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GB/T 42691.5-2023

Road vehicles - Local Interconnect Network(LIN) - Part 5: Application programmers interface (API)

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents.

This document is Part 5 of GB/T 42691 Road vehicles - Local Interconnect Network (LIN). The following parts have been issued for GB/T 42691:

-- Part 1: General information and use case definition;

-- Part 2: Transport protocol and network layer services;

-- Part 3: Protocol specification;

-- Part 4: Electrical physical layer (EPL) specification 12 V/24 V;

-- Part 5: Application programmers interface (API);

-- Part 6: Protocol conformance test specification;

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-- Part 7: Electrical Physical Layer (EPL) conformance test specification;

-- Part 8: Electrical physical layer (EPL) specification: LIN over DC powerline (DC-LIN).

This document is identical to ISO 17987-5:2016 Road vehicles - Local Interconnect Network (LIN) - Part 5: Application programmers interface (API).

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1 Scope

This document has been established in order to define the LIN application programmers interface (API).

This document applies to the definition of application programmers interface of LIN communication.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

ISO 17987-2, Road vehicles - Local Interconnect Network (LIN) - Part 2: Transport protocol and network layer services

Note: GB/T 42691.2-2023, Road vehicles - Local Interconnect Network (LIN) - Part 2: Transport protocol and network layer services (ISO 17987-2:2016, IDT)

ISO 17987-3, Road vehicles - Local Interconnect Network (LIN) - Part 3: Protocol specification

Note: GB/T 42691.3-2023, Road vehicles - Local Interconnect Network (LIN) - Part 3: Protocol specification (ISO 17987-3:2016, IDT)

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17987-2 and ISO 17987-3 apply.

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3.2 Symbols

For the purposes of this document, the following symbols apply.

||: logical OR binary operation.

3.3 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

API: application programmers interface

OSI: open systems interconnection

PDU: protocol data unit

RX: Rx pin of the transceiver

UART: universal asynchronous receiver transmitter

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4.1 LIN cluster generation

The LIN Description file (LDF; see ISO 17987-2) is parsed by a tool and generates a configuration for the LIN device driver. The node capability language specification (NCF) is normally not used in this process since its intention is to describe a hardware slave node, and therefore, does not need the API. See ISO 17987-2 for a description of the workflow and the roles of the LDF and NCF.

4.2.1 General

The API is split in three areas:

a) LIN core API;

b) LIN node configuration and identification API;

c) LIN transport layer API (optional).

4.2.2 LIN core API

The LIN core API handles initialization, processing and a signal based interaction between the application and the LIN core. This implies that the application does not have to bother with frames and transmission of frames. Notification exists to detect transfer of a specific frame if this is necessary, see 4.3.5. API calls to control the LIN core also exist.

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Two versions exist of most of the API calls:

a) static calls embed the name of the signal or interface in the name of the call;

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