

Events on CANopen in special purpose cars

CAN in Automation (CiA) has scheduled two CiA technology days with special regard to CANopen in special purpose cars (CiA 447). The 4-hour events take place at two different starting times.

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CAN in Automation (CiA) has scheduled two CiA technology days online with the topic "CANopen in special purpose cars (CiA 447)". The events take place on October 27 (start 09:00 to 13:00, Berlin time) and October 28 (start 15:00 to 19:00, Berlin time), 2020. Thus, people from all over the world can participate at a suitable local time.

These CiA technology days provide an insight to the status and future of CANopen in special purpose cars (CiA 447). The presentation language will be English. Participation is free of charge, but registration is obligatory to receive the dial-in data. CiA members have also the option to take part with technical-oriented presentations, to inform about experiences with CiA 447 solutions. The agenda can be found [here](#).

This profile standardizes the electronic interfaces of the add-on equipment for special-purpose passenger cars such as taxis, police cars, emergency vehicles, vehicles for handicapped persons etc. Use of CiA 447 allows the car manufacturer to choose appropriate add-on devices (e.g. taximeter, roof bar, camera) from diverse suppliers. Standardized interfaces simplify the integration of the add-on devices based on the plug-and-play principle. Development effort, time and costs are minimized. The effort for testing and for authorization of special add-on devices is reduced. Vehicle manufacturers do not require additional agreements with device suppliers.

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(Source: CiA)

The device suppliers benefit from the possibility to sell the same devices to diverse car manufacturers. The devices do not have to be adapted to a particular manufacturer or to a type of vehicle. Diagnostics of the special equipment may be done via off-the-shelf CANopen tools.

The four-part application profile specifies the CAN physical layer, application, configuration and diagnostic parameters transmitted within a car add-on device network. Add-on devices communicate with the car's IVN (in-vehicle network) gateway, which provides IVN-signals in a pre-defined manner and serves as an NMT (network management) master in the add-on network.

Part 1 defines the physical layer (e.g. connectors), the general system architecture, the boot-up procedure, and some common communication parameter objects. For node-ID assignment it is recommended to use LSS (layer setting services) Fastscan procedure as defined in CiA 305. Further, services and protocols for power management (sleep and wake-up mechanisms) as well as timely relationships of the CiA 447 protocols are specified. Part 2 gives an overview about the defined virtual devices (indivisible functionality of a device e.g. IVN gateway, taximeter, printer) and the corresponding configuration and process parameters. The detailed process data and configuration parameter definitions are provided in part 3.

Part 4 specifies pre-defined CAN-IDs (CAN identifier) for SDOs and PDOs as well as the content of the process data objects (PDOs). As the number of devices in the car add-on network is limited to 16, a full meshed SDO communication (each device communicates with all other devices via SDO) is possible. Further CAN-IDs are specified for use of extended diagnostic functions according to ISO 14229-1 (UDS) and ISO 14229-3 (ISO-TP).

The related SIG (special interest group) is currently working on the CiA 312-5 document, which defines the test specification for the CiA 447 devices. It is also intended to submit the CiA 447 profile for the international standardization.

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