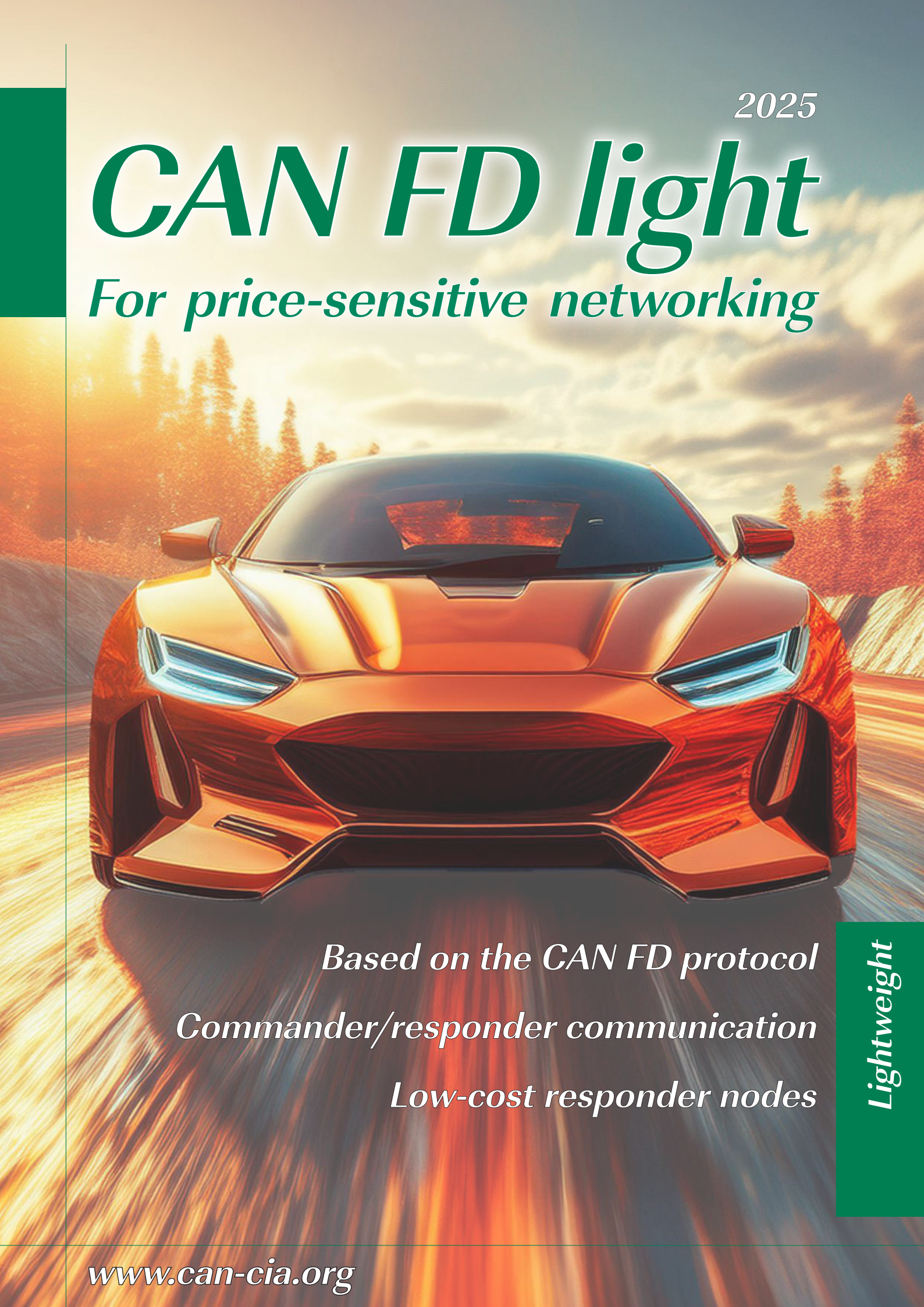
2025

CAN FD light

For price-sensitive networking



Based on the CAN FD protocol

Commander/responder communication

Low-cost responder nodes

Lightweight

www.can-cia.org

CAN FD light features

Motivation and intention

A communication schema with one commander node and multiple responder nodes is suitable for simple network applications such as controlling a huge number of LEDs (light-emitting diodes). In these applications, the commander node controls the entire communication. The responder nodes communicate only on request of the commander node. In order to use, the well-known CAN FD frame format and to avoid costly add-on circuitry such as crystals and precise oscillators, CAN FD light responder nodes have been developed. The CAN FD light commander node can be a CAN FD protocol controller.

Key functions

- CAN FD light responder nodes do not need a programmable microcontroller
- Usage of the CAN FD base frame format (FBFF) with a 11-bit identifier field
- No bus arbitration needed
- CAN FD light responder nodes do not transmit CAN error or overload frames
- Deterministic communication schema and high busload utilization

Benefits for network designers

- Cost-saving CAN FD light responder nodes
- Easy integration into CAN-based network architectures
- Simple control of CAN FD light responder clusters by broadcast communication
- Unicast commander/responder communication supported
- Robust CAN physical layer optionally implemented in CAN FD light responder nodes

CAN FD light status and future

Standards and specifications

- CAN FD protocol controller: ISO 11898-1:2024
- CAN FD light responder: ISO 11898-1:2024 (annex)
- CAN FD light responder conformance testing: ISO 16845-1
- Additional CAN FD light network design recommendations: CiA 604-3
- CAN transceiver: ISO 11898-2:2024

Further information for device and network designers

CiA provides additional design guidelines and white papers in its publications:

- CAN Newsletter magazine
- iCC (international CAN Conference) proceedings
- CiA website
- etc.

Availability of CAN FD light products

- CAN FD light responder IP cores: Bosch
- CAN FD light responder implementations: ST Microelectronics, Texas Instruments (prototypes)
- CAN FD light tools: Vector
- CAN transceivers: several suppliers
- CAN FD protocol controller: several suppliers

Application possibilities

- Deeply embedded networks in automotive LED-based lamps
- Deeply embedded networks in heating, ventilation, and air-conditioning (HVAC) systems
- Deeply embedded networks in battery cell management systems
- Other price-sensitive network applications with multiple simple sensors and actuators

Ready to use

Join us!

CiA fosters CAN FD light

Users' and manufacturers' association

CiA (CAN in Automation) has been established in March 1992. The CAN FD light approach has been developed within in the nonprofit association and has been submitted for standardization to ISO.

CiA provides technical, product, and marketing information about CAN. The aim is to promote CAN's image and to provide a path for future developments of the CAN technology. Therefore, CiA takes part in and supports the development of CAN-related standards and specifications. Additionally, an important part of the organization's effort is spent to develop and maintain specifications for CANopen (CC/FD) and J1939.

CiA organizes joint marketing activities in all parts of the world. This includes joint stands at tradeshows, joint information events, workshops, and contributions to magazines as well as conferences. An essential aim of the organization is the social networking of CAN-interested parties. In CiA's technical and marketing groups, engineers exchange experiences and knowledge to the benefit of all CiA members.

Special interest group (SIG) CAN FD light

This CiA technical working group has developed the CAN FD light specification. It specifies currently the Echo mode needed for conformance testing of CAN FD light responder implementations. It specifies also the related conformance test cases. In addition, this SIG is going to organize CAN FD light plugfests, testing commander and responder node implementations on interoperability.

CAN FD light

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