CAN Newsletter Online

First CAN FD specification released

Bosch (Germany) has released the first version of the CAN FD (CAN with flexible data-rate) specification. Additionally, CiA has initiated a kick-off meeting for a CAN FD interest group as well as a CAN FD marketing group. First 32-bit micro-controllers supporting CAN FD are expected by end of 2012.

THE ACCEPTANCE AND INTRODUCTION OF SERIAL COMMUNICATION to more an more applications has led to increasing demand for bandwidth in CAN communication. In order to overcome the current limitations of the CAN protocol, Bosch has developed jointly with other CAN experts the CAN FD data link layer protocol. This approach supports higher bit-rates than 1 Mbit/s and allows frame payloads longer than 8 byte. CAN FD makes use of the internationally standardized CAN high-speed transceivers (ISO 11898-2). For bus-line topologies, the data-rate can be increased to 8 Mbit/s and theoretically higher data-rates using state-of-the-art transceivers. For passive star topologies as used in passenger cars the maximum data-rate is expected to be 2 Mbit/s.

CiA has organized a first open CAN FD meeting participated by OEMs, ECU suppliers, chipmakers, and other interested users from non-automotive industries. The OEMs requested compatibility to the upcoming selective wake-up transceivers (ISO 11898-6). In addition, evaluation of EMC performance for different network topologies was requested. This may lead to additional recommendations and recommended practices, which will be developed by CiA's CAN FD interest group (IG). General Motors is committed to CAN FD. Ford and PSA are more than just interested. Bosch has stated that the next generation of high-end ECUs for powertrain and chassis networks will support CAN FD. Continental is evaluating CAN FD connectivity. ST Microelectronics, Infineon, and Freescale are in the development process of integrating CAN FD into high-end micro-controllers. ST Microelectronics plans to provide first 32-bit MCUs by end of this year. Fujitsu and Renesas have not decided yet to support CAN FD, but observing tightly the CAN FD activities.

CiA has announced to organize CAN FD information events all over the world on request of interested parties. The nonprofit user organization also will promote CAN FD on conferences and exhibitions. In addition, migration plans needs to be developed, in order to help CAN users to make use of the CAN FD enhancements. This includes the release of additional specifications, e.g. mapping of CANopen to the CAN FD data link layer.

Bosch will submit the CAN FD specification for international standardization to ISO (International Standardization Organization). The German automotive supplier also plans to develop a CAN FD reference model and to provide a CAN FD conformance test plan to be internationally standardized. CAN FD implementations need to be compliant to ISO 11898-1. This means they can be used in any existing CAN network, when they don't transmit CAN FD frames. If the normal CAN controllers support a silent mode (not transmitting error frames), the CAN FD messages can be sent for software-download or end-of-line programming between those nodes supporting CAN FD.