

- Connection to electronic and relay interlockings
- HTML communication for effective configuration, logging and diagnostics
- Modular, compact hardware
- Clearguard ZP D 43 counting heads

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The launch of smart track vacancy detection

The Clearguard ACM 200 Axle Counting System

Track vacancy detection creates the basis for rail automation. A track vacancy detection system supplies the information about whether a track in a particular section is clear or occupied, thereby permitting safe, trouble-free and efficient operations management.

Siemens has developed a new generation of track vacancy detection systems that utilize an intelligent module system configuration using Ethernet.

The Clearguard ACM 200 axle counting system is made up of maintenance-free ACM 200 modules, which are programmed using an ID plug and connected to the axle counting heads of the Clearguard ZP D 43 via an f1 / f2 interface which combines frequency and amplitude modulation.

Low Initial Costs

Track vacancy detection applications for individual operating concepts can be implemented quickly and economically using Clearguard ACM 200. Whether in a centralized or decentralized configuration, the features
- modular system architecture
- only one standard module
- standard Ethernet bus
- optimized system configuration
- low-cost wheel detector and
- minimized building space requirements

make for an extremely cost-effective system.

High performance and Availability

The Clearguard ACM 200 module can monitor two track sections. Each module has its own IP address for communication and operator control. Each module is thus addressable via Ethernet. This creates high system transparency and offers advantages for achieving the maximum possible availability of the track vacancy detection system.

Programming via ID Plug

The Clearguard ACM 200 modules are equipped with a programmable plug element (ID plug) with its own software. The configured data can be transferred to a replacement ACM simply by remo- ving and then reinserting the ID plug.Thus, faults can be quickly rectified and downtimes minimized.

Cost-effective Maintenance

The highly dependable and maintenance free Clearguard ACM 200 hardware ensures a low maintenance outlay and low life cycle costs. Because all the track vacancy detection applications are implemented using a single module type, system configuration is easy and fewer spare parts have to be stocked.

Intelligent Diagnostics

The ability to communicate with the integral website (IP address) allows remote diagnostics via a network (internet or intranet) from any location at any time. The integrated website enables the current status information to be requested.

Smart Platform for Effective Configuration and Speedy Installation

Safe, Reliable

Clearguard ACM 200 was developed in accordance with the safety requirements of the European CENELEC standards EN 50126, EN 50128 and EN 50129 and conforms to the highest safety integrity level, SIL 4.

The modular architecture of the Clearguard ACM 200 track vacancy detection system can be tailored to individual customer requirements. The required number of Clearguard ACM 200 modules depends on control functions required. The Clearguard ACM 200 axle counting system offers smart track vacancy detection for the cost-effective implementation of individual operating concepts.

The track based equipment consists of Clearguard ZP D 43 counting heads that detect the passing wheels. The pulses are transmitted via a two-core trackside cable to the Clearguard ACM 200 axle counting system installed in the interlocking building. The Clearguard ACM 200 modules perform the following process steps:

- Evaluation of the signal pulses trans- mitted from the wheel detection components
- Comparison of the number of axles entering a track vacancy detection section with the number of axles leaving it
- Monitoring of the track vacancy detection sections and transmission of clear or occupied indications to the interlocking
- Optional transmission of sensor and /or block information via ACM–ACM Ethernet communication.

Modular Hardware Architecture

For the configuration of an axle counting system, one or more Clearguard ACM 200 modules are connected to an Ethernet network via switches. The switches and power supply modules are standard automation modules which are available worldwide.

The Clearguard ACM 200 module has a robust metal housing and can be quickly installed by simply locking it into position on a mounting rail. This type of installation reduces commissioning times and installation costs. The consistent use of only one module type reduces hardware costs as well as expenses associated with stocking spare parts.

Easy Module Replacement

A Clearguard ACM 200 module can be replaced in the energized state; it is no longer necessary to switch off the system components and interrupt operation.

The data configuration for the Clearguard ACM 200 modules is done via a graphical user interface on an integrated website in the module. The data is stored on a programmable ID plug that can, if necessary, be removed and plugged into another Clearguard ACM 200 module.

The graphical user interface, with its user-friendly display, provides optimal support for all operational, service and maintenance tasks. Status and indication information are automatically and cyclically updated to provide information that can be displayed, for example:

- "Clear" or "occupied" for the two track vacancy detection sections of the Clearguard ACM 200 system
- Number of counted axles
- Status of the Clearguard ZP D 43 counting heads

Status information and stored log files can be viewed in the form of graphs and data lists. LED indicators on the Clearguard ACM 200 module permit simple diagnostics – even on site.

The concept of the Clearguard ACM 200 permits easy extension and modification.

Hardware replacement and extension or configuration updates can be carried out within a very short period of time. It is not necessary to interrupt rail operation.

Dry-Contact Relay Interface

For the connection to other interlockings or subsystems, the Clearguard ACM 200 uses a dry-contact relay interface that allows flexible adaptation to a wide range of operating conditions. Existing installations can therefore be cost-effectively upgraded, extended or optimized.
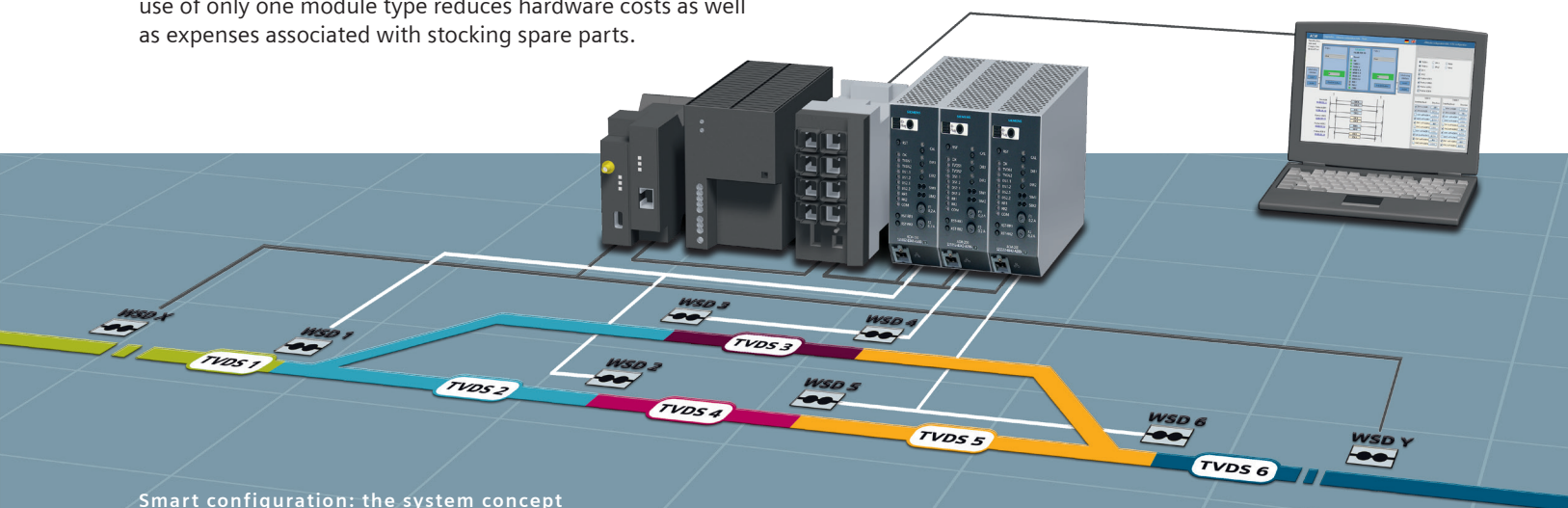
Smart configuration: the system concept

The information in this document contains general descriptions of the technical options available. The required features should therefore be specific in each individual case at the time of closing the contract. For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action and integrate each component into a holistic, state-of-the-art security concept. Third-party products that may be in use should also be considered.

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