

CAN XL and CAN FD Light are in the pipeline

CiA technical groups are busy in developing specifications. The nonprofit association develops CAN-related specifications from the physical layer to the application layer as well as bus-independent profiles standardizing the payload of the application layer PDUs (protocol data unit).



Sets of CiA Draft Specifications can be subscribed also by non-members (Source: Adobe Stock)

The CAN XL data link layer specification (CiA 610-1) is already mature and needs just a last review before it will be released CiA-internally as Draft Specification Proposal. CiA (CAN in Automation) intends to organize plugfests to test interoperability of first CAN XL protocol implementations.

The interest group (IG) lower-layers also develops the CAN XL SIC transceiver specification (CiA 610-3). It is based on the Media-Independent CAN Interface (MICI) provided by the CAN XL protocol controller. The CiA 610-3 document also will be released CiA-internally in the second quarter of 2021. Related conformance test plans are also under development: CiA 610-2 (protocol) and CiA 610-4 (transceiver).

Additionally, the IG (interest group) lower-layers specifies CAN FD Light. This is a CAN FD protocol implementation

with limited features. It is suitable for price-sensitive applications, for example, deeply embedded networks in smart car lighting devices. It is based on a fire-and-forget frame transmission. The CAN FD Light implementations send only on command by a CAN FD data frame from a commanding node a response (CAN FD data frames). The implementation specification (CiA 604-1) is still under development and will be released CiA-internally in the first half of this year.

The CAN XL related CiA documents are subject to be submitted for ISO standardization. In this year, the ISO 11898-1 document is going to be reviewed systematically. This is, why the CAN XL extension can be introduced in the ISO documents as soon as first implementation experiences are made. The CAN XL SIC transceiver features seem to be standardized in a new part of the ISO 11898 series. CiA also supports the integration of the CAN XL protocol capabilities into the ISO 15765 series of transport protocols.

CANopen FD and CiA profiles

In the past, CiA has developed many device, application, and interface profiles for the classic CANopen application layer (CiA 301). With the introduction of CANopen FD (CiA 1301) supporting data frames with up to 64 byte, the profile specifications need to be adapted to the increased payload. Therefore, the IG profiles has asked its special interest groups (SIG) to split the profile specifications to a part describing the functional behavior as well as the process data, configuration parameters, and diagnostic information. Other parts specify the mapping to classic CANopen and CANopen FD. If desired, also the mapping to other CAN-based communication systems (e.g. SAE J1939) could be specified. Last year, the profiles for encoders and inclinometers have been mapped to J1939 (CiA 406-J respectively CiA 410-J).

This year, CiA re-establishes some profile-related SIG to review and update CiA documents. One of the first is the SIG subsea responsible for the CiA 443 profile specification. In this document, interfaces for sensors and actuators are specified, which are suitable for so-called subsea trees. These are networked devices on the ocean ground protecting oil-and-gas explorations.

Additionally, the many other SIGs will start the systematic review of CiA profile specifications. CiA also has introduced a new cover layout and two new document sections (Foreword and Introduction). This makes the transition to ISO documents simpler. CiA office will also introduce inclusive language, where appropriate.

Online conference

First information about CAN XL can be found in the [December issue](#) of the CAN Newsletter. In June the 17th international CAN Conference (iCC) will provide much more detail information on CAN XL and other CAN-related developments. Due to the coronavirus pandemic, it will be a virtual two-day conference with accompanied e-meetings before and after the conference. Details are yet fixed, but will be available soon.

CiA provides also free-of-charge webinars on some of the above-mentioned topics. Details are available on the [CiA website](#). The webinars just give overviews. For engineers expected more detailed information, CiA has scheduled charged e-seminars. The association also offers in-house seminars with tailored agendas.