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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42691.8-2023

Road vehicles - Local Interconnect Network (LIN) - Part 8: Electrical physical layer (EPL) specification: LIN over DC powerline (DC-LIN)

道路车辆 局域互联网络（LIN） 第8部分：电气物理层（EPL）规范：直流电源线上的局域互联网络（DC-LIN）

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Foreword

This document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents. This Document is Part 8 of GB/T 42691 Road Vehicles - Local Interconnect Network (LIN). GB/T 42691 has published the following parts:

--- 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 12V/24V;

--- Part 5: Application Programmers Interface (API);

--- Part 6: Protocol Conformance Test Specification;

--- Part 7: Electrical Physical Layer (EPL) Conformance Test Specification;

--- Part 8: Electrical Physical Layer (EPL) Specification: LIN over DC Powerline (DC-LIN). This Document equivalently adopts ISO 17987-8:2019 Road Vehicles - Local Interconnect Network (LIN) - Part 8: Electrical Physical Layer (EPL) Specification: LIN over DC Powerline (DC-LIN). Please note some contents of this Document may involve patents. The issuing

agency of this Document shall not assume the responsibility to identify these patents. This Document was proposed by the Ministry of Industry and Information Technology of the PRC. This Document shall be under the jurisdiction of National Technical Committee of Auto Standardization (SAC/TC 114). Drafting organizations of this Document: China FAW Group Co., Ltd.; China Automotive Technology and Research Center Co., Ltd.; Great Wall Motor Company Limited; Geely Automobile Research Institute (Ningbo) Co., Ltd.; Pan-Asia Technical Automotive Center Co., Ltd.; Dongfeng Motor Group Co., Ltd.; FAW-Volkswagen Automotive Co., Ltd.; Huizhou Desay SV Automotive Co., Ltd.; Beijing National New Energy Vehicle Technology Innovation Center Co., Ltd.; SAIC-GM-Wuling Automobile Co., Ltd.; CATARC (Tianjin) Automotive Engineering Research Institute Co., Ltd.; CATARC (Tianjin) Automotive Inspection Center Co., Ltd.; and SAIC Maxus Automotive Co., Ltd. Road Vehicles - Local Interconnect Network (LIN) - Part 8: Electrical Physical Layer (EPL) Specification: LIN over DC Powerline (DC-LIN)

1 Scope

GB/T 42691.8-2023 is Part 8 of the Chinese LIN series, and specifies the electrical physical layer for LIN carried over the DC power line. Running the data on the supply wire removes a conductor from the harness, which matters in places where a third wire is expensive or impossible - a door, a mirror, a seat, a trailer connector - but it means signalling over a line carrying switching noise, load dumps and the transients of everything else on the same supply. The standard sets the electrical physical layer requirements: the transmitter characteristics, the timing requirements, the receiver characteristics, the electrical parameters and the behaviour of communication in the presence of faults, with an informative annex on peripheral interface design considerations and a normative annex giving the conformance test plan. It took effect on 1 December 2023.

This document specifies an additional electrical physical layer (EPL) requirements for the Local Interconnect Network (LIN), including electrical characteristics, the modulation method of transmission, and how to apply the carrier signal to the DC power line. It specifies the transmission over DC powerline without affecting the LIN higher layers (hereafter named DC- LIN). The DC-LIN EPL uses a high-frequency modulated carrier to propagate UART bytes (byte- oriented) over the DC powerline. The DC-LIN EPL supports bit rates of 9 615 bit/s, 10 417 bit/s, and 19 230 bit/s. The DC-LIN EPL is applicable for a wide range of DC powerlines including 12-V and 24-V operations, allowing communicating between different DC powerlines via a coupling capacitor. A DC-LIN EPL interface to powerline example is described in Annex A.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the

dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 42691.4-2023 Road vehicles - Local Interconnect Network (LIN) - Part 4: Electrical physical layer (EPL) specification 12 V/24 V (ISO 17987-4:2016, IDT) ISO 17987-

6 Road vehicles - Local Interconnect Network - Part 6: Protocol conformance test specification NOTE:

GB/T 42691.6-2023 Road vehicles - Local Internet Network (LIN) - Part 6: Protocol conformance test specification (ISO 17987-6:2016, IDT)