



## ControlSafe<sup>™</sup> Platforms

### SIL4 Certified COTS Fail-Safe and Fault-Tolerant System for Train Control and Rail Signaling Applications

#### DELIVERING FAIL-SAFE SYSTEMS FOR CRITICAL RAIL SAFETY APPLICATIONS

Leveraging over 30 years of expertise in developing highly reliable and available embedded computer systems, Artesyn Embedded Technologies is a premier supplier of commercial off-the-shelf (COTS) fail-safe and fault-tolerant computer systems to rail system integrators and rail application providers.

- Highly integrated SIL4 COTS platforms
- Designed to deliver platform hardware availability of six nines (99.9999%)
- Modular, scalable and suitable for both new deployments and update projects
- Innovative data lock-step architecture allows seamless technology upgrades
- Hardware-based voting mechanism maximizes application software transparency
- 15 years planned product life and 25 years of extended support and service available
- Backed by a global service organization
- Rugged design compliant with IEC 61373 and EN 50155
- Common platform to enable various wayside and carborne applications



## SAFETY

Certified by TÜV SÜD, one of the most trusted certification bodies worldwide, Artesyn's ControlSafe™ platforms are designed as a common platform to enable various wayside and carborne applications by meeting a series of stringent rail standards and specifications, including EN 50126 for reliability, availability, maintainability and safety (RAMS) processes; EN 50128 for safety-related software; and EN 50129 for safety-related electronic systems. The field-proven VxWorks 653 operating system from Wind River provides safe partitions for customer applications.

## TIME-TO-MARKET

Artesyn's ControlSafe platforms provide an application-ready safety platform including all necessary supporting evidence, significantly simplifying the certification your end solutions for implementation in a SIL4 application environment. Rather than designing and building a core safety voting and processing engine from scratch, adopting ControlSafe platforms enables you to effectively reduce cost and risk by leveraging a SIL4 COTS platform, and therefore substantially accelerate time-to-market.

**Leverage over 30 years  
of expertise in  
developing highly reliable  
and available embedded  
computer systems**

## FUTURE-PROOF

ControlSafe platforms are modular, scalable and designed to seamlessly accommodate additional I/O interfaces as well as new processor architectures that will be required throughout the product life cycle. Thanks to the innovative data lockstep safety architecture, the ControlSafe platforms can be implemented using modern high-performance processors. Hardware-based voting makes it easy to migrate your existing application software.

## LONG LIFE CYCLE

Artesyn is committed to building long-term partnerships with customers, based on proven and reliable systems with consistent performance. The ControlSafe platforms further strengthen this commitment by providing an unmatched, highly reliable platform with 15 years of planned product life and 25 years of extended support and service available.

## ADAPTABLE

Deployable for both wayside and carborne applications, Artesyn's ControlSafe platforms are designed to support a broad range of I/O modules such as CAN, Ethernet, Ethernet Ring, UART, MVB, digital, analog and GPS/Wireless to enable integrators to handle both new deployments and upgrade projects easily. In addition to the continuous addition of its in-house developed I/O modules, Artesyn also offers customers the flexibility to develop I/O modules to meet their specific needs by providing all necessary technical specifications, product support and service.





# ControlSafe™ Platform Portfolio Overview

All ControlSafe platforms leverage the same safety architecture and technologies so you can adopt a common platform across applications and maximize your return on investment.

As a highly available platform, each ControlSafe platform consists of two redundant ControlSafe computers, each of which delivers fail-safe operations enabled by data lock-step mode and two-out-of-two (2oo2) voting mechanism.

The ControlSafe computers are linked by a Safety Relay Box (SRB) or Direct Connect Algorithm (DCA) that monitors the health of the two computers, designates one of them as 'active' and the other as 'standby', and controls fail-over operation between the two computers to deliver a fail-safe computing system. The health-and-safety architecture is designed so that there is no possibility of an incorrect output being driven to external equipment.



## ControlSafe™ Platform

- Up to six I/O modules in a single chassis
- Generic platform for both wayside and carborne applications



## ControlSafe™ Expansion Box Platform

- Up to ten 9U expansion I/O modules and one 4U I/O module in a single chassis
- Improved I/O processing capability can effectively reduce the number of chassis required to construct large scale wayside applications



## ControlSafe™ Carborne Platform

- Up to 12 I/O modules in a single chassis
- Compact 4U chassis with front access I/O and DC power supply to suit carborne applications



## ControlSafe™ Compact Carborne Platform

- Same core system as ControlSafe Carborne Platform but in a half-width chassis for applications with limited installation space
- Two chassis can be placed side-by-side in a standard 19-inch rack
- Functions as processing and voting engine to connect and power external equipment
- SIL4 certification planned

## THE ARTESYN EXPERIENCE

Artesyn has over 30 years of experience serving a range of fail-safe and fault-tolerant industries, including the world's telecommunications networks, where we have deployed hundreds of thousands of products. With that long experience comes a deep understanding of our customers' requirements for on time, consistent and high quality product coupled with excellent customer support. We deliver on all counts from our own world-class factory and seasoned support experts.

Artesyn strives to speed our customers' time to revenue and make your development process as efficient as possible. Product features are supported globally with local system architects and field application engineers to keep you on schedule.

We're a very flexible and agile organization. We recognize that you may need your system to have your own unique branding. No problem. We're used to that. We have services that allow you to define the look and feel that's consistent with your company's branding and aesthetic standards.

Our flexibility isn't just limited to look and feel. Integration services, unique support requirements, longevity of supply, drop shipments and many more services are designed to make it easy to do business with us and quick for you to get to market and deploy smoothly.



### WORLDWIDE OFFICES

Tempe, AZ U.S.A.	+1 888 412 7832	China	+86 400 8888 183
Tel Aviv, Israel	+972 9 9560361	Tokyo, Japan	+81 3 5403 2730
Hong Kong	+852 2176 3540	Seoul, Korea	+82 2 6004 3268

**ARTESYN**<sup>™</sup>  
EMBEDDED TECHNOLOGIES