

ADAS & Autonomous Vehicle

INTERNATIONAL

THE INTERNATIONAL
REVIEW OF AUTONOMOUS
VEHICLE TECHNOLOGIES:
FROM CONCEPTION
TO MANUFACTURE TO
IMPLEMENTATION

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ADAS
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TECHNOLOGY EXPO | EUROPE

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the brains behind the Indy
Autonomous Challenge



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How can autonomous vehicles better signal their intent to other road users to prevent accidents and delays?

ADAS symbology

The challenges of standardizing symbols within the cockpit to represent key ADAS and AD features, without confusing drivers

Sensors

Experts discuss the best combination of sensors to ensure the right balance of safety, accuracy, cost and durability

Shock proof

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The critical role of rugged high-performance computing and trusted recording solutions

By **Simone Adam & Carina Franke**, b-plus

When it comes to the development of ADAS and autonomous driving technologies, the backbone is the integration of rugged high-performance computing (HPC) and advanced measurement technology platforms. Innovative solutions and components are crucial for processing, recording and analyzing the vast amounts of data generated by vehicle sensors, helping to ensure the safety, reliability and efficiency of autonomous vehicles.

In the area of autonomous driving, high-performance computing systems face extreme environmental conditions and must showcase unmatched ruggedness and durability to operate reliably. Unlike their data center counterparts, these rugged HPC units are designed for direct field deployment in vehicles, where they encounter challenges such as high humidity, dust, shock, vibration and a wide temperature range. To ensure continuous operation and to maintain operational integrity in these demanding circumstances, the systems are constructed with compact, robust housing, solid-state drives and shock-absorbent mountings. They also receive special certifications for protection against liquids, solids and impact, highlighting a comprehensive design approach tailored to meet the rigorous demands of automotive applications.

Given the intensive computational demands placed on these systems, specialized cooling solutions are essential to dissipate heat efficiently, preventing overheating and ensuring sustained performance. Moreover, energy efficiency becomes a critical factor, especially in mobile environments where power supply may vary. Rugged HPCs designed for automotive



Development software **AVETO.dps** for precise raw datalogging for processing and recording of data rates over 100Gbps

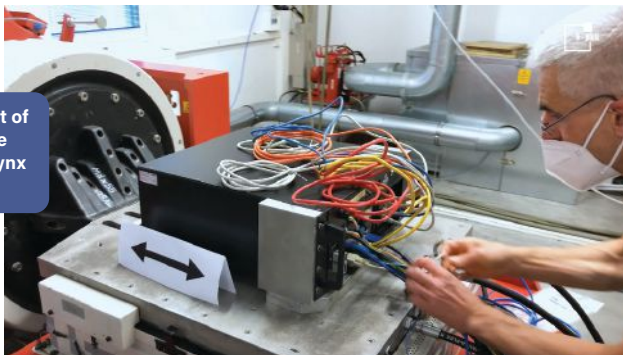
applications often support direct current (DC) power supplies to minimize energy loss, ensuring that the systems can operate effectively even with fluctuating power supply.

Enabling precise data acquisition

In conjunction with rugged HPCs, advanced measurement technology platforms play an important role. They facilitate the precise collection, recording and analysis of sensor data, which is pivotal for the development, testing and validation of ADAS/AD functionalities. The integration of such platforms enables the handling of high data rates and supports a wide range of data sources, ensuring compatibility and flexibility for automotive development teams. Furthermore, the incorporation of software

solutions for precise logging of raw data enhances data quality and integrity. The systems' high-speed data acquisition capabilities and integrated rights management for storage ensure no data loss. This software infrastructure supports high analytical capability and transparency. With its open system architecture, it enables virtualized processing and visualization of data. The ability to handle and analyze data from diverse sources with high accuracy is crucial. This is coupled with extensive support for open data formats. Together, they ensure a seamless and comprehensive approach to data management and analysis, enhancing the effectiveness of measurement technology in autonomous vehicle development.

The evolution toward higher levels of vehicle autonomy underscores the necessity for robust, reliable, high-performing computing and measurement technologies. These solutions are a cornerstone in the development of autonomous driving systems that can navigate the complexities of real-world environments. By ensuring data integrity, system stability and precise data acquisition, the automotive industry can advance toward creating vehicles that offer enhanced safety, efficiency and reliability. ◀



A ruggedness test of high-performance computer **DATALynx ATX4 EP4**

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