

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.

Common terminology for CAN protocols and CAN transceivers

The next editions of the ISO base standards for Controller Area Network (CAN) are close to be finalized. ISO 11898-1 is titled “Data link layer and physical coding sublayer”. ISO 11898-2 is called “Physical medium attachment (PMA) sublayer” often implemented as stand-alone transceivers. The CiA Business Committee (BC) and the CiA Technical Committee (TC) jointly agreed to recommend a common terminology for CAN protocol generations and CAN transceivers.

With the introduction of CAN FD and CAN XL, there are now three CAN protocol generations. In order to avoid misunderstandings, the term “CAN” should not more be used for the legacy CAN Classic protocol (1st generation). In the future, the term “CAN” covers all three CAN protocol generations and could be therefore misleading, if an interface does not support all these CAN data link layer protocols.

If you want to address precisely the 1st CAN protocol generation, write “CAN CC (ClassiC)”. The 2nd CAN protocol generation should be named “CAN FD (flexible data rate)” and the 3rd one “CAN XL (extended data-field length)”. In order to avoid confusion, write “CAN CC/FD” resp. “CAN CC/FD/XL”. If you want to indicate the supported frame formats of a CAN interface, it is recommended to list them: “The CAN interface supports CBFF, CEFF, FBFF, FEFF resp. XLFF” (select what is appropriate).

For the term “CANopen” this is similar. The term “CANopen” covers both protocol generations: CANopen CC (ClassiC) and CANopen FD (flexible data rate). If a CANopen implementation supports both generations and you like to express this explicitly, it is recommended to write “CANopen CC/FD”.

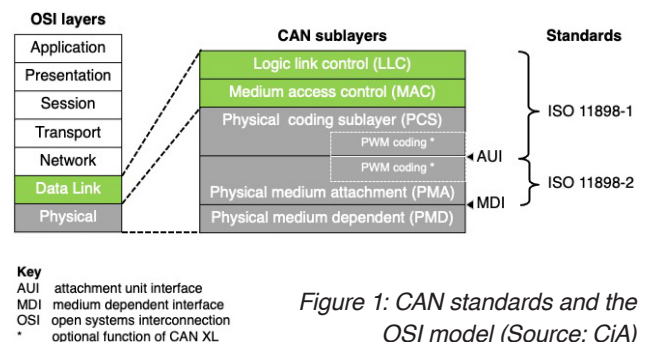


Figure 1: CAN standards and the OSI model (Source: CiA)

It is not necessary to change legacy documents. But consider the recommended terminology for new and updated documents. CiA is going to update all of its documents step-by-step. In CiA publications, the new terminology will be used, immediately. The review regarding the CiA website has been started.

With the introduction of CAN PMA (physical medium attachment) sublayers providing SIC (signal improvement capability) functionality and an optional PWM (pulse-width modulation) coding, we have additional CAN transceiver types on the market. In order to avoid misunderstandings, it is recommended to use the following terms. For legacy implementations limited to bit rates of 1 Mbit/s, the term “CAN HS (high-speed) transceiver” should be used. For implementations supporting bit rates higher than 1 Mbit/s, it is suggested to name them “CAN FD transceivers”. Implementations featuring SIC functionality should be called “CAN SIC transceivers” (they enable to use higher bit rates compared with CAN FD transceivers). “CAN XL SIC transceivers” feature SIC functionality and support additionally a PWM coding; they are made to run up to 20 Mbit/s depending on the network design.

hz

Call for experts: CAN-based greenhouse automation networks



South Korea is going to submit a new work item (NWI) to the ISO Technical Committee 23 (tractors and machinery for agriculture and forestry) Sub-Committee 19 (agriculture electronics). The purpose is to standardize CAN-based networks for the automation of greenhouses. This includes networks for heating, ventilation, and air-conditioning (HVAC), for controlling doors and windows, for monitoring the irrigation, for managing lighting, etc.

In several greenhouse automation systems, CAN-based networks are already in use. To standardize the CAN interfaces for dedicated sensors, actuators, and host

controllers would reduce the number of variants. This could increase the volume, for example, for temperature sensors using the same CAN interface. Higher volumes normally lead to lower prices. This would be beneficial especially for farmers in countries with limited natural resources.

CANopen is one of the candidates for the higher-layer protocol. Existing CiA profile specifications could be adapted and new ones could be developed. The intended NWI is sponsored by the Korean government. CiA is supporting this standardization project. Interested parties can contact the [CiA office](#) for more information. hz

Brief news

The CiA 603 (CAN network time management) specification has been updated editorially (version 1.1.0). The technical content has not been changed.

The CiA 1310-1 CANopen conformance test plan specifying CiA 1301-related (CANopen FD) test cases has been released as version 1.0.0. It is the base for the CANopen FD conformance test procedure by CiA.

The ISO 11783-3 (Isobus application and transport layer) standard is in review. Pending comments will be considered as well as new ones.

The ISO 11898-1 next edition has passed successfully the DIS (draft international standard) ballot. The submitted comments need to be resolved. An FDIS (final draft international standard) ballot will be started beginning of 2024.

The ISO 11898-2 next edition will be in FDIS (final draft international standard) ballot, soon. Technical

comments are not more possible – only editorial and general comments are allowed.

The ISO 11992-2:2023 (Interchange of digital information on electrical connections between towing and towed vehicles, Part 2: Application layer for brakes and running gear) standard is unfortunately not complete and contains some errors.

The ISO 15765-5 (Diagnostic communication over CAN (DoCAN), Part 5: Specification for an in-vehicle network connected to the diagnostic link connector) standard has been revised and the 2nd edition is under publication. It has been improved technically and editorially.

The SAE J1939DA (digital annex) spreadsheet is updated quarterly. The last released version is from October 2023. It includes new Parameter Groups (PG) and Suspect Parameters (SP) discussed in the August meeting. hz