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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42193.3-2022

**Road vehicles - Communication between vehicle and external
equipment for emissions-related diagnostics - Part 3: Diagnostic
connector and related electrical circuits: Specification and use**

道路车辆 车辆和外部设备之间排放相关诊断的通信 第3部分：诊断连接器和相关
电路的要求及使用

(English Translation)

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Introduction

GB/T 42193 consists of multiple parts, which together provide a coherent and organized set of specifications for the convenience of emissions Close diagnostics.

GB/T 42193 consists of 7 parts.

--- Part 1: General information and use case definitions. The purpose is to specify the general Information and use case definitions intended to provide an introduction to the series of documents.

--- Part 2: Guidelines for terms, definitions, abbreviations and abbreviations. Communication of emission-related diagnostics between the vehicle and external equipment Terms, definitions, abbreviations and abbreviations provide guidance and aim to unify the rules.

--- Part 3: Requirements and use of diagnostic connectors and related circuits. Connection of emissions-related diagnostics between the vehicle and external equipment Provides requirements for connectors and associated circuitry designed to enable standard access to OBD data.

--- Part 4: External test equipment. It specifies the communication establishment method between the vehicle and the external test equipment and the requirements of the external test equipment.

The request is designed to allow external test equipment to effectively access the vehicle through OBD services.

--- Part 5: Emissions-related diagnostic services. Specifies the emission-related diagnostic

service requirements between vehicles and external equipment, aiming to unify Communication requirements.

--- Part 6: Definition of diagnostic trouble codes. Specifies the format and description of fault codes for emission-related diagnostics between vehicles and external equipment, Aim to unify the fault code format.

--- Part 7: Data link security. Provides guidance on vehicle diagnostic data link protection of road vehicle modules against illegal intrusion, aiming at Provides guidance on protecting your vehicle from unauthorized access through the vehicle diagnostics connection.

GB/T 42193 includes within the scope of emission-related OBD, the on-board diagnostic (OBD) system of the vehicle and the test equipment that passes the vehicle. communication between.

To achieve the above objectives, this document uses ISO /IEC 7498-1 and ISO /IEC 10731, the basic reference for Open Systems Interconnection (OSI). model, which divides the communication system into seven layers. When mapping the services described in GB/T 42193 to the model, it can be divided into the following levels (Table 1).

---Application layer (layer 7), see.

- ISO 15031-5 (emission related OBD);
- ISO 27145-3 (WWH-OBD).

--- Presentation layer (layer 6), see.

- ISO 15031-2, SAEJ1930-DA;
- ISO 15031-5, SAEJ1979-DA;
- ISO 15031-6, SAEJ2012-DA(OBD);
- ISO 27145-2, SAEJ2012-DA (WWH-OBD).

---Session layer (layer 5), see.

- ISO 14229-2 supports ISO 15765-4DoCAN and ISO 14230-4DoK-Line protocols;
- ISO 14229-2 is not applicable to SAEJ1850 and ISO 9141-2 protocols.

---Transport layer (layer 4), see.

- DoCAN. ISO 15765-2 transport layer protocol and network layer services;
- SAEJ1850.ISO 15031-5 emissions-related diagnostic services;
- ISO 9141-2.ISO 15031-5 emissions-related diagnostic services;
- DoK-Line. ISO 14230-4, ISO 15031-5 emissions-related diagnostic services.

---Network layer (layer 3), see.

- DoCAN. ISO 15765-2 transport layer protocol and network layer services;
 - SAEJ1850. ISO 15031-5 emissions-related diagnostic services;
 - ISO 9141-2. ISO 15031-5 emissions-related diagnostic services;
 - DoK-Line. ISO 14230-4, ISO 15031-5 emissions-related diagnostic services.
- Data link layer (layer 2), see.
- DoCAN. ISO 15765-4, ISO 11898-1;
 - SAEJ1850;
 - ISO 9141-2;
 - DoK-Line. ISO 14230-2.
- Physical layer (layer 1), see.
- DoCAN. ISO 15765-4, ISO 11898-1, ISO 11898-2;
 - SAEJ1850;
 - ISO 9141-2;
 - DoK-Line. ISO 14230-1.

1 Scope

This document specifies the requirements for physical connections and associated pin usage to enable standard access to OBD data.

This document is applicable to on-board diagnostic standards that require road vehicles to be equipped with standard connectors for external testing in accordance with GB/T 42193.4 Test equipment to access OBD information.

Appendix A and Appendix B are for information only and are not required to achieve emissions-related OBD.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document.

3.1 Terms and Definitions

The terms and definitions defined in SAEJ1962.2015 apply to this document.

3.2 Abbreviations

The following abbreviations apply to this document. RHD. Right-Hand-Driven

4 Agreement

ISO 15031 follows the conventions in the OSI Service Convention (ISO /IEC 10731) applicable to diagnostic services.

5.1 Normative reference SAEJ1962

This document corresponds to SAEJ1962 diagnostic connector.

5.2 Performance requirements for right-hand drive vehicle connector system

According to 5.10.4e) of SAEJ1962.2015, "in other axial directions, the performance requirements shall withstand 220N without mechanical failure"

7 Layers

application layer (layer 7)

ISO 15031-5 ISO 27145-3 presentation layer (layer 6)

ISO 15031-2, ISO 15031-5, ISO 15031-6 SAEJ1930-DA/SAEJ1979-DA

ISO 27145-2 SAEJ1930-DA/SAEJ1979-DA SAEJ2012-DA(OBD)

SAEJ2012-DA(WWH-OBD) session layer (layer 5) Not applicable to ISO 14229-2 transport layer (layer 4)

Network layer (tier 3) data link layer (tier 2) physical layer (tier 1)

ISO 15031-5 SAEJ1850 ISO 9141-2

ISO 14230-4 ISO 15765-2

ISO 14230-2 ISO 11898-1

ISO 14230-1

ISO 11898-1

ISO 11898-2

ISO 15765-4