BS ISO 15031-1:2010

BSI Standards Publication

Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics

Part 1: General information and use case definition

National foreword

This British Standard is the UK implementation of ISO 15031-1:2010.

The UK participation in its preparation was entrusted to Technical Committee AUE/16, Electrical and electronic equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 68187 5

ICS 13.040.50; 43.040.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2011.

Amendments issued since publication

Date	Text affected

BS ISO 15031-1:2010

INTERNATIONAL STANDARD

ISO 15031-1

Second edition
2010-12-15

Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics —

Part 1: General information and use case definition

Véhicules routiers — Communications entre un véhicule et un équipement externe quant au diagnostic relatif aux émissions —

Partie 1: Informations générales et définition de cas d'usage

Reference number
ISO 15031-1:2010(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 15031-1 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 15031-1:2001), which has been technically revised.

ISO 15031 consists of the following parts, under the general title *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics*:

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

— *Part 2: Guidance on terms, definitions, abbreviations and acronyms*

— *Part 3: Diagnostic connector and related electrical circuits, specification and use*

— *Part 4: External test equipment*

— *Part 5: Emissions-related diagnostic services*

— *Part 6: Diagnostic trouble code definitions*

— *Part 7: Data link security*

ISO 15031 provides an implementer with all documents and references required to support the implementation of legislated on-board diagnostics (OBDs) in accordance with the requirements set forth in the country-specific emissions regulation.

— ISO 15031-1 provides general information and use case definitions and an overview of the document set along with the use case definitions and a common set of resources (definitions, references) for use by all subsequent parts.

— ISO 15031-2 is a guide to terms, definitions, abbreviations and acronyms used in emissions-related diagnostics, with respect to the communication between road vehicles and external equipment used in that field. It also specifies a procedure for constructing new terms. As it gives recommended usage of diagnostic terms applicable to electrical/electronic systems, it also makes reference to related mechanical terms, definitions, abbreviations and acronyms.

— ISO 15031-3 specifies a minimum set of requirements for a diagnostic connector used in communication between vehicle and external equipment for emissions-related diagnostics.

— ISO 15031-4 provides requirements to be fulfilled by any external test equipment connected to the vehicle.

— ISO 15031-5 provides the data reporting requirements of (OBD) regulations in the United States and Europe, and any other region that may adopt similar requirements in the future. ISO 15031-5 specifies:

  — message formats for request and response messages,

  — timing requirements between request messages from external test equipment and response messages from vehicles, and between those messages and subsequent request messages,

  — behaviour of both the vehicle and external test equipment if data is not available,

  — a set of diagnostic services, with corresponding content of request and response messages, to satisfy OBD regulations.

— ISO 15031-6 provides uniformity for standardized Diagnostic Trouble Codes (DTC) that electrical/electronic (OBD) systems of motor vehicles are required to report when malfunctions are detected. It further provides guidance for uniform messages (text descriptor) associated with these codes.

— ISO 15031-7 specifies a standard mechanism for limiting access to particular vehicle services (such as those intended for use only within the original manufacturing plant).

Introduction

0.1 Overview

ISO 15031 consists of a number of parts which, taken together, provide a coherent, self-consistent set of specifications to facilitate emissions-related diagnostics. Parts 2 through 7 are based on SAE recommended practices. This part of ISO 15031 provides an introduction to the series of International Standards and the reference to the SAE Digital Annexes (DA).

Such standardization is of benefit to many sectors of the automotive industry, including service technicians who are required to work on a variety of vehicle types and component suppliers who wish to provide similar products to several vehicle manufacturers.

Some of the documents have a wider scope than just purely emissions-related issues. The legislator is the adequate authority to make the appropriate references.

ISO 15031 includes the communication between the vehicle's on-board diagnostic (OBD) systems and an external (off-board) “generic” test equipment within the scope of the emissions-related OBD legislation.

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. When mapped on this model, the services specified by ISO 15031 are broken into the following layers in accordance with Table 1:

— diagnostic services (layer 7), specified in
  — ISO 15031-5 (emissions-related OBD);
  — ISO 27145-3 (WWH-OBD);
— presentation layer (layer 6), specified in
  — ISO 15031-2, SAE J1930-DA;
  — ISO 15031-5, SAE J1979-DA;
  — ISO 15031-6, SAE J2012-DA (OBD);
  — ISO 27145-2, SAE J2012-DA (WWH-OBD);
— session layer services (layer 5), specified in
  — ISO 14229-2 support ISO 15765-4 and ISO 14230-4 protocol;
  — ISO 14229-2 are not applicable to the SAE J1850 and ISO 9141-2 protocols;
— transport layer services (layer 4), specified in
  — ISO 15765-4, ISO 15765-2 Transport protocol and network layer services;
  — SAE J1850 defined in ISO 15031-5;
  — ISO 9141-2 defined in ISO 15031-5;
  — ISO 14230-4 defined in ISO 15031-5;

— network layer services (layer 3), specified in

  — ISO 15765-4, ISO 15765-2 Transport protocol and network layer services;

  — SAE J1850 defined in ISO 15031-5;

  — ISO 9141-2 defined in ISO 15031-5;

  — ISO 14230-4 defined in ISO 15031-5;

— data link layer (layer 2), specified in

  — ISO 15765-4, ISO 11898-1 and ISO 11898-2;

  — SAE J1850;

  — ISO 9141-2;

  — ISO 14230-2;

— physical layer (layer 1), specified in

  — ISO 15765-4, ISO 11898-1 and ISO 11898-2;

  — SAE J1850;

  — ISO 9141-2;

  — ISO 14230-1.

Table 1 — Legislated emissions-related OBD/WWH[1)]-OBD diagnostic specifications applicable to the OSI layers

<table>
<tr><th>Applicability</th><th>OSI 7 layers</th><th colspan="6">Emissions-related OBD communication requirements</th><th colspan="3">Emissions-related WWH-OBD communication requirements</th></tr>
<tr><td rowspan="9">Seven layer according to ISO/IEC 7498-1 and ISO/IEC 10731</td><td>Application (layer 7)</td><td colspan="6">ISO 15031-5</td><td colspan="3">ISO 27145-3</td></tr>
<tr><td rowspan="2">Presentation (layer 6)</td><td colspan="6">ISO 15031-2, ISO 15031-5, ISO 15031-6
SAE J1930-DA / SAE J1979-DA</td><td colspan="3">ISO 27145-2
SAE J1930-DA / SAE J1979-DA</td></tr>
<tr><td colspan="6">SAE J2012-DA (OBD)</td><td colspan="3">SAE J2012-DA (WWH-OBD)</td></tr>
<tr><td>Session (layer 5)</td><td colspan="2">Not Applicable</td><td colspan="4">ISO 14229-2</td></tr>
<tr><td>Transport (layer 4)</td><td colspan="2" rowspan="2">ISO 15031-5</td><td rowspan="2">ISO 14230-4</td><td rowspan="2">ISO 15765-2</td><td rowspan="3">ISO 15765-4</td><td rowspan="2">ISO 15765-2</td><td rowspan="3">ISO 27145-4</td><td rowspan="2">ISO 13400-2</td></tr>
<tr><td>Network (layer 3)</td></tr>
<tr><td>Data link (layer 2)</td><td rowspan="2">SAE J1850</td><td rowspan="2">ISO 9141-2</td><td>ISO 14230-2</td><td rowspan="2">ISO 11898-1, ISO 11898 -2</td><td rowspan="2">ISO 11898-1, ISO 11898 -2</td><td rowspan="2">ISO 13400-3</td></tr>
<tr><td>Physical (layer 1)</td><td>ISO 14230-1</td></tr>
</table>

1) World-Wide Harmonized.

0.2 SAE document reference concept

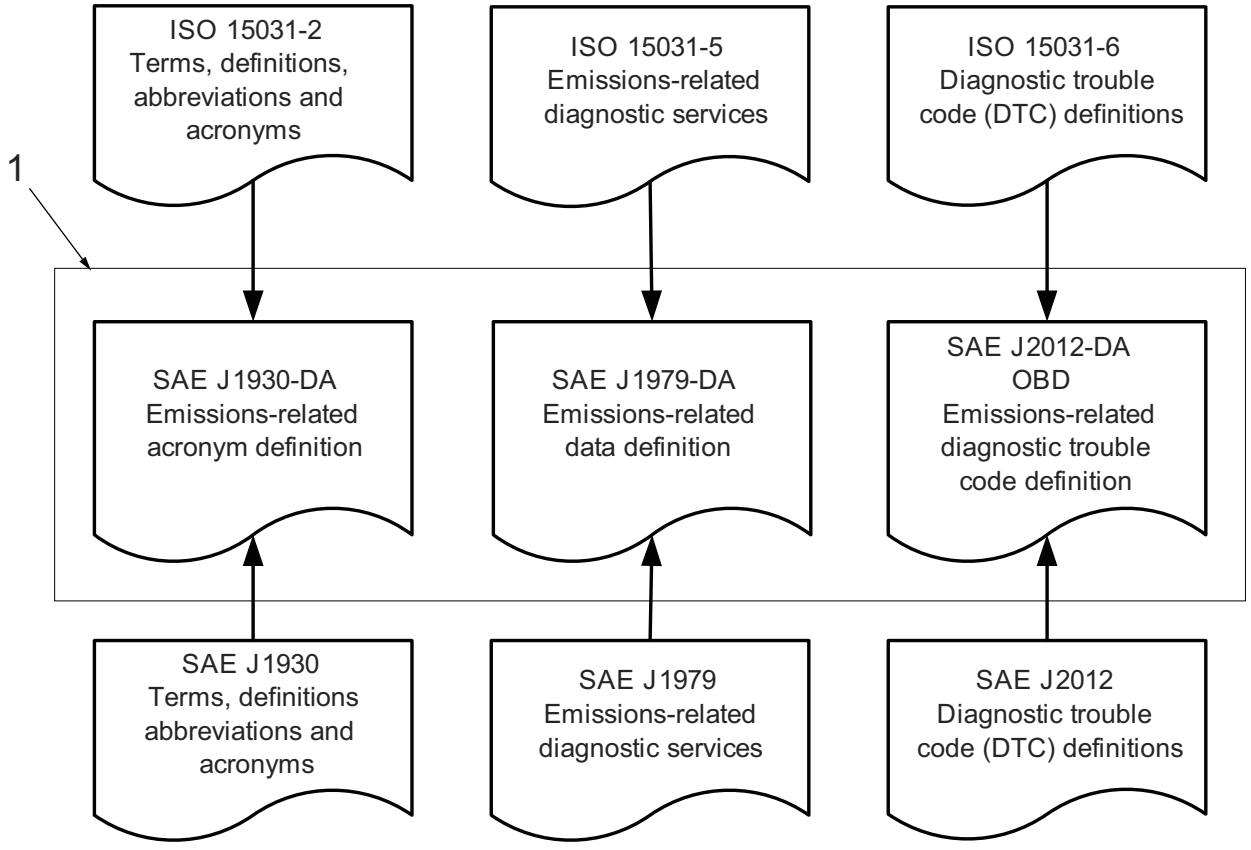
ISO 15031 references several SAE documents which contain all terms, data and DTC (diagnostic trouble code) definitions.

This is illustrated in Figure 1. Additional information on the content of the referenced documents is given below:

— SAE J1930: the document is concerned with a procedure for naming objects and systems and with the set of words from which names are built. It references SAE J1930-DA, which contains all standardized naming objects, terms and abbreviations.

— SAE J1979: the document is concerned with the definition of emissions-related diagnostic services (diagnostic test modes). It references SAE J1979-DA, which contains all standardized data items like PIDs, Test Ids, Monitor Ids and InfoType Ids.

— SAE J2012: the document is concerned with the procedure for defining emissions-related DTCs. It references SAE J2012-DA, which contains all standardized data items like DTCs and FTBs.



Key

1 SAE Digital Annexes

Figure 1 — SAE Digital Annex document reference

0.3 SAE Digital Annex revision procedure

New emissions-related regulatory requirements drive new in-vehicle technology to lower emissions. New technology-related OBD monitor data and DTCs need to be standardized to support the external (off-board) “generic” test equipment. All relevant information is proposed by the automotive industry represented by members of the appropriate SAE task force.

ISO 15031-2, ISO 15031-5 and ISO 15031-6 reference a “Change Request Form” to be used for new data items to be defined by the SAE task force for standardization. The standardized data items will be defined in SAE J1930-DA, SAE J1979-DA and SAE J2012-DA. Once the information has been balloted and approved the documents will be published on the SAE Store Web Site.

The revision request forms and instructions for updating the registers to all parts of ISO 15031 can be obtained on the Registration Authority's website at:

— for Part 2: http://www.sae.org/servlets/works/committeeHome.do?comtID=TEVDS7
The column titled “Resources” shows a document with the title: J1930-DA_Revision_Request_Form.doc. Double click on the name and you will be asked to download the document with the filename: SAE_J1930-DA_Revision_Request_Form.doc

— for Part 5: http://www.sae.org/servlets/works/committeeHome.do?comtID=TEVDS14
The column titled “Resources” shows a document with the title: J1979-DA_Revision_Request_Form.doc. Double click on the name and you will be asked to download the document with the filename: SAE_J1979-DA_Revision_Request_Form.doc

— for Part 6: http://www.sae.org/servlets/works/committeeHome.do?comtID=TEVDS9
The column titled “Resources” shows a document with the title: J2012-DA_Revision_Request_Form.doc. Double click on the name and you will be asked to download the document with the filename: SAE_J2012-DA_Revision_Request_Form.doc

Fill out the revision request form with your request.

Please send an email with the completed revision request form as an attachment to:

SAE Headquarters
755 West Big Beaver Road
Suite 1600
Troy, MI 48084-4093, USA
Fax: +1 (248) 273-2494

Email: saej1930@sae.org

Email: saej1979@sae.org

Email: saej2012@sae.org

INTERNATIONAL STANDARD **ISO 15031-1:2010(E)**

Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics —

Part 1: General information and use case definition

1 Scope

This part of ISO 15031 gives an overview of the structure and the partitioning of ISO 15031, and shows the relation between the different parts. It also defines the corresponding SAE recommended practices and reference to the SAE Digital Annexes. The terminology defined in this part of ISO 15031 is common for all parts of ISO 15031.

This part of ISO 15031 also describes the use cases applicable to the communication between vehicle and external test equipment for emissions-related diagnostics.

2 Normative references

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

ISO/IEC 7498-1:1994, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model*

ISO/IEC 10731:1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Conventions for the definition of OSI services*

ISO 15031-2, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 2: Guidance on terms, definitions, abbreviations and acronyms*

ISO 15031-3, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 3: Diagnostic connector and related electrical circuits, specification and use*

ISO 15031-4, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 4: External test equipment*

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

ISO 15031-6, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 6: Diagnostic trouble code definitions*

ISO 15031-7, *Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 7: Data link security*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
calibration identifier
CALID
identification code for a specific software/calibration contained in a server/electronic control unit (ECU)

NOTE If regulations require calibration identifications for emission-related software, those shall be reported in a standardized format as specified in SAE J1979-DA.

3.1.2
calibration verification number
CVN
server/ECU calculated verification number of a calibration identification number to verify the integrity of the software/calibration contained in a server/ECU

NOTE If regulations require calibration identifications for emission-related software, those shall be reported in a standardised format as specified in ISO 15031-2.

3.1.3
diagnostic service
information exchange initiated by a client (external test equipment) in order to require diagnostic information from a server (ECU) or to modify its behaviour for diagnostic purposes

NOTE This is also the equivalent of test mode or mode.

3.1.4
emissions-related DTC
DTC
DTC which is set when a malfunction causes vehicle emissions to exceed legislated emission thresholds or is otherwise required to be set as specified by on-board diagnostics legislation (e.g. disables another part of the diagnostic system)

NOTE Normally, the malfunction indicator (MI) is illuminated at the same time as the emissions-related DTC is set. The determination of which DTCs are emissions-related is made by the vehicle manufacturer for each vehicle, as specified by on-board diagnostic legislation.

3.1.5
I/M station
I/M
inspection and maintenance station to test roadworthiness of the emissions-related systems in the vehicle

3.1.6
malfunction indicator
MI
indicator which clearly informs the driver of the vehicle in the event of a malfunction

3.1.7
on-board diagnostics
OBD
system that monitors some or all computer input and control signals

NOTE Signal(s) outside of the predetermined limits imply a fault in the system or in a related system.

3.1.8
server
function that is part of an electronic control unit that provides the diagnostic services

NOTE This part of ISO 15031 differentiates between the server (i.e. the function) and the electronic control unit so that this part of ISO 15031 remains independent from the implementation.

3.1.9
vehicle identification number
VIN
identification number specific and unique to each vehicle following the applicable legal provisions of each national/regional authority

3.2 Abbreviated terms

CALID	calibration identifier
CAN	controller area network
CARB	California Air Resources Board
CVN	calibration verification number
DoCAN	Diagnostic communication over CAN
DoK-Line	Diagnostic communication over K-Line
DTC	diagnostic trouble code
ECU	electronic control unit
I/M	inspection and maintenance
ISO	International Organization for Standardization
K-Line	UART-based communication data link
MI	malfunction indicator
OBD	on-board diagnostic
OSI	open systems interconnection
SAE	Society of Automotive Engineers
UDS	unified diagnostic services
VIN	vehicle identification number

4 Conventions

ISO 15031 is based on the conventions discussed in the OSI Service Conventions (ISO/IEC 10731:1994) as they apply for diagnostic services.

5 Document overview

Table 2 defines the partitioning of ISO 15031 and the relation between ISO 15031-1 through ISO 15031-7 and related SAE recommended practices.

Table 2 — Reference between ISO and SAE standards

ISO		SAE		
ISO Master document		**SAE Master document**		**Digital Annex**
ISO 15031-1	General information	No equivalent standard		—
ISO 15031-2	Guidance on terms, definitions, abbreviations and acronyms	SAE J1930	Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations and Acronyms	SAE J1930-DA
ISO 15031-3	Diagnostic connector and related electrical circuits, specification and use	SAE J1962	Diagnostic Connector	—
ISO 15031-4	External test equipment	SAE J1978	OBD II Scan Tool	—
ISO 15031-5	Emissions-related diagnostic services	SAE J1979	E/E Diagnostic Test Modes	SAE J1979-DA
ISO 15031-6	Diagnostic trouble code definitions	SAE J2012	Diagnostic Trouble Code Definitions	SAE J2012-DA
ISO 15031-7	Data link security	SAE J2186	E/E Data Link Security	—

ISO 15031-2, ISO 15031-5 and ISO 15031-6 are master documents and do not define any related data in the annexes. The related data are defined in the referenced SAE Digital Annexes. These Digital Annexes are developed, updated and maintained by the SAE task forces.

Figure 2 illustrates the document references.

The protocol initialization identifies whether ISO 15765-4 DoCAN or SAE J1850 or ISO 14230-4 DoK-Line or ISO 9141-2 is the data link layer supported by the vehicle. ISO 15031 references the standards as an applicable data link for emissions-related OBD.

ISO 15031-5 specifies the applicable emissions-related diagnostic services. This part of ISO 15031 specifies the data record structures and references SAE J1930-DA, SAE J1979-DA and SAE J2012-DA which include all emissions-related OBD data definitions.

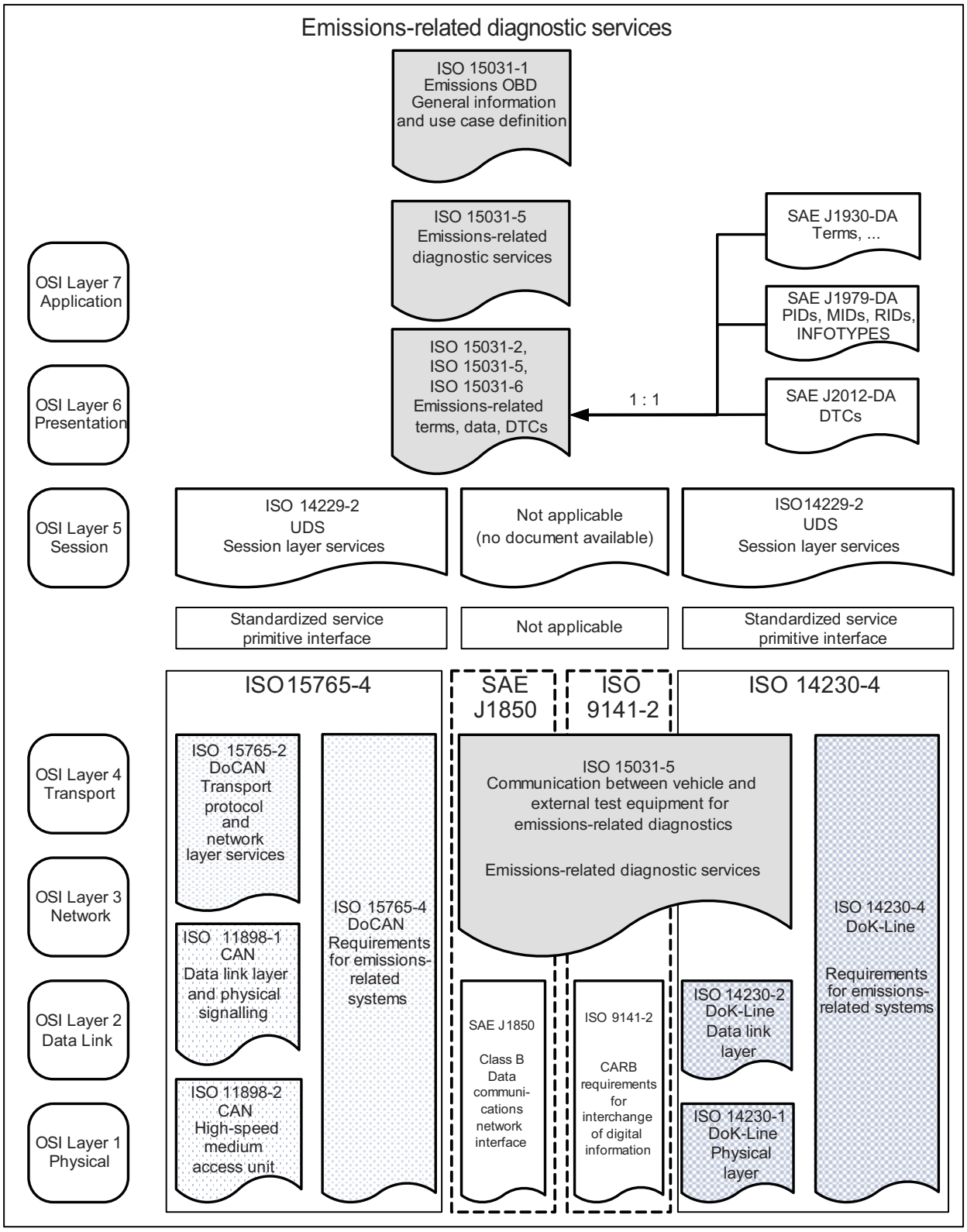


Figure 2 — Implementation of emissions-related OBD in OSI model

6 Emissions-related OBD use case overview and principles

6.1 Overview

The OBD system is required to make available vehicle diagnostic information under several different use cases as specified by the legislation. These use cases provide the implementer with guidance in the implementation of the OBD system and methodology used on the vehicle to make the required data available.

6.2 OBD use case clusters

The following is a summary of the use cases applicable to emissions-related OBD systems.

Table 3 provides an overview of the main emissions-related OBD use cases. A main emissions-related OBD use case cluster may have one or more use case definitions.

Table 3 — OBD main use case clusters

No.	Main title of use case cluster	Brief description
1	Information about emissions-related malfunctions for the purpose of inspection	The purpose of this information package is to provide access to the data set specified as necessary by the OBD legislation to determine vehicle readiness and characterize the malfunctions detected by the OBD system.
2	Information related to diagnosis for the purpose of repair	The purpose of this information package is to provide access to all OBD data required by the OBD legislation and available from the OBD system.

7 Emissions-related OBD use case definition

7.1 UC 1 — Information about emissions-related malfunctions

7.1.1 UC 1.1 — Information about emission-related confirmed DTC(s)

Table 4 describes the use case of retrieving confirmed DTC(s) by an external test equipment which might either be an I/M test system or a repair technician's scan tool.

Table 4 — UC 1.1 Information about emissions-related confirmed DTC(s)

Actor	Any repair technician, any inspection station (I/M station).
Goal	This information will provide any inspection station with engine-related OBD data including the MI status and associated data, a list of diagnostic trouble codes and associated data.
Use case input	Perform VIN upload, read MI status, read confirmed DTC(s), read readiness status of OBD system, read continuous-MI counter and cumulated operating hours with a continuous-MI.
Use case output	— The VIN. — The MI status. — The DTCs with confirmed status. — The readiness status of the OBD system.
Brief description	The OBD system shall provide the data items as required by the emissions-related module(s) and in the format as specified in ISO 15031 and associated SAE J1930-DA, SAE J1979-DA and SAE J2012-DA for the external inspection test equipment to assimilate the data and provide an inspector with the information.

7.1.2 UC 1.2 — Information about emissions-related pending DTC(s)

Table 5 describes the use case of retrieving pending DTC(s) by an external test equipment which might either be an I/M test system or a repair technician's scan tool.

Table 5 — UC 1.2 Information about emissions-related pending DTC(s)

Actor	Any repair technician.
Goal	The goal of obtaining pending DTC(s) detected during current or last completed driving cycle for emissions-related components/systems is used to assist the service technician after a vehicle repair, and after clearing diagnostic information, by reporting test results after a single driving cycle.
Use case input	Perform VIN upload, read MI status, read pending DTC(s), read readiness status of OBD system, read continuous-MI counter and cumulated operating hours with a continuous-MI.
Use case output	— The VIN. — The MI status. — The DTCs with pending status. — The readiness status of the OBD system.
Brief description	Pending diagnostic trouble codes may be reported after a vehicle repair, after clearing diagnostic information and after a single driving cycle. If this is the case the test(s) failed during the driving cycle, and the DTC(s) associated with that test is (are) reported. A DTC with pending status does not necessarily indicate a faulty component/system. If test results indicate a failure after additional driving, then the MI will be illuminated and a DTC will be set and reported with confirmed status, indicating a faulty component/system.

7.1.3 UC 1.3 — Information about emissions-related permanent DTC(s)

Table 6 describes the use case of retrieving permanent DTC(s) by an I/M test system.

Table 6 — UC 1.3 Information about emissions-related permanent DTC(s)

Actor	Any inspection station (I/M station).
Goal	The intended use of this data is to prevent vehicles from passing an in-use inspection simply by disconnecting the battery or clearing DTCs with an external test equipment (scan tool) prior to the inspection. The presence of permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the vehicle on-board monitoring system.
Use case input	Perform VIN upload, read MI status, read permanent DTC(s), read readiness status of OBD system, read continuous-MI counter and cumulated operating hours with a continuous-MI.
Use case output	— The VIN. — The MI status. — The DTCs with permanent status. — The readiness status of the OBD system.
Brief description	Permanent DTC(s) are DTCs that are “confirmed” and are retained in the non-volatile memory of the server/ECU until the appropriate monitor for each DTC has determined that the malfunction is no longer present and is not commanding the MI on. The permanent DTC information is used to verify a successful repair and the readiness of the vehicle's emissions-related OBD system to perform an I/M test. The permanent DTC is read-only and can not be cleared.

7.2 UC 2 — Information related to diagnosis for the purpose of repair

Table 7 describes the use case of retrieving all available and supported data retrieval from the vehicle's emissions-related OBD system for the purpose of a repair. The emissions-related OBD system data are specified in ISO 15031-5 and ISO 15031-6 with reference to the SAE Digital Annexes of SAE J1930-DA, SAE J1979-DA and SAE J2012-DA.

Table 7 — UC 2 Information related to diagnosis for the purpose of repair

Actor	Any repair technician.
Goal	This information will provide repair technicians with all OBD data specified in ISO 15031 and associated Digital Annexes: SAE J1930-DA, SAE J1979-DA, SAE J2012-DA.
Use case input	All emissions-related diagnostic services and request parameters as specified in ISO 15031-5 and associated Digital Annexes: SAE J1930-DA, SAE J1979-DA, SAE J2012-DA.
Use case output	— The VIN. — The MI status. — The DTCs and status. — The readiness status of the OBD system of service 0x01 PIDs 0x01, 0x41. — Real-time information on OEM selected and supported sensor signals, internal parameters and output signals. — The freeze frame data. — The OBD Monitor test data of service 0x06. — The software CALID(s) [calibration identification(s)]. — The CVN(s) [calibration verification number(s)]. — The activation of routines.
Brief description	The OBD system provides the data items as required by the emissions-related system and in the format as specified in ISO 15031 and associated SAE J1930-DA, SAE J1979-DA and SAE J2012-DA for the external repair test equipment to assimilate the data and provide a repair technician with the information.

8 Handling of new requirements

OBD regulations require passenger cars, and light, medium and heavy duty trucks, to support a minimum set of diagnostic information to external (off-board) “generic” test equipment. New emissions-related regulatory requirements drive new in-vehicle technology to lower emissions. New technology-related OBD monitor data and DTCs need to be standardized to support the external (off-board) “generic” test equipment. All relevant information is proposed by the automotive industry represented by members of the appropriate SAE task force under the registration authority of ISO.

ISO 15031-2, ISO 15031-5 and ISO 15031-6 include a “Revision Request Form” to be used for new data items to be defined by the SAE task force for standardization. The standardized data items will be defined in SAE J1930-DA, SAE J1979-DA and SAE J2012-DA. Once the information has been balloted and approved, the documents will be published on the SAE Store Web Site.

Bibliography

[1] ISO 9141-2, *Road vehicles — Diagnostic systems — Part 2: CARB requirements for interchange of digital information*

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

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

[4] ISO 13400-1, *Road vehicles — Diagnostic communication over Internet Protocol (DoIP) — Part 1: General information and use case definition* [2)]

[5] ISO 13400-2, *Road vehicles — Diagnostic communication over Internet Protocol (DoIP) — Part 2: Network and transport layer requirements and services* [3)]

[6] ISO 14229-2, *Road vehicles — Unified diagnostic service (UDS) — Part 2: Session layer services* [4)]

[7] ISO 14230-1, *Road vehicles — Diagnostic systems — Keyword Protocol 2000 — Part 1: Physical layer*

[8] ISO 14230-2, *Road vehicles — Diagnostic systems — Keyword Protocol 2000 — Part 2: Data link layer*

[9] ISO 14230-4, *Road vehicles — Diagnostic systems — Keyword Protocol 2000 — Part 4: Requirements for emission-related systems*

[10] ISO 15765-2, *Road vehicles — Diagnostics on Controller Area Networks (CAN) — Part 2: Network layer services*

[11] ISO 15765-4, *Road vehicles — Diagnostics on Controller Area Networks (CAN) — Part 4: Requirements for emissions-related systems*

[12] ISO 27145-2, *Road vehicles — Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD) communication requirements — Part 2: Common data dictionary* [5)]

[13] ISO 27145-3, *Road vehicles — Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD) communication requirements — Part 3: Common message dictionary* [6)]

[14] ISO 27145-4, *Road vehicles — Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD) communication requirements — Part 4: Connection between vehicle and test equipment* [7)]

2) To be published.

3) To be published.

4) To be published.

5) To be published.

6) To be published.

7) To be published.

[15] SAE J1930, *Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations and Acronyms*

[16] SAE J1930-DA, *Digital Annex of Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations and Acronyms*

[17] SAE J1962, *Diagnostic Connector*

[18] SAE J1978, *OBD II Scan Tool*

[19] SAE J1979, *E/E Diagnostic Test Modes*

[20] SAE J1979-DA, *Digital Annex of E/E Diagnostic Test Mode data definition*

[21] SAE J2012, *Diagnostic Trouble Code Definitions*

[22] SAE J2012-DA, *Digital Annex of Diagnostic Trouble Code Definitions and Failure Type Definitions*

[23] SAE J2186, *E/E Data Link Security*

ICS 13.040.50; 43.040.10

Price based on 10 pages

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™