DRAFT International Standard

ISO/SAE DIS 1979-3.2

Road vehicles — On-board diagnostic communication —

Part 3: Zero-emissions vehicle propulsion systems (ZEV)

ICS: 43.040.15

ISO/TC **22**/SC **31**

Secretariat: **DIN**

Voting begins on:
2026-06-01

Voting terminates on:
2026-07-27

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENTS AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

This document has not been edited by the ISO Central Secretariat.

Reference number
ISO/SAE DIS 1979-3.2:2026(en)

© ISO/SAE International 2026



COPYRIGHT PROTECTED DOCUMENT

© ISO/SAE International 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced, or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO or SAE International at the respective address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

SAE International
400 Commonwealth Dr.
Warrendale, PA, USA 15096
Phone: 877-606-7323 (inside USA and Canada)
Phone: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
Website: www.sae.org

Published in Switzerland by ISO, published in the USA by SAE International

Contents

Page

1 Scope **11**

2 Normative references **11**

3 Terms and definitions **12**

4 Symbols and abbreviated terms **13**
4.1 Symbols 13
4.2 Abbreviated terms 13

5 Conventions **17**

6 Basic principles and use cases overview **17**
6.1 Basic principles 17
6.2 Use case groups and associated use cases 18

7 Use cases definition (UC) **19**
7.1 UCG 1 – Discover protocol communication interface and ZEV propulsion system 19
7.1.1 UC 1.1 – Discover DoCAN communication interface 19
7.1.2 UC 1.2 – Discover DoIP communication interface 19
7.1.3 UC 1.3 – Discover SOVD communication interface 20
7.1.4 UC 1.4 – Discover ZEV propulsion system server(s)/ECU(s) 20
7.2 UCG 2 – Report ZEV propulsion system information 20
7.2.1 UC 2.1 – Report ZEV propulsion system supported resources 20
7.2.2 UC 2.2 – Report ZEV propulsion system data 21
7.2.3 UC 2.3 – Report ZEV propulsion system information 22
7.3 UCG 3 – Report/erase ZEV propulsion system fault information 22
7.3.1 UC 3.1 – Report ZEV propulsion system fault information 22
7.3.2 UC 3.2 – Erase ZEV propulsion system fault information 23

8 Abstract Service Primitive (ASP) interface definition between application and OSI layers **24**
8.1 A_Data.req, A_Data.ind, and A_Data.con service interface 24
8.2 A_Data.req, A_Data.ind, and A_Data.con ASP parameter mapping 24
8.3 ASP parameters 25
8.3.1 General 25
8.3.2 Data type definitions 25

9 Use cases and general technical requirements coverage **27**
9.1 Mapping of use cases to requirements 27
9.2 Diagnostic data parameter validity 27
9.2.1 Maximum data parameter value 27
9.2.2 Invalid data parameter value 28

10 ZEV propulsion system diagnostic application **28**
10.1 Diagnostic communication interface options 28
10.2 Diagnostic communication interface discovery and support 29
10.3 Option I – DoCAN 11-Bit CANIDs with UDS communication protocol initialization 30
10.3.1 Initialize CAN controller at 500 Kbit/s and 11-bit CANIDs 30
10.3.2 Initialize DoCAN transport protocol and network layer services addresses 30
10.3.3 Confirm UDS application layer protocol 30
10.3.4 UDS on DoCAN protocol initialization timing 30
10.4 Option II – DoCAN 29-Bit CANIDs with UDS communication protocol initialization 30
10.4.1 Initialize CAN controller at 500 Kbit/s and 29-bit CANIDs 30
10.4.2 Initialize DoCAN transport protocol and network layer services addresses 30
10.4.3 Confirm UDS application layer protocol 30
10.4.4 UDS on DoCAN protocol initialization timing 31
10.5 Option III – DoIP with UDS communication protocol initialization 31

© ISO/SAE International 2026 – All rights reserved

10.5.1 Activation of DoIP communication line 31
10.5.2 DoIP routing activation 31
10.5.3 DoIP diagnostic protocol identification 31
10.5.4 DoIP logical address assignment 31
10.5.5 Confirm UDS application layer protocol 32
10.5.6 UDS on DoIP protocol initialization timing 32
10.6 Option IV – SOVD communication protocol initialization 32
10.6.1 Activation of DoIP communication line 32
10.6.2 SOVD protocol identification 32
10.6.3 SOVD protocol initialization timing 32
10.6.4 SOVD server/ECU identification 33

11 UDS ZEV propulsion system application layer 33
11.1 UDS application layer general information 33
11.2 UDS ZEV propulsion system application layer framework 33
11.3 UDS ZEV propulsion system application layer services requirements 33
11.3.1 UDS negative response message 33
11.3.2 UDS supported negative response codes 33
11.4 UDS ZEV propulsion system application layer supported services 34
11.5 UDS ReadDataByIdentifier service 34
11.5.1 Requirements definition – ReadDataByIdentifier 34
11.5.2 Message sequence requirements – ReadDataByIdentifier 35
11.5.3 Condition-based NRC handling – ReadDataByIdentifier 36
11.5.4 Report supported DIDs – ReadDataByIdentifier 37
11.5.5 UDS protocol identification 37
11.6 UDS ReadDTCInformation service 38
11.6.1 Requirements definition – ReadDTCInformation 38
11.6.2 Message sequence requirements – ReadDTCInformation 41
11.6.3 Condition-based NRC handling – ReadDTCInformation 43
11.7 UDS ClearDiagnosticInformation service 44
11.7.1 Requirements definition – ClearDiagnosticInformation 44
11.7.2 Message sequence requirements – ClearDiagnosticInformation 45
11.7.3 Condition-based NRC handling – ClearDiagnosticInformation 45
11.8 UDS ZEV propulsion system logical address assignment 46
11.9 UDS ZEV application layer timing 46
11.9.1 Vehicle performance timing 46
11.9.2 DoCAN default performance timing 47
11.9.3 DoCAN to DoCAN gateway default timing 48
11.9.4 DoCAN enhanced performance timing 50
11.9.5 DoCAN exception performance timing 51
11.9.6 DoCAN to DoCAN gateway performance timing 51
11.9.7 DoIP default performance timing 53
11.9.8 DoIP to DoCAN gateway default timing 55
11.9.9 DoIP enhanced performance timing 56
11.9.10 DoIP exception performance timing 57
11.9.11 DoIP to DoCAN gateway performance timing 58
11.9.12 UDS service exception timing 59

12 UDS ZEV presentation layer 61
12.1 General 61
12.2 UDS ZEV presentation layer framework 61
12.3 UDS ZEV presentation layer communication profile 61

13 UDS ZEV session layer 61
13.1 General 61
13.2 UDS ZEV session layer framework 61
13.3 UDS ZEV session layer communication profile 62

14 T_DATA interface 62

© ISO/SAE International 2026 – All rights reserved

15 Setup DoCAN communication interface 62
15.1 DoCAN ZEV framework 62
15.2 DoCAN_ZEV_L4_ComProfile transport protocol configuration parameters 62
15.3 DoCAN_ZEV_L4_ComProfile transport protocol parameters 63
15.4 DoCAN_ZEV_L3_ComProfile network layer addressing configuration parameters 64
15.5 DoCAN_ZEV_L2_ComProfile data link layer configuration parameters 65
15.6 DoCAN_ZEV_L1_ComProfile physical layer configuration parameters 67
15.7 DoCAN PMD DLC cable requirements 67

16 Setup DoIP communication interface 67
16.1 DoIP ZEV framework 67
16.2 DoIP_ZEV_L4_ComProfile transport protocol configuration parameters 67
16.3 DoIP_ZEV_L3_ComProfile network layer configuration parameters 68
16.4 DoIP_ZEV_L2_ComProfile data link layer configuration parameters 68
16.5 DoIP_ZEV_L1_ComProfile physical layer configuration parameters 68
16.6 DoIP ZEV media dependent interface definition 68
16.7 DoIP PMD DLC cable requirements 69

17 SOVD ZEV propulsion system application layer 69
17.1 SOVD application layer general information 69
17.2 SOVD application layer supported services 69
17.3 SOVD ZEV components and services identification 70
17.3.1 SOVD components tag usage 70
17.3.2 SOVD services tag usage 70
17.4 SOVD read data service 70
17.4.1 Requirements definition 70
17.4.2 Message sequence examples – SOVD read data service 71
17.5 SOVD read faults service 71
17.5.1 Requirements definition 71
17.5.2 Message sequence requirements – SOVD read faults service 71
17.6 SOVD clear faults service 72
17.6.1 Requirements definition 72
17.6.2 Message sequence requirements – SOVD clear faults service 72
17.7 SOVD diagnostic communication protocol security 72
17.8 SOVD diagnostic application layer performance timing 72

18 SOVD ZEV presentation layer 73

19 SOVD ZEV session layer 73

20 Setup SOVD communication interface 73
20.1 SOVD ZEV framework 73
20.2 SOVD_ZEV_L4_ComProfile transport protocol configuration parameters 73
20.3 SOVD_ZEV_L3_ComProfile network layer configuration parameters 73
20.4 SOVD_ZEV_L2_ComProfile data link layer configuration parameters 73
20.5 SOVD_ZEV_L1_ComProfile physical layer configuration parameters 73
20.6 SOVD ZEV media dependent interface definition 73
20.7 SOVD PMD DLC cable requirements 74

Annex A (informative) ZEV propulsion system UDS application layer examples 75
A.1 ReadDataByIdentifier message flow examples 75
A.1.1 Current UDS data message flow example 75
A.1.2 ReadDataByIdentifier negative response message 75
A.1.3 Supported InfoTypes from ZEV 77
A.1.4 Request vehicle information – VIN 77
A.1.5 Request vehicle information – CALID ECU#1 78
A.1.6 Request vehicle information – ECU#1 Name 81
A.2 Request vehicle information with unsupported DID 82
A.3 ReadDTCInformation message flow examples 84
A.3.1 ReadDTCInformation with confirmed/pending status 84
A.3.2 ReadDTCInformation positive response message with DTC P014211 stored 85

© ISO/SAE International 2026 – All rights reserved

A.3.3 ReadDTCInformation positive response message with no DTC stored 85
A.3.4 ReadDtcInformation with unsupported data parameters 86
A.4 ClearDiagnosticInformation message flow examples 87
A.5 DoIP ZEVonUDS example 88
A.5.1 DoIP server to ECU relationship 88
A.5.2 DoIP Step 1: routing activation 89
A.5.3 DoIP Step 2: functional request to discover all regulated ZEVonUDS ECUs 92
A.5.4 DoIP Step 3: physical request to discover all ZEVonUDS ECUs 96

Annex B (informative) ZEV propulsion system SOVD examples 103
B.1 Assumptions of ZEV propulsion system SOVD examples 103
B.2 Co-located server discovery (DNS-SD + mDNS) 103
B.2.1 SOVD discovery 103
B.2.2 Check for SOVD services on the local link 103
B.2.3 Resolve VIN 104
B.2.4 Resolve Internet Protocol (IPv4/IPv6) 104
B.2.5 Resolve versioning and base URI 104
B.3 Resolve entity and resource discovery (components, data) 105
B.3.1 Discovery 105
B.3.2 Resolve ZEV components 105
B.3.3 Determine capabilities of a given component 105
B.3.4 Data resources 106
B.3.5 Fault information retrieval 107
B.3.6 Delete fault information 108

© ISO/SAE International 2026 – All rights reserved

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).

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).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee [or Project Committee] ISO/TC [or ISO/PC] ###, *[name of committee]*, Subcommittee SC ##, *[name of subcommittee]*.

This second/third/… edition cancels and replaces the first/second/… edition (ISO #####:####), which has been technically revised.

The main changes compared to the previous edition are as follows:

— xxx xxxxxxx xxx xxxx

A list of all parts in the ISO ##### series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO/SAE International 2026 – All rights reserved

Introduction

0.1 ISO/SAE 1979 series

The ISO/SAE series is intended to satisfy the data reporting requirements of regulations in the United States and Europe, and any other market that may adopt similar requirements in the future.

This document has been developed and published in SAE and ISO under the PSDO (Partner Standards Development Organization) for the purpose of:

— leveraging joint development under equal conditions;

— achieving acceptance in other countries (considering local regulation(s));

— strengthen the expertise in communication protocols as well as zero emissions vehicle propulsion systems.

This document includes capabilities required to satisfy on-board diagnostic (OBD) requirements for multiple regions, model years, propulsion types, and vehicle types. At the time of publication many regional regulations are not yet final and are expected to change in the future. This document makes no attempt to interpret the regulations and does not include applicability of the included diagnostic services and data parameters for various vehicle applications. The user of this document is responsible to verify the applicability of each section of this document for a specific vehicle, propulsion system, model year, and region.

This document provides an implementation guidance based on the principles of the ISO 14229 series, focusing on standardization of data to ensure access to important repair information by independent repair facilities. The purpose of this document is to focus on providing the necessary content and performance requirements. The ISO/SAE series specifies diagnostic functionalities, which utilize communication facilities over either Controller Area Network (CAN) or Ethernet data links.

These requirements apply to all ECU's that provide operational data and diagnose those components that are integral to provide propulsion on zero emissions (ZEV) vehicles. In general, if an ECU monitors a component, whose failure directly affects the propulsion system, the information reporting uses the diagnostic communication services as specified in the ISO/SAE series.

A government agency may have policy reasons for specifically tracking ZEV propulsion componentry (i.e. unique warranty requirements). In order to track the linkage between a diagnostic trouble code and a covered repair under ZEV component warranty, provisions are made in ISO/SAE 1979 series to highlight those failures that are specifically related to electrified propulsion. These linkages can be thought of analogously to emissions-related failures requiring emissions-related warranty repair.

NOTE Global regulations may vary in the definition of propulsion componentry. This document provides a standard to satisfy known country-specific certification regulations. This document is not considered a final authority for interpretation of the certification regulations, so users of this document should determine the applicability of capabilities defined in this document for their specific OBD regulatory requirements.

In order to satisfy OBD requirements for multiple regions, model years, propulsion types, and vehicle types, the communication is based on the Open Systems Interconnection (OSI) Basic Reference Model specified in accordance with ISO/IEC 7498-1[1] and ISO/IEC 10731[2], which structures communication systems into seven layers. When mapped on this model, the services specified are broken into:

0.2 ISO/SAE 1979 series referenced documents

Figure 1 shows the propulsion system relevant documents in a top to down illustration.

© ISO/SAE International 2026 – All rights reserved

The top shows the application-type documents, where ISO/SAE 1979-3 Zero emissions vehicle propulsion system (this document) is referenced by regulation(s) and ISO/SAE 1979-2 emissions propulsion system is a potential future document. ISO/SAE 1979-3 specifies zero-emissions vehicle propulsion system and ISO/SAE 1979-2 specifies emissions-related vehicle propulsion system requirements. This includes the configuration of communication protocol related documents according to the Open System Interconnect (OSI) layers.

ISO/SAE 1979-2 and ISO/SAE 1979-3 include requirements to support unified diagnostic services (ISO 14229 UDS series: option 'I', 'II' and 'III') and service-oriented vehicle diagnostics (ISO 17978 SOVD series: option 'IV'). The vehicle manufacturer decides which option to support by the vehicle propulsion system:

— Option 'I': UDS on DoCAN with 11-bit CAN Identifiers;

— Option 'II': UDS on DoCAN with 29-bit CAN Identifiers;

— Option 'III': UDS on DoIP;

— Option 'IV': SOVD on TCP/IP.

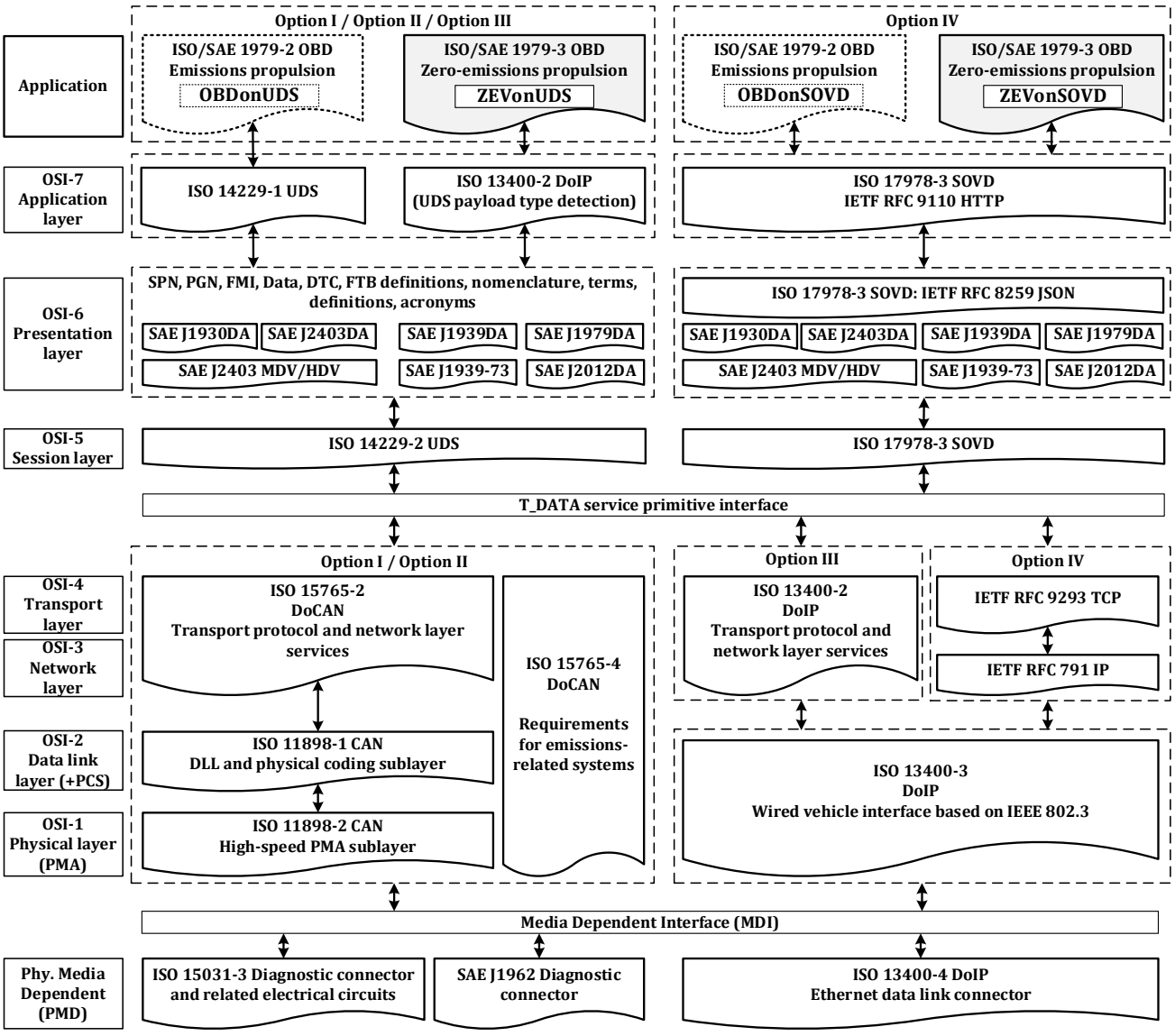


Figure 1 — Propulsion system communication documents referenced by regulation(s)

© ISO/SAE International 2026 – All rights reserved

0.3 SAE digital annexes

This document references various digital annexes as follows:

— SAE J1930DA[4] is concerned with terms definition;

— SAE J1979DA is concerned with the definition of:

  — data identifiers (DIDs):

    — parameter identifiers (PIDs);

    — info types identifiers (ITIDs);

  — routine identifiers (RIDs).

— SAE J2012DA is concerned with the definition of:

  — diagnostic trouble codes (DTCs);

  — failure type bytes (FTBs).

— SAE J1939DA is concerned with the definition of suspect parameter numbers (SPNs);

— SAE J2403DA[6] is concerned with the definition of medium/heavy-duty E/E systems diagnosis nomenclature.

0.4 SAE digital annex revision procedure

New ZEV regulatory requirements require monitoring of the componentry that facilitates zero emission transportation. New ZEV technology parameters and diagnostic trouble codes need to be standardized to support the external (off-board) “generic” test equipment. All relevant information is proposed by the automotive industry who are represented by members of the appropriate SAE task force.

This document references a “Change Request Form” to be used for new data items to be defined by the SAE task force for standardization. The standardized terms and definitions are defined in the SAE J1930DA[4], the standardized data items are defined in the SAE J1979DA, and the standardized diagnostic trouble codes are defined in the SAE J2012DA. Once the information has been balloted and approved, the documents are published on the SAE store website.

The revision request form and instructions for this document can be obtained on the registration authority’s website at: https://standardsworks.sae.org/standards-committees/j1979-review-task-force.

Located within the overview tab in the public resources section, a document with the title: *J1979-DA Revision Request Form* is available for change requests. Click on the name to download the document.

Fill out the revision request form with your request.

Please send an email with the completed revision request form as an attachment to: saej1979@sae.org.

Those users who use SAE_J1939-73_DTCFormat to communicate DTCs may also request new suspect parameter number (SPN) values from the SAE Truck and Bus Control and Communications Network Committee. Request forms are available to the public at the committee’s SAE Standards Works website. The website, which can be found at https://standardsworks.sae.org/standards-committees/truck-bus-control-communications-network-committee provides the following forms:

— request processing guidelines;

— general request form;

© ISO/SAE International 2026 – All rights reserved

— bulk request form.

The index of SPN assignments is published quarterly in SAE J1939DA. SAE J1939DA includes all the SPN labels defined in SAE J2403[5] and SAE J2403DA[6]. SAE J1939DA also defines a range of manufacturer proprietary SPNs that are occasionally used for diagnostic conditions that do not map unambiguously into the standardized list of SPNs.

© ISO/SAE International 2026 – All rights reserved

Road vehicles — On-board diagnostic communication — Part 3: Zero-emissions vehicle propulsion systems (ZEV)

1 Scope

This document specifies the zero emissions vehicle (ZEV) propulsion system diagnostic application protocol from a vehicle's point of view between the ZEV propulsion systems and test equipment required by government regulations. Standardization 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 (ETE).

This document specifies:

— ZEV propulsion system diagnostic communication use cases;

— four options of diagnostic protocols: UDS on DoCAN 11-bit CANIDs, UDS on DoCAN 29-bit CANIDs, UDS on DoIP, SOVD (service-oriented vehicle diagnostics);

— message formats for request and response messages;

— timing requirements between request messages from ETE and response messages from the vehicle, and between those messages and subsequent request messages;

— behavior of both, the ZEV propulsion system and ETE if data is not available;

— a set of diagnostic services with corresponding content of request and response messages; and

— standardized source and target addresses for client and ZEV propulsion system.

This document is based on the content of SAE J1979-3 (2nd edition: 202310) while considering the following potential improvements:

— explicit drafting of requirements (shall) that allows for example unique references in conformance test plan documents;

— restructured layout as diagnostic application-type document including the definition of ZEV propulsion system diagnostic communication use cases;

— improvement of references to communication protocol-type documents to accomplish single source of requirements.

This document specifies support for the 2nd generation OBD application layer protocol (ISO 14229-1 UDS) with the underlaying ISO 15765 DoCAN or ISO 13400 DoIP, or service-oriented vehicle diagnostics (SOVD) with HTTP, JSON, TCP/IP and Ethernet 100BASE-TX protocols as illustrated in Figure 1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11898-1, *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical coding sublayer*

© ISO/SAE International 2026 – All rights reserved

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

ISO 13400 (all parts), *Road vehicles — Diagnostic communication over Internet Protocol (DoIP)*

ISO 14229-1, *Road vehicles — Unified diagnostic services (UDS) — Part 1: Application layer*

ISO 14229-2, *Road vehicles — Unified diagnostic services (UDS) — Part 2: Session layer services*

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

ISO 15765-4, *Road vehicles — Diagnostic communication over Controller Area Network (DoCAN) — Part 4: Requirements for emissions-related systems*

ISO 17978 (all parts), *Road vehicles — Service-oriented vehicle diagnostics (SOVD)*

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*

SAE J1939DA, *Digital Annex of Serial Control and Communications Heavy Duty Vehicle Network*

SAE J1939-73, *Application Layer — Diagnostics*

SAE J1962, *Diagnostic Connector*

SAE J1979DA, *Digital Annex of E/E Diagnostic Test Modes*

SAE J2012, *Diagnostic Trouble Code Definitions*

SAE J2012DA, *Digital Annex of Diagnostic Trouble Code Definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 7498-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
aggregatedstatus
classifies the fault's current condition

3.2
propulsion system
componentry to deliver vehicle tractive and regenerative braking force

3.3
ZEV
zero emission vehicle
vehicle that does not emit exhaust gas or other pollutants from the onboard source of power

© ISO/SAE International 2026 – All rights reserved

3.4
zero emission vehicle on unified diagnostic services
ZEVonUDS
zero emission vehicle with support of unified diagnostic services in ZEV ECU(s)

3.5
zero emission vehicle on service-oriented vehicle diagnostics
ZEVonSOVD
zero emission vehicle with support of public service-oriented vehicle diagnostics server

3.6
ZEV propulsion component
component identified on a zero emissions vehicle to have a noteworthy impact on propulsion functionality

4 Symbols and abbreviated terms

4.1 Symbols

%	percentage

4.2 Abbreviated terms

BECM	battery energy control module
C	communication parameter (ComParam)
$C_{L2_CP_CAN_DLC}$	OSI layer 2 ComParam controller area network data length code
$C_{L2_CP_CAN_NomBitRate}$	OSI layer 2 ComParam controller area network nominal bit rate
$C_{L2_CP_CAN_11Bit_CANID}$	OSI layer 2 ComParam controller area network 11-bit CAN identifier
$C_{L2_CP_CAN_29Bit_CANID}$	OSI layer 2 ComParam controller area network 29-bit CAN identifier
$C_{L2_CP_CAN_DLenC}$	OSI layer 2 ComParam controller area network data length code
$C_{L2_CP_ETH_NomBitRate}$	OSI layer 2 ComParam Ethernet nominal bit rate
$C_{L3_CP_AI_ADDRtype}$	OSI layer 3 ComParam address information address type
$C_{L3_CP_AI_TAtype}$	OSI layer 3 ComParam address information target address type
$C_{L3_CP_AI_SA}$	OSI layer 3 ComParam address information source address
$C_{L3_CP_AI_TA}$	OSI layer 3 ComParam address information target address
$C_{L4_CP_PTPtype}$	OSI layer 4 ComParam protocol packet type
$C_{L4_CP_TX_SegDL}$	OSI layer 4 ComParam transmit segment data length
$C_{L4_CP_PCI_SegType}$	OSI layer 4 ComParam protocol control information segment type
$C_{L4_CP_FCBS}$	OSI layer 4 ComParam flow control block size
$C_{L4_CP_WFT_Max}$	OSI layer 4 ComParam wait frame transmission maximum

© ISO/SAE International 2026 – All rights reserved