CAN Newsletter Online

EMBEDDED WORLD 2019

Automated driving and cyber security

At the Embedded World 2019, several topics were showcased. Two main topics were automated driving and cyber security.

The tradeshow in Nuremberg (Germany) is an early indicator of the annual trends in embedded electronics. More than 1100 exhibitors presented their products and services. This was a new record. There were many CiA members among the exhibitors. CiA presented in hall 1 its CANopen FD demonstrator comprising I/O modules from Microcontrol and Peak/Emsa as well as a host controller by ESD and a display interface by HMS implementing Emtas protocol stack. CiA showed also classic CANopen products from several members.

Automated driving solutions still need communication with Classical CAN respectively CAN FD networks (Photo: Embedded World)

Of course, there were many questions on CANopen FD by the visitors of the CiA stand. But surprisingly, many engineers asked about CAN XL, the next generation of CAN data link layers, which is in an early stage of development. Also at the Bosch stand many inquiries were regarding CAN XL features.

Automated driving was on several stands a major topic. Dspace, Etas, and Vector demonstrated hardware and software tools for the development of highly automated driving, for example. Infineon showed on its stand a multi-sensor fusion using its Aurix safety micro-controllers (TC397XX) with CAN FD connectivity. On the ECU level, new players enter the market: Quanta Computer (Taiwan) presented in Nuremberg several units for autonomous driving. They all provide CAN connectivity. They are based on Nvidia processors. The Perception Master is dedicated for sensor fusion purposes, while the AD Master features redundancy for SAE level-3+ applications. The Vehicle Server integrates these two ECU platforms and a cluster gateway. It can handle sensor data fusion, perception, and decision-making. The gateway provides six CAN, four LIN, and two Flexray interfaces.

Investments in automated driving seem to exceed the resources of a single carmaker: Directly after the Embedded World tradeshow, BMW and Daimler announced to cooperate in developing next generation of advanced driver assistance systems.

CAN FD is set: Nearly all new CAN interface products support the improved CAN data link layer (Photo: Embedded World)

CAN FD products – micro-controllers, interface modules, and tools – were shown on many stands. The automotive industry is already migrating to CAN FD. Volkswagen will introduce this year several vehicles, including the electric-powered Neo, implementing multiple CAN FD networks. Even BMW will use in its next generation about six CAN FD network segments. It seems that CAN FD is set in the automotive industry. On the chip level, CAN FD is not a new topic anymore. All new micro-controllers featuring CAN connectivity implement CAN FD. This includes the STM3MP1 multi-core series by ST Microelectronics, which features two CAN FD on-chip modules.

With the focus on automated driving, cyber security becomes an important issue. Many companies promoted proprietary solutions. Nothing is really standardized. This makes it difficult to provide cyber security in open networks such as CANopen and J1939. Emsa showed at NXP's stand its CANcrypt solution in combination with the secure transceiver by NXP.

CANcrypt combined with the secure transceiver by NXP enables cyber security in open network approaches (Photo: Emsa)

Of course, there was a range of other exhibited CAN products. Seco presented a range of its CAN-based devices. One of them is the Q7-C25 module, which is based on the NXP i.MX 8M application processors for edge computing strategies. It comes with a CAN interface. Its brother, the SBC-C61 based on NXP i.MX 8M mini application processors comes also with CAN interfaces.

In hall 1 and some other halls, many suppliers of displays and human machine interfaces (HMI) presented their products. Many of them are produced in Far East, especially in Taiwan. Some of them provide CAN connectivity. However, HMIs do not belong to the embedded market, because they are visible. Embedded systems are by definition not visible for the user. This is a paradoxon.

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