CASE STUDY: DIN RAIL SE400S-X10

Dependable Diagnostics for the Endurance Specialists

Why Audi Chose Kvaser and RA Consulting for CAN/CAN FD Diagnostics

Stable CAN communication modules ensure that Audi's diagnostics data always gets through.
Automotive endurance testing creates hundreds of thousands of hours of test data per vehicle. Kvaser's DIN Rail Ethernet to CAN/CAN FD interface and RA Consulting's DiagRA D diagnostic software ensure reliable collection of diagnostic data on Audi's test benches.

The Challenge

In automotive endurance testing, whilst engineers are in physical proximity to oversee the test process, sufficient distance is required to isolate the engineers from the constant cycling of noise, vibration and harshness (NVH) tests that characterise the standard physical testing of new vehicles as well as crash behaviour and aerodynamics. As with most test systems, data collection and post-analysis are rarely carried out in the same place, but endurance tests require a particular combination of guaranteed real-time data acquisition and reliability when connecting the two locations.

Patrick Guhl, responsible for vehicle measurement technology and test bench automation for vehicle emissions, consumption and range testing in the Audi test facility in Neckarsulm, explained:

"We were looking for a CAN FD-capable module that could reliably bridge a distance of up to 100 metres between the vehicle on a test bench and the computer on which the DiagRA D diagnostic software is operated. The module needed to ensure a stable connection, with no interruptions in communication between the tool to access the car's diagnostics data and the PC." An important additional requirement was an independent connection after voltage drops or computer restarts.

The Solution

As a long-term user of DiagRA D diagnostic software to collect CAN and CAN FD data, Audi's endurance test team turned to RA Consulting for advice on a bridging solution. RA Consulting (RAC), a Kvaser technical associate, had tested Kvaser's recently-launched DIN Rail SE400S-X10, a multichannel, programmable Ethernet to CAN/CAN FD interface for DIN Rail mounting. The SE400S-X10 uses Kvaser's standard universal driver, enabling RAC to guarantee a future-proof integration between their DiagRA D software and Kvaser's DIN Rail series.

DIN Rail SE400S-X10

Mario Hoppe, marketing and sales manager at RAC: "Whilst Wi-Fi and Bluetooth are fast enough to transmit data in many test scenarios, the long distances involved, building layout and environmental conditions would have made them unsuitable in this instance. The DIN Rail SE400S-X10 proved a versatile alternative, with programmable Ethernet to four CAN/CAN FD channels and all major CAN protocol types supported. Ethernet cabling also made it simple to assign many DIN Rail modules to their respective test benches."

Audi was able to source software and hardware from one source, with a central contact person for questions and support. Guhl noted: "The DIN Rail SE400S-X10 promised low installation effort, as it was voltage, LAN and OBD ready, and its top-hat rail mounted form-factor meant that it could be easily integrated into existing systems."

With tests running 24/7 across a bank of dynamometers in Audi's Neckarsulm and Ingolstadt test facilities, Kvaser's DIN Rail SE400S-X10 ensures that CAN/CAN FD data is gathered reliably from Audi's test subjects. RA Consulting's DiagRA D software combines this data and uses OEM-specific diagnostic routines for data collection and troubleshooting. With DiagRA D's advanced developer functionality and firmware updatability in Kvaser's DIN Rail modules, the system can evolve as new features are added or Audi's diagnostics testing needs change.

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RA CONSULTING GMBH

The Best Automotive Software Solutions

RA Consulting GmbH of Germany (RAC) has been in business for over 25 years and is known in the development departments of auto manufacturers as well as hundreds of their tier one suppliers and development partners. Long-lasting products and solutions, focused on their customer's needs, are the reason for this success.

The main activities in our Automotive business unit include solutions for control unit diagnostics, measurement and calibration. Our diagnostic solutions have more than 20,000 users, with our well-known product names Silver Scan-Tool and DiagRA D, the diagnostics part of the DiagRA MCD Toolset. Silver Scan-Tool and DiagRA MCD Toolset support the Kvaser CAN products.

Learn More: www.rac.de/en/automotive-products

KVASER DIN RAIL SE400S-X10

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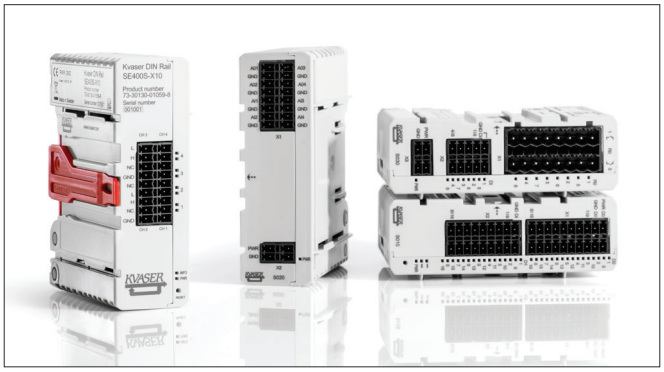

The Kvaser DIN Rail SE400S-X10 is a multichannel, programmable Ethernet to CAN/CAN FD interface for DIN Rail mounting. This device has four CAN/CAN FD channels and supports up to four optional Kvaser DIN Rail SE400S-X10 I/O add-on modules, of which there are three different types; analog, digital and relay. Ideal for automotive test cell or end-of-line production test applications, the SE400S-X10 can download and run programs created in the Kvaser *t* programming language, such as diagnostics routines to test automotive body control modules.

Learn More: www.kvaser.com/din-rail

Major Features

- Multi-channel CAN to Ethernet interface.
- Supports CAN FD, up to 8 Mbit/s (with correct physical layer implementation).
- Networked CAN interface with Kvaser *t* programmability to monitor and respond to CAN messages, develop I/O functionality and optimize protocol handling.
- Capable of sending up to 20,000 messages per second, per CAN channel.
- Ethernet connection with auto-MDIX using a standard shielded RJ45 socket.
- Supports up to four add-on modules for digital and/or analog inputs and outputs, controllable through Kvaser CANlib and *t* programs.