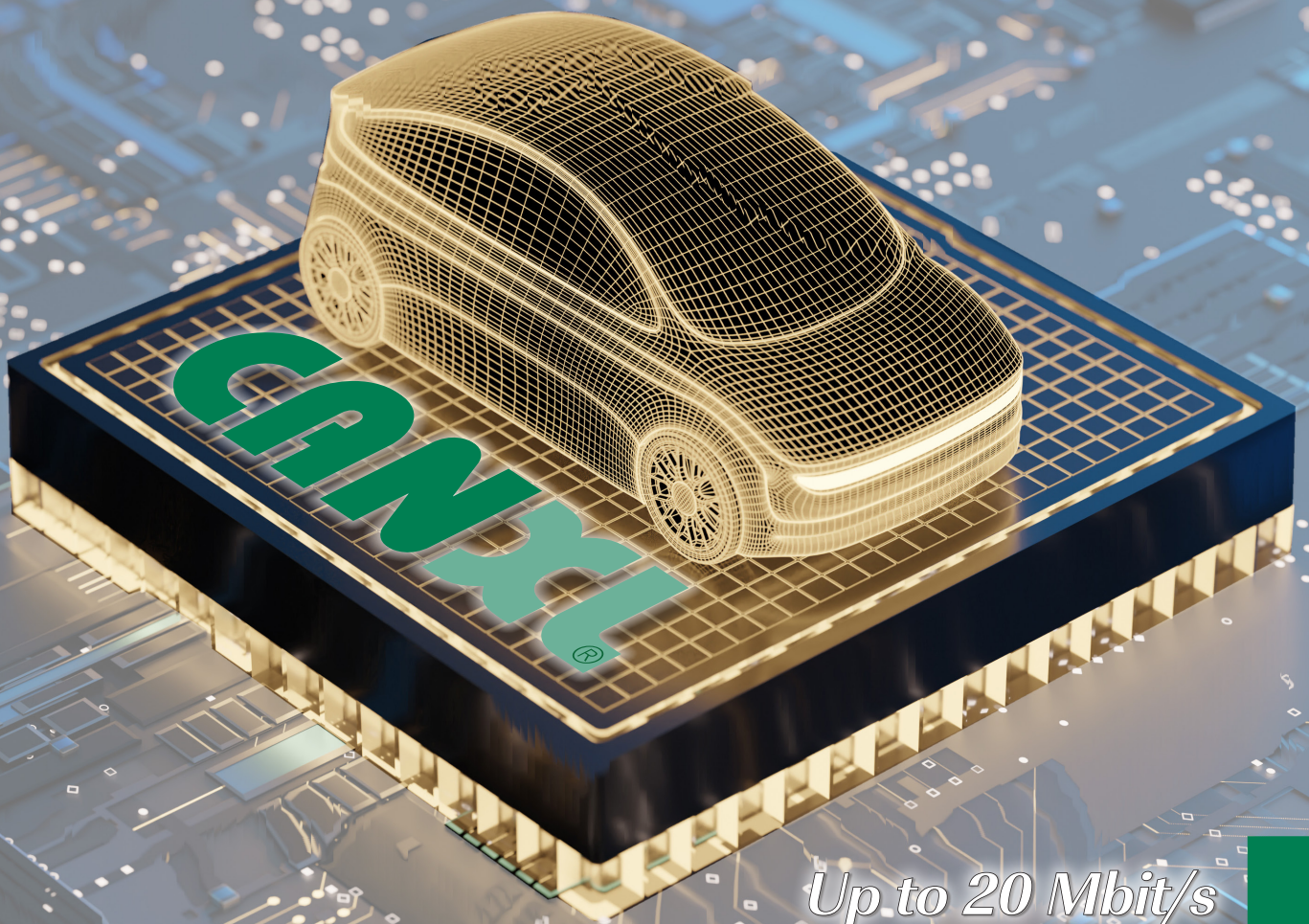


# *CAN XL* 2023

*The third CAN generation*



*Up to 20 Mbit/s*

*Up to 2048-byte data field*

*CANsec security at line-speed*

*Ethernet frames embedded in CAN XL frames*

*Supported by Autosar specifications*

*Bright future*

[www.can-cia.org](http://www.can-cia.org)



## CAN XL – Features and functions

### Up to 20 Mbit/s

Originally, CAN XL has been developed for high-volume passenger cars to enable zonal network architectures. Those architectures allow the reduction of wiring harnesses, which saves weight. CAN XL is suitable to run several Classical CAN and even CAN FD networks on one single physical network. This is supported by new protocol functions. Using CAN SIC XL transceivers, data bit rates up to 20 Mbit/s are possible.

### CANsec and frame fragmentation

The optional CANsec data link layer security protocol is a building block to meet future cybersecurity requirements. The optional CAN XL frame fragmentation improves the real-time demands in control applications.

### Robust and reliable

CAN XL communication is at least as robust and reliable as Classical CAN and CAN FD. The probability of undetected errors is even lower, by means of using two CRCs in the frame. The error detection performance has been evaluated independently by two universities.

### Key features

- ◆ Up to 20 Mbit/s data phase bit rate
- ◆ 1-byte to 2048-byte data field size
- ◆ CANsec security protocol at line-speed
- ◆ Support of virtual CAN networks
- ◆ 11-bit priority identifier intended for bus access
- ◆ 32-bit acceptance field intended for addressing
- ◆ Simultaneous support of multiple higher-layer protocols



# *CAN XL – Application fields and availability*

## **Vehicles and non-vehicles**

In automotive applications and heavy-duty commercial vehicles, CAN XL fills the gap between legacy CAN networks (Classical CAN and CAN FD) and high-performance network solutions. In non-automotive applications, CAN XL provides sufficient payload capability to be used as backbone network and to support functional safety and cybersecurity.

## **Chips and tools**

Different micro-controller families provide CAN XL protocol controllers. Several chipmakers announced CAN SIC (signal improvement capability) XL transceivers. These integrated circuits will be available for reasonable prices as for CAN FD. Some vendors already offer hardware and software tools including oscilloscopes.

## **Autosar and CiA**

The two organizations cooperate in the development of specifications. The latest Autosar specifications support the new CAN XL features like longer payloads as well as Classical CAN, CAN FD, and Ethernet tunneling.

## ***CAN XL status***

- ◆ Specified in CiA 610 document series
- ◆ ISO 11898 series in update process
- ◆ Conformance test plans under development
- ◆ CAN SIC XL transceiver "samples" available
- ◆ IP available for ASIC/FPGA and MCU/SOC
- ◆ MCU "samples" with CAN XL available
- ◆ Expected in vehicles in 2026/27

*Ready to use*



Join now!

## *CiA fosters CAN XL*

### **SIG CAN XL**

In the special interest group (SIG) CAN XL, CiA members develop and maintain the CAN XL ecosystem. This covers the data link and physical layer, as well as higher-layer functions. Additionally, the SIG takes care of related conformance test plans.

### **MG CAN XL**

In the marketing group (MG) CAN XL, automakers, suppliers and semiconductor manufacturers develop, initiate, and coordinate joint marketing initiatives to pave CAN XL the road to future application fields.



### **CiA plugfests**

CAN XL plugfests allow the verification of CAN XL features to increase the interoperability of CAN XL implementations.

Additionally, they are a good opportunity for social networking. The participants learn from each other and together they solve interoperability issues.

### **CAN XL technology days**

Experts provide in-depth information about CAN XL technology:

April 26, 2023 in Detroit (US)

June 22, 2023 in Paris (FR)

For details refer to CiA website.



CAN in Automation e. V.  
Kontumazgarten 3  
DE-90429 Nuremberg  
Phone: +49-911-928819-0  
[headquarters@can-cia.org](mailto:headquarters@can-cia.org)  
[www.can-cia.org](http://www.can-cia.org)