



System MAS 94x - Efficient Computing

One virtualised control platform
from Basic Integrity up to SIL 4.

The 94x family combines efficient computing, functional safety and cybersecurity in one rail vehicle control platform.

Run three independent virtual programmable logic controllers (PLCs) for vehicle control, Train Control and Management System (TCMS), traction, braking and diagnostics on a single control unit – with clear separation between safety-related and non-safety-related applications.



SELETRON

System MAS 94x - Efficient Computing

The four outstanding features.

Efficient computing

Consolidate demanding control and monitoring functions on a high-performance rail vehicle platform.

Three independent vPLCs

Run up to three virtual PLCs on one control unit simultaneously. A hypervisor separates applications and consolidates control functions.

Safety by design

Use the 94x platform for Basic Integrity and SIL 2 applications. Add the safe processor extension for safety-critical functions up to SIL 4.

Cybersecurity by design

Defence-in-Depth and Cybersecurity capabilities aligned with IEC 62443-4-2, Security Level 2 (SL-C 2).

Designed for rail vehicle control applications.

Combine control, monitoring, and safety on one platform with clear separation.



**Vehicle Control
& Train Control
and Management
System**



Traction Control



**Wheel-Slide
Protection**



**Diagnostics
& Condition
Monitoring**



**Heating,
ventilation, and
air conditioning
(HVAC)**



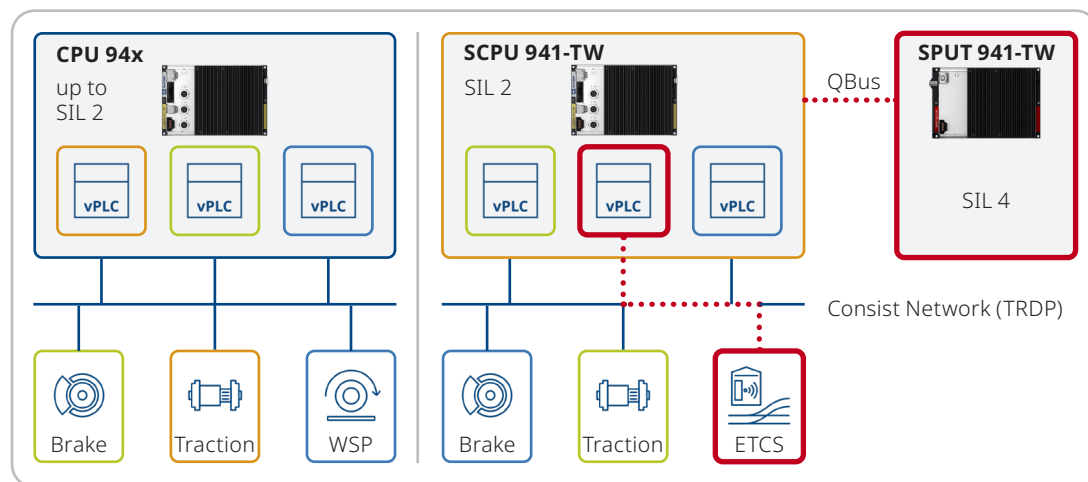
**Auxiliary Systems
& other Onboard
Functions**

Multiple control applications. One hardware platform.

Independent application environments on one control platform.

The hypervisor divides the 94x Control Unit into independent virtual PLC environments. Each vPLC can be assigned to a specific vehicle function, such as braking, traction, wheel-slide protection (WSP) or ETCS (European Train Control System).

Applications run in parallel with freedom of interference, helping to simplify the system architecture and reduce the number of independent control devices.



SELECTION

Scalable to your safety requirements.

Basic Integrity

For standard control and monitoring applications without a defined SIL requirement.

SIL 2 platform

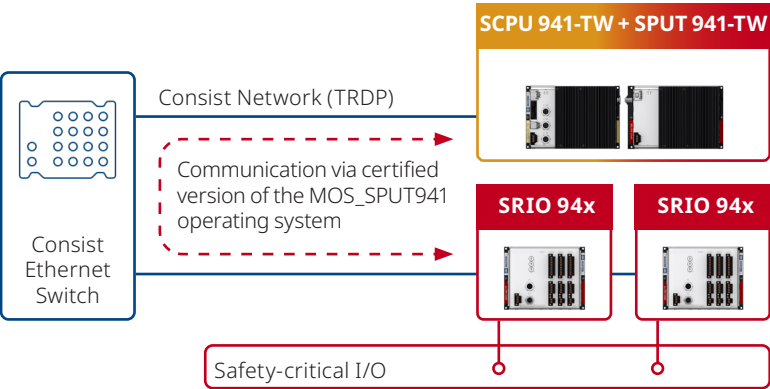
The safety version of the 94x Control Unit supports safety-related applications up to SIL 2.

SIL 4 extension

Add the SPUT 941-TW extension and SRIO 94x remote I/O nodes for safety-critical functions with requirements up to SIL 4.

One platform architecture – scalable from standard control functions to safety applications up to SIL 4.

SIL 4 architecture with Safe Processor Extension Unit and Safe Remote I/O.



Technical highlights

94x Control Unit

- Quad-core 64-bit ARM® processor, 1.6 GHz
- 3 × Gigabit Ethernet
- 1 × USB device
- 1 × memory card slot
- 24 ... 110 V DC
- DIN-rail, wall and optional 19" rack mounting (3U)

Safe Remote I/O

- Variants: 4 I / 2 O or 12 I / 6 O
- 24 V DC
- Outputs up to 0.5 A

Safety & Cybersecurity

- SIL 2 controller option**
Safety version (SCPU) certified according to EN 50129:2018/AC:2019 SIL 2.
- Cybersecurity by design**
Certified according to IEC 62443-4-2, Security Level 2 (SL-C 2).
- Defense in depth**
Multiple protection mechanisms against accidental and intentional data manipulation.
- Pre-qualified platform**
Integrated toolchain, operating system and safety lifecycle support reduce engineering and approval effort.

Engineering & lifecycle support

- Network and system architecture support.
- Application engineering with integrated toolchain and libraries.
- Long-term availability, retrofit support and global service for rail projects.

Built for your project success

Multiple applications on one device

vPLCs enable independent applications on one platform, reducing hardware and costs.

Shorter time to market

Pre-qualified platform and reusable software components reduce project time.

Structured architectures

Clear separation of safety and non-safety applications simplifies TCMS design and approvals.

Cost efficiency

Lower recurring equipment costs through consolidation and simplified architecture.

Next steps | Find the right Efficient Computing configuration for your rail vehicle project.

Get in touch

Expert advice and tailored support for your projects.

Read more

For more information, visit our topic page.

Follow us on LinkedIn

Stay informed about future posts.