Second edition
2011-11-15

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

Part 2: Transport protocol and network layer services

Véhicules routiers — Communication de diagnostic sur gestionnaire de réseau de communication (DoCAN) —

Partie 2: Protocole de transport et services de la couche réseau

Reference number
ISO 15765-2:2011(E)

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15765-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition cancels and replaces the first edition (ISO 15765-2:2004), which has been technically revised.

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

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

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

— *Part 3: Implementation of unified diagnostic services (UDS on CAN)*

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

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 on-board diagnostics specifications applicable to the OSI layers

<table>
<tr><th>Applicability</th><th>OSI 7 layers</th><th>Vehicle-manufacturer-enhanced diagnostics</th><th colspan="2">Legislated OBD (on-board diagnostics)</th><th colspan="2">Legislated WWH-OBD (on-board diagnostics)</th></tr>
<tr><td rowspan="8">Seven layers according to ISO/IEC 7498-1 and ISO/IEC 10731</td><td>Application (layer 7)</td><td>ISO 14229-1,
ISO 14229-3</td><td colspan="2">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 colspan="2">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 J1939:2011,
Appendix C (SPN),
SAE J1939-73:2010,
Appendix A (FMI)</td></tr>
<tr><td>Session (layer 5)</td><td colspan="5">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="3">ISO 15765-4</td><td rowspan="2">ISO 15765-4,
ISO 15765-2</td><td rowspan="3">ISO 27145-4</td></tr>
<tr><td>Network (layer 3)</td></tr>
<tr><td>Data link (layer 2)</td><td rowspan="2">ISO 11898-1
ISO 11898-2
ISO 11898-3
ISO 11898-5
or
user defined</td><td rowspan="2">ISO 11898-1,
ISO 11898-2</td><td rowspan="2">ISO 15765-4,
ISO 11898-1,
ISO 11898-2</td></tr>
<tr><td>Physical (layer 1)</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. ISO 14229-3 is also compatible with most diagnostic services defined in national standards or vehicle manufacturer's specifications.

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 OBD.

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