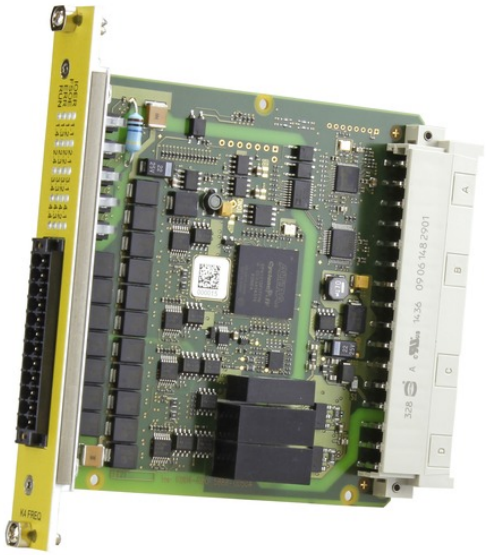
K4

4 Safe Frequency Inputs

menTCS Safe I/O Board SIL 2 to SIL 4

- *Four frequency inputs, four signals each*
- *Quadrature encoded signal input, 0.1 Hz to 30 kHz*
- *Voltage supply of connected sensors*
- *Optical isolation from other cards*
- *Fail-safe board architecture*
- *Certifiable up to SIL 4 (with report from TÜV SÜD)*
- *Developed according to EN 50129, EN 50128 and IEC 61508*
- *Extensive supervision functions*
- *Full EN 50155 compliance*
- *-40 to +85°C qualified*
- *Conformal coating*



Digital Inputs for menTCS

The K4 is a safe frequency input card for use in a modular MEN Train Control System. menTCS is a platform to perform safe train control functions, focusing on rolling stock applications like Automated Train Operation (ATO) or Automated Train Protection (ATP). It usually consists of the MH50C menTCS controller system and safe remote I/O boxes, e.g., KT8. The K4 can be a part in any of these systems, with one card providing four frequency inputs.

Safe, Certified Railway I/O

Developed according to EN 50129/EN 50128, K4 boards can be used for SIL 1, SIL 2, SIL 3 and SIL 4 applications. All menTCS I/O components come with dedicated SIL 4 certification packages from TÜV SÜD, reducing the integrator's certification effort and risk, and resulting in lower integration costs.

Functional Safety Design

With a dedicated onboard supervisor and FSoE features (Fail Safe over Ethernet), the I/O board is equipped with all the mechanisms required to provide protection in functionally safe systems. The I/O card reacts to be fail-safe: it enters the safe state if it detects an error.

In-System Connection using Real-Time Ethernet

menTCS I/O boards are physically shorter than a 3U CompactPCI board. Inside a menTCS system, these cards connect to the backplane using an extension. This links them to the menTCS EBUS, power supply, and address lines, allowing safe real-time Ethernet communication within the system.
Front I/O is connected via spring cage terminal blocks for fast installation thanks to reduced wiring.

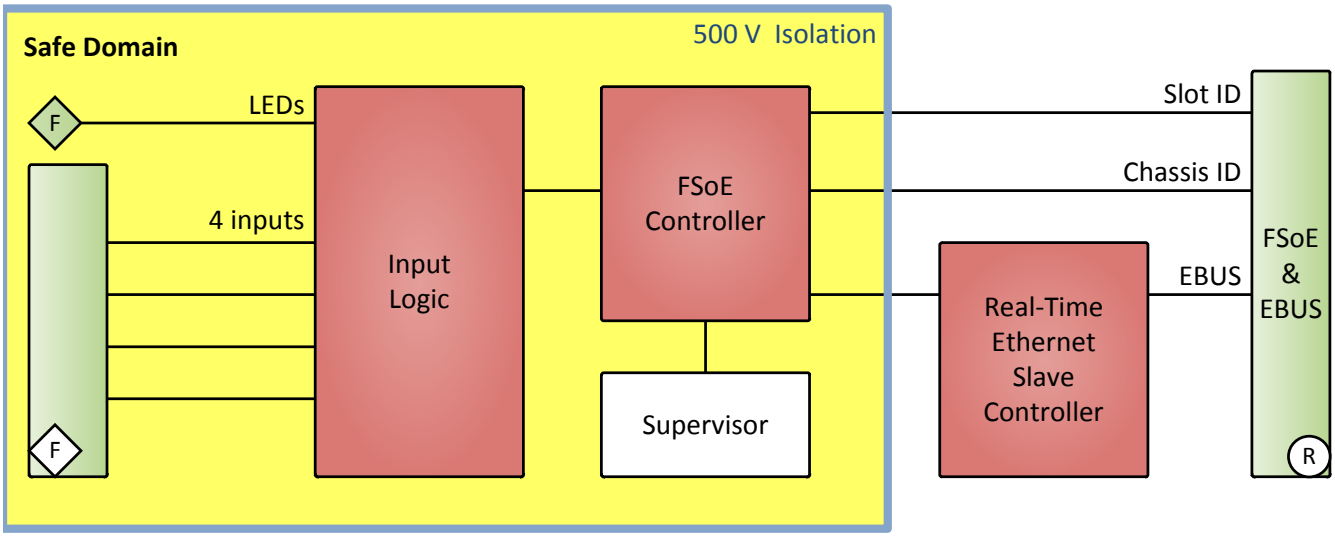
EN 50155 Rolling Stock Compliance

The K4 can supply the connected sensors and tolerates the voltage ranges defined by EN 50155 for railway applications. Being usable in all types of different trains optimizes the I/O board's interoperability. Its operating temperature complies with the class TX specifications of -40 to +70 °C (10 minutes up to +85 °C). Standard boards include conformal coating.
Along with its full EN 50155 compliance and long-term availability of a minimum 10 years, the K4 is a rail-ready I/O component.

Safe Software Concept

All menTCS components are supported by certified QNX BSP and driver software.

Data Sheet



F Front R Rear

Diagram

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