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Trackguard Westrace Mk II



Flexible safety processor



Trackguard Westrace Mk II, the new generation of the best-selling vital logic controller

Trackguard Westrace is a highly flexible, modular vital logic processing system that has already been proven in over 1,200 applications worldwide. With straightforward configuration using ladder logic to deliver almost any vital functionality, Trackguard Westrace offers real benefits to railway authorities in terms of cost of ownership, capability and flexibility. Trackguard Westrace Mk II is the exciting new evolution of the system, bringing all the previous benefits but with even better processing power, I/O options, maintainability and availability than before.

Versatile and dependable

Trackguard Westrace Mk II can be used as a stand-alone system or interface to a wide range of equipment – including existing interlockings. Typical applications include simple, medium-sized and complex interlockings, radio block systems, trackside control – and provision of vital functionality in centralized traffic control systems.

The system offers a unique flexibility of application, supporting both centralized and distributed architectures, as the I/O can be either located with the interlocking processor, or distributed around the railway as appropriate.

Trackguard Westrace Mk II is designed to use standard Ethernet communications systems to provide conveniently scalable versatility, whilst maintaining safety and enhancing reliability.

Trackguard Westrace MK II's vital processors are built up from a range of compatible modules which communicate together over a fast serial bus. Using Siemens' computer-based data and configuration management systems, the system can be quickly programmed for its specific application. The range of modules available and the flexibility allowed by our programming approach are key reasons behind the success of Trackguard Westrace to date.

SIL 4 safety certification

Trackguard Westrace Mk II fully complies with all the requirements of CENELEC SIL 4 certification, and uses a 2-out-of-2 safety architecture for all modules.

Each module continually checks its own operation, and, in the event that an unexpected event occurs, it can shut itself down without affecting any other modules.



Flexile architectures

Trackguard Westrace Mk II makes use of highly flexible network-based communications to allow a wide variety of architectures to be implemented. Simple “end of siding” controllers can be created using two or three modules, or complex station layouts can be signaled using an array of Trackguard Westrace Mk II object controllers connected to a central interlocking processor. The decision to use centralized or distributed, direct-fed or object controlled-based systems is not limited by the interlocking, allowing the applications engineer to use the optimum solution for each installation.

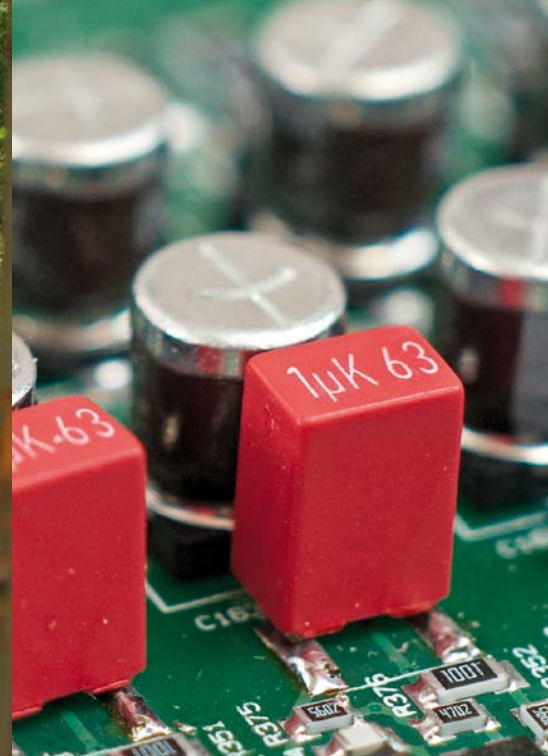
Selectable hot-standby functionality

Trackguard Westrace already has an impressive record of availability in service. Mk II takes this success yet further by adopting an architecture that ensures that failure of one I/O module does not cause failure of the entire interlocking, and allowing fully selectable hot-standby functionality.

Processor modules (PM) may be duplicated if necessary, with both modules in the same rack, operating in true hot standby. If one PM fails, the system automatically switches to the control of the standby unit.

I/O modules may also be duplicated for key railway functions as required. Most I/O modules in the system can operate as a hot-standby pair with another module. No additional external circuitry is required; inputs and outputs of duplicated modules can be wired together without the need for external relays. An installation can contain both duplicated and non-duplicated modules as determined by the designer in order to meet the specific availability needs of railway authorities.

In the event that any module should fail, it can be “hot-swapped” without needing the system to be powered down or re-started.



Increased performance – increased railway capacity

Trackguard Westrace Mk II uses a range of modern techniques that allow key features of previous generations of Trackguard Westrace to be maintained, whilst adding benefits such as significantly increased performance. For example, the I/O modules make extensive use of field-programmable gate array (FPGA) technology to allow for faster processing than has previously been possible.

The new PM has in excess of four times the logic processing capacity of the previous vital logic module, which was already a class leader. It integrates full network communications and diagnostics capability on a single board, reducing the physical size of the system.

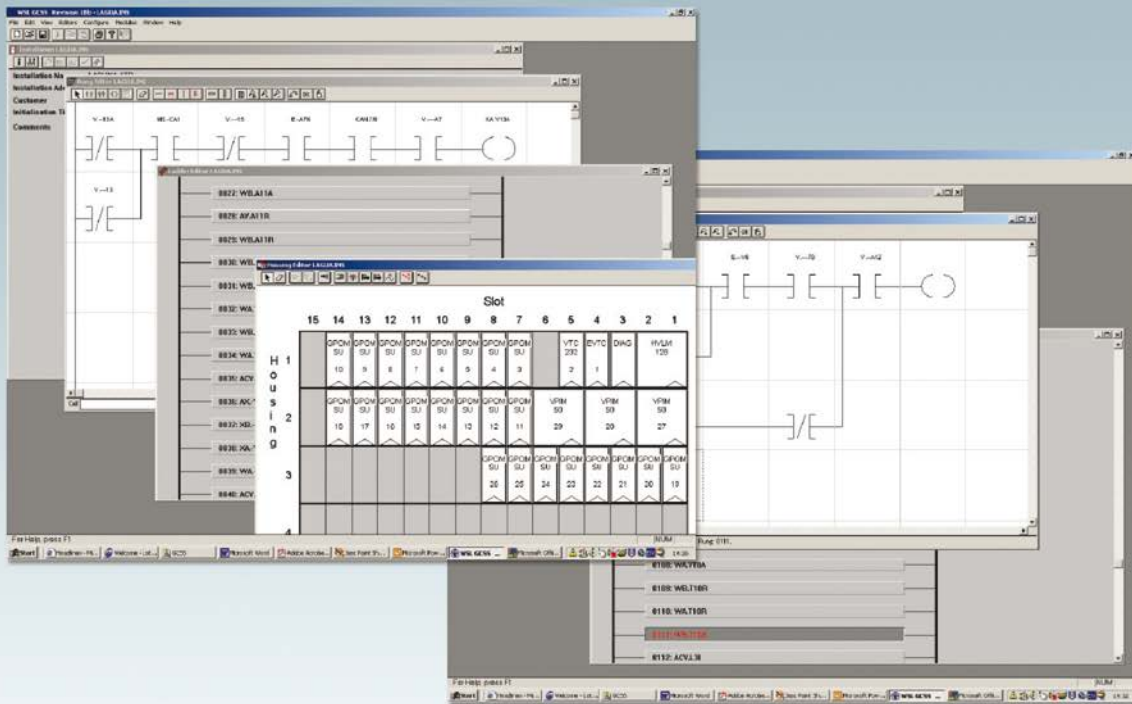
Up to 126 I/O modules may be used in each Trackguard Westrace Mk II installation – an increase of around four times compared to the largest Trackguard Westrace systems already in use. This means that one Trackguard Westrace Mk II system can control a large area of railway with processing power and I/O capacity to spare.

Protection and filtering functionality is provided within each I/O module; no external modules are required.

Connectivity – a key feature of Trackguard Westrace Mk II

Each PM provides duplicated network links which use the industry-leading WNC protocol to support up to 128 communications sessions operating safely over standard Ethernet technology. This allows rapid interconnection with devices such as ATP processors and ETCS radio block centers.

As with previous generations of Trackguard Westrace, Mk II is ideally suited for connection to existing interlockings, allowing a rapid and low-risk migration path for railways needing to increase capacity and capability without affecting



Safe, flexible and fast system configuration

Trackguard Westrace Mk II

operational service.

Simple programming – ensuring safe, flexible and fast system configuration

Trackguard Westrace is programmed in ladder logic, using a PC-based graphical configuration subsystem (GCSS) and graphical simulator (GSIM) software, which allows engineers to easily configure, check and test each application in the office before installation on site.

The Trackguard Westrace template tool offers significant improvements in efficiency of data production. Application engineers can draw up “standard circuits” in ladder logic data and store them in a closely controlled template tool. Implementation of design then simply involves data production engineers “cutting and pasting” logic from the template and filling in geographical data. System configuration ensures that, once agreed by the customer’s engineers, the template cannot be changed without re-approval.

Applications

The processing power and robust, reliable performance of Trackguard Westrace has been proven in extreme conditions and demanding situations, from Australia to Norway and from high-intensity metros to long-distance, heavy-haul lines.

The system has been integrated with existing infrastructure without disruption, and designed with future expansion in mind. It has proved highly reliable with no downtime since its commissioning in 1998. Meanwhile, maintenance and operation costs have been reduced, and safety standards improved.

Trackguard Westrace Mk II – evolution of a best seller

Trackguard Westrace Mk II builds heavily on the hugely successful foundation of Trackguard Westrace vital processing, using latest techniques and technology to provide railway authorities with a highly flexible, economical and powerful solution to allow them to meet their customers' requirements.

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