Standards and specifications

This section provides news from standardization bodies and nonprofit associations regarding CAN-related documents. Included are also recommended practices, application notes, implementation guidelines, and technical reports.

Installation aid for alcohol ignition interlock devices is mandatory

Since July, European (EU) regulation 2019/2144 is in force, requiring to provide installation aid for in-vehicle breathalyzers in newly registered road vehicles. One option is the direct connection to CAN networks. The related EN 50436-4 standard specifies two J1939 parameter groups (PGs) to prevent the start of the vehicle.

In the last four years, the number of accidences under influence of alcohol is slightly increasing in Europe. The positive experiences in Scandinavian countries have encouraged the EU commission to simplify the installation of alcohol ignition interlock devices. There are three options mentioned in the related EU regulation: discrete as well as LIN and CAN connections. EN 50436-4 specifies the details for the CAN communication. There are two J1939 PDU2-compliant messages specified:

- Alcohol-Interlock-To-Vehicle (AITOV) using the PGN (parameter group number) 64390
- Vehicle-To-Alcohol-Interlock-(VTOAI) using the PGN 64391

Draeger has introduced the Interlock 7500 devices supporting the CAN option as well as the other two installation options. It consists of two parts: the handset and the control box. In the handset the breath sample is analyzed. The control box allows or prevents the start of the vehicle. Before starting the vehicle, the Interlock 7500 requests a breath test from the driver. If the device detects a measured value above the set alcohol limit, it prevents the vehicle from being started. The device helps to avoid driving under the influence of alcohol and thus alcohol-related accident risks.

Particular features of the Interlock 7500 are the short warm-up and its quick readiness for use. At temperatures of more than 0 °C it is ready for immediate use. With an approved temperature range of -40 °C to +85 °C, it ensures that the device works under all kinds of ambient conditions. According to the German supplier the measuring result is reliable and precise. Also, attempts to bypass or manipulate the device are reliably identified and stored in the system. The device is able to identify whether the alcohol detected in the breath sample is actual breath alcohol or only mouth alcohol.

"Out Interlock 7500 is currently the only alcohol interlock in serial production, which complies with EN 50436-4," said Soeren Hertzer from Draeger. This standard specifies the connection and digital interface between the alcohol interlock and the in-vehicle networks. The alcohol interlock device by Dignita (Sweden) does not yet feature CAN connectivity. *hz*

(Source: Draeger)

Evaluating driver's mental and physical condition

Wuerzburg Institute for Traffic Sciences (Germany) has done some research on drivers' mental and physical condition. The latest developments in highly automated driving are already putting the driver in a largely passive role that is often accompanied with monotony and reduced vigilance. Therefore, monitoring the mental and physical state of drivers becomes even more important, in order to ensure that the driver remains able to reassume control of the vehicle from various levels of driving automation systems in critical situations. One of the developments is related to evaluate the level of fatigue. The used test system is based on the DS-1302 embedded PC by Compmall, featuring Intel's i5-10500TE processor and CAN FD connectivity. *hz*

Brief news

- ***CiA 611-1:*** In version 2.0.0, additional service data unit types (SDT) have been introduced. An SDT indicates the used higher-layer protocol in a CAN XL data frame. This enables the parallel usage of up to 256 different higher-layer protocols in the same CAN XL network. This includes, in particular, mapping of Ethernet frames or TCP/IP packets/segments into CAN XL data frames. A mapping of CAN CC and CAN FD data frames is supported, as well.
- ***CiA 611-2:*** This document specifies a multi-PDU protocol different than other solutions. It enables to combine data from multiple sub-layered networks and to transmit them in a single CAN XL data frame. These sub-layered networks can use different network technologies and different CAN-based higher-layer protocols (e.g. CANopen and J1939). This multi-PDU approach is in particular suitable for backbone networks.
- ***CiA 408 series:*** The profile for fluid power devices has been split into parts. The generic process data and configuration parameters are specified in Part B. Part C contains the mapping to CANopen CC (CiA 301) and Part F provides the mapping to CANopen FD (CiA 1301).
- ***CiA 410 series:*** The updated inclinometer profile comprises mappings to CANopen CC (Part C), CANopen FD (Part F), and J1939-21/71 (Part J). The process data and configuration parameters are specified in Part B. The mapping to SRDOs (safety-related data objects) is included in Part C. *hz*