

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.

New CiA specifications

CAN in Automation (CiA) has improved most of its specifications and technical reports regarding inclusive language. In minimum, there is a hint in the documents that CiA is committed to substitute non-inclusive terms in newly-released documents.

Recently, CiA has released the following specifications:

- ◆ CiA 457 (version 1.1.0): CANopen interface profile wireless transmission as Draft Specification (DS)
- ◆ CiA 459 series (three parts): CANopen profile for on-board weighing devices as DS
- ◆ CiA 611-1 (version 1.0.0): CAN XL higher-layer functions - Part 1: Definition of service data unit types (SDT) as Draft Specification Proposal (DSP)

Documents in DS state are part of an annual subscription option for non-members, for example the CiA 6XX series. CiA members have free-of-charge access to all documents including DSPs and WDs (Work Draft). ■

Call for experts: CiA profile for smart homes

CiA calls for members interested to develop a CiA (CANopen) profile for smart homes. Hyperpanel Lab informed CiA headquarters about the idea to use CANopen networks to control smart homes. CANopen networks are intended to be used to control heating and air-conditioning, lighting, domestic appliances, window shading, etc. CAN XL with its 10+ Mbit/s data phase bit rate and its 2048-byte payload capability could be used as a smart home backbone network. If there is sufficient interest in this topic, CiA office will organize a workshop to discuss the development of a CiA smart home profile. ■

CiA and Autosar cooperate

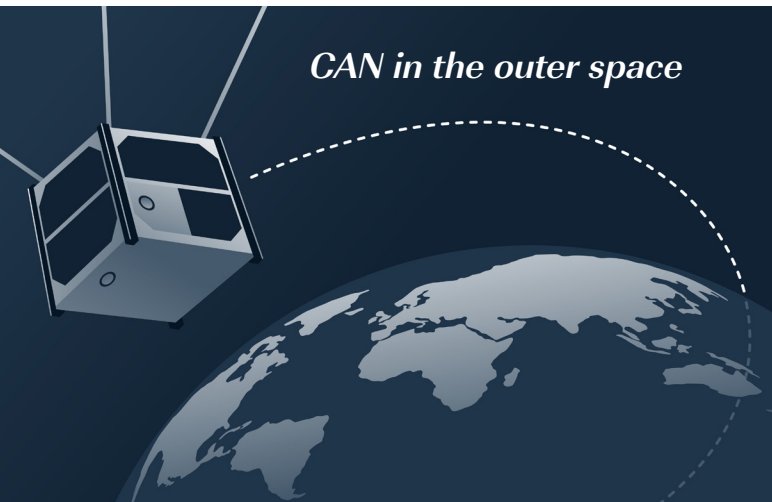
CiA has become an Autosar partner. It is intended to support each other in developing specifications and recommendations. The objective is to harmonize documents before they are released. Experts from both organizations are allowed to participate in meetings of the other association.



Currently, CiA grants Autosar members access to CiA documents, which are referenced in Autosar specifications. This includes also CiA documents in DSP (Draft Specification Proposal) status – generally limited to CiA members. The first document referenced by Autosar is CiA 611-1, which defines the values of the Service Data Unit Type (SDT) field in the CAN XL data link layer protocol. ■

New edition of ISO 11898-2

CiA has submitted the content of CiA 601-4 (SIC transceiver) and CiA 610-3 (SIC XL transceiver) to be included in the next edition of ISO 11898-2. This standard will specify all kind of CAN high-speed physical medium attachment technologies. The responsible ISO working report has already prepared a draft document, which is currently in DIS (Draft International Standard) ballot. National standardization bodies will vote on this document and may submit comments. The DIS ballot is open for three months. ■



Since several years, CAN-based networks are used in satellites. In some of them, the classic CANopen application layer and communication profile (CiA 301) has been adapted. The European Space Agency (ESA) has specified an implementation guideline. ESA has implemented this with partners in an IP core. This CANopen Controller IP Core (CCIPC) provides a subset of the CANopen services. Two different variants of the IP-Core are present, CCIPC and RCCIPC; the latter one implements a subset of the CCIPC with the advantage of a consistently-reduced silicon area occupation. Both implementations feature NMT server and Heartbeat functionalities, the Default-SDO server, PDOs to be transmitted and received,

and supports PDO synchronization by means of the SYNC message.

Three years ago, ESA has issued an invitation to tender for the development of an open-source implementation of the CANopen protocol suitable for space applications. In particular, an implementation of the ECSS-E-ST-50-15C specification developed by ESA was demanded. The Lely CANopen stack was one of the candidates considered to be a promising starting point for such a development. N7 Space submitted a proposal based on this open-source stack and won the bid. Since 2021, the company (in the meantime CiA member) has been working, with support from Lely, to improve and extend the stack and to develop a comprehensive test suite. This work is carried out under a program of, and funded by ESA.

Recently, some more companies of the outer space business have joined the CiA community, e.g. Endurosat. This means, it is time for evaluating the development of further specifications for embedded CAN-based networks in satellites. This could include redundancy concepts as well as dedicated profiles. CiA office is going to organize a very first evaluation meeting for this application field. In the past, ESA has organized several CAN-in-space conferences in the Netherlands, Italy, and Norway.

Perhaps, CiA members can continue this. There are also chipmakers providing radiation-resistant CAN transceivers and micro-controllers with integrated CAN protocol controllers. ■

INTEGRATION IoT Fleet Management

for Driver

- Record data
- Upload data
- Read DTC
- Display location
- Driving behavior record
- Maintenance support

for Maintenance

- Collecting Data
- Flash programming
- Diagnostic functions
- Calibration
- Life of spare parts prediction

for Factory

- EOL Flash programming
- Diagnostic functions
- Components test
- Data analysis
- Retrofit for extended function

