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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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# Contents

Page

<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms, definitions, symbols and abbreviated terms</b>	<b>2</b>
3.1 Terms and definitions	2
3.2 Symbols	2
3.3 Abbreviated terms	2
<b>4 Conventions</b>	<b>3</b>
<b>5 Document overview</b>	<b>3</b>
<b>6 External test equipment initialization sequence</b>	<b>4</b>
6.1 General	4
6.2 Baudrate validation procedure	7
6.2.1 BaudrateRecord	7
6.2.2 Baudrate validation	7
6.2.3 External test equipment error detection provisions	9
6.3 CAN identifier validation procedure	9
6.3.1 CAN identifier validation procedure OBD	9
6.3.2 CAN identifier validation procedure WWH-OBD	11
<b>7 Application layer</b>	<b>13</b>
<b>8 Session layer</b>	<b>14</b>
<b>9 Transport protocol layer</b>	<b>14</b>
<b>10 Network layer</b>	<b>14</b>
10.1 General	14
10.2 Network layer parameters	14
10.2.1 Timing parameter values	14
10.2.2 Definition of Flow Control parameter values	15
10.2.3 Maximum number of legislated OBD/WWH-OBD ECUs	16
10.3 Addressing formats	17
10.3.1 Normal and fixed addressing format	17
10.3.2 Functional addressing	17
10.3.3 Physical addressing	17
10.4 CAN identifier requirements	18
10.4.1 External test equipment	18
10.4.2 Legislated OBD/WWH-OBD server/ECU	18
10.5 Mapping of diagnostic addresses	19
10.5.1 Legislated OBD/WWH-OBD CAN identifiers	19
10.5.2 11 bit CAN identifiers	19
10.5.3 29 bit CAN identifiers	20
10.6 Support of ECUNAME reporting	21
<b>11 Data link layer</b>	<b>21</b>
<b>12 Physical layer</b>	<b>21</b>
12.1 General	21
12.2 External test equipment baudrates	21
12.3 External test equipment CAN bit timing	21
12.3.1 CAN bit timing parameter values	21
12.3.2 Nominal baudrate 250 kBit/s	22
12.3.3 Nominal baudrate 500 kBit/s	23
12.4 External test equipment	23

12.4.1	General.....	23
12.4.2	CAN interface .....	24
12.4.3	External test equipment cable .....	26
<b>Bibliography</b>	.....	<b>27</b>

## 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](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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)*<sup>1)</sup>:

- *Part 1: General information and use case definition*
- *Part 2: Transport protocol and network layer services*
- *Part 4: Requirements for emissions-related systems*

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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**

OSI 7 layers <sup>a</sup>	Vehicle-manufacturer-enhanced diagnostics	Legislated OBD (on-board diagnostics)	Legislated WWH-OBD (on-board diagnostics)
Application (layer 7)	ISO 14229-1, ISO 14229-3	ISO 15031-5	ISO 27145-3, ISO 14229-1
Presentation (layer 6)	Vehicle manufacturer specific	ISO 15031-2, ISO 15031-5, ISO 15031-6, SAE J1930-DA, SAE J1979-DA, SAE J2012-DA	ISO 27145-2, SAE 1930-DA, SAE J1979-DA, SAE J2012-DA, SAE J1939-DA (SPNs), SAE J1939-73 Appendix A (FMIs)
Session (layer 5)	ISO 14229-2		
Transport protocol (layer 4)	ISO 15765-2	ISO 15765-2	ISO 15765-4, ISO 15765-2
Network (layer 3)			
Data link (layer 2)	ISO 11898-1	ISO 11898-1	ISO 15765-4, ISO 11898-1
Physical (layer 1)	ISO 11898-1, ISO 11898-2, ISO 11898-3, or vehicle manufacturer specific	ISO 11898-1, ISO 11898-2	ISO 15765-4, ISO 11898-1, ISO 11898-2
ISO 27145-4			

<sup>a</sup> 7 layers according to ISO/IEC 7498-1 and ISO/IEC 10731

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.

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

## Part 4: Requirements for emissions-related systems

### 1 Scope

This part of ISO 15765 specifies requirements for Controller Area Networks (CAN) where one or more controllers comply with on-board diagnostics (OBD) or world-wide harmonized on-board diagnostics (WWH-OBD) regulations. The network presumes the use of an external test equipment for inspection and repair diagnostics, as defined by the regulations. The CAN network requirements for the vehicle and the external test equipment are based on the specifications of ISO 15765-2, ISO 11898-1 and ISO 11898-2.

This part of ISO 15765 places restrictions on those International Standards for the fulfilment of the regulations. It does not specify in-vehicle CAN bus architecture, but seeks to ensure that the vehicle's regulated CAN communications comply with external test equipment requirements.

This part of ISO 15765 defines the requirements to successfully establish, maintain and terminate communication with a vehicle that implements the requirements of the OBD/WWH-OBD regulations. Plug-and-play communication capabilities among vehicles and test equipment are defined to assure the interoperation of external test equipment and vehicles. This part of ISO 15765 details all of the OSI layer requirements to achieve this goal.

This part of ISO 15765 is the entry point for DoCAN (Diagnostic communication over Controller Area Network). Based on the results of the initialization, the external test equipment determines which protocol and diagnostic services are supported by the vehicle's emissions-related system:

- legislated OBD: ISO 15031 (all parts);
- legislated WWH-OBD: ISO 27145 (all parts).

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11898-1, *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical signalling*

ISO 11898-2, *Road vehicles — Controller area network (CAN) — Part 2: High-speed medium access unit*

ISO 15031-5, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 5: Emissions-related diagnostic services*

ISO 15765-2, *Road vehicles — Diagnostic communication over Controller Area Networks (DoCAN) — Part 2: Transport protocol and network layer services*

ISO 27145-3, *Road vehicles — Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD) communication requirements — Part 3: Common message dictionary*