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Road vehicles — Diagnostic communication over Controller Area Network (DoCAN) —

Part 4: Requirements for emissions-related systems

Véhicules routiers — Diagnostic sur gestionnaire de réseau de communication (DoCAN) —

Partie 4: Exigences applicables aux systèmes associés aux émissions

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

This third edition cancels and replaces the second edition (ISO 15765-4:2011), which has been technically revised. It also incorporates the Amendment ISO 15765-4:2011/Amd 1:2013.

ISO 15765 consists of the following parts, under the general title *Road vehicles — Diagnostic communication over Controller Area Network (DoCAN)*[1]:

— *Part 1: General information and use case definition*

— *Part 2: Transport protocol and network layer services*

— *Part 4: Requirements for emissions-related systems*

1) ISO 15765-3 Implementation of unified diagnostic services (UDS on CAN) has been withdrawn and replaced by ISO 14229-3 Road vehicles — Unified diagnostic services (UDS) — Part 3: Unified diagnostic services on CAN implementation (UDSonCAN)

Introduction

This part of ISO 15765 has been established in order to define common requirements for vehicle diagnostic systems implemented on a Controller Area Network (CAN) communication link, as specified in ISO 11898. Although primarily intended for diagnostic systems, it also meets requirements from other CAN-based systems needing a network layer protocol.

To achieve this, it is based on the Open Systems Interconnection (OSI) Basic Reference Model, in accordance with ISO/IEC 7498-1 and ISO/IEC 10731, which structures communication systems into seven layers as shown in Table 1.

Table 1 — Enhanced and legislated OBD diagnostic specifications applicable to the OSI layers

<table>
<tr><th>OSI 7 layers [a]</th><th>Vehicle-manufacturer-enhanced diagnostics</th><th>Legislated OBD (on-board diagnostics)</th><th colspan="2">Legislated WWH-OBD (on-board diagnostics)</th></tr>
<tr><td>Application (layer 7)</td><td>ISO 14229-1, ISO 14229-3</td><td>ISO 15031-5</td><td colspan="2">ISO 27145-3, ISO 14229-1</td></tr>
<tr><td>Presentation (layer 6)</td><td>Vehicle manufacturer specific</td><td>ISO 15031-2, ISO 15031-5, ISO 15031-6, SAE J1930-DA, SAE J1979-DA, SAE J2012-DA</td><td colspan="2">ISO 27145-2, SAE 1930-DA, SAE J1979-DA, SAE J2012-DA, SAE J1939-DA (SPNs), SAE J1939-73 Appendix A (FMIs)</td></tr>
<tr><td>Session (layer 5)</td><td colspan="4">ISO 14229-2</td></tr>
<tr><td>Transport protocol (layer 4)</td><td rowspan="2">ISO 15765-2</td><td rowspan="2">ISO 15765-2</td><td rowspan="4">ISO 15765-4</td><td rowspan="2">ISO 15765-4, ISO 15765-2</td><td rowspan="4">ISO 27145-4</td></tr>
<tr><td>Network (layer 3)</td></tr>
<tr><td>Data link (layer 2)</td><td>ISO 11898-1</td><td>ISO 11898-1</td><td>ISO 15765-4, ISO 11898-1</td></tr>
<tr><td>Physical (layer 1)</td><td>ISO 11898-1, ISO 11898-2, ISO 11898-3, or vehicle manufacturer specific</td><td>ISO 11898-1, ISO 11898-2</td><td>ISO 11898-1, ISO 11898-2</td></tr>
<tr><td colspan="6">[a] 7 layers according to ISO/IEC 7498-1 and ISO/IEC 10731</td></tr>
</table>

The application layer services covered by ISO 14229-3 have been defined in compliance with diagnostic services established in ISO 14229-1 and ISO 15031-5, but are not limited to use only with them.

The transport protocol and network layer services covered by this part of ISO 15765 have been defined to be independent of the physical layer implemented, and a physical layer is only specified for legislated on-board diagnostics (OBD).

For other application areas, ISO 15765 can be used with any CAN physical layer.