

This is a preview of "ISO 14229-2:2013". Click here to purchase the full version from the ANSI store.

First edition  
2013-02-15

---

---

## Road vehicles— Unified diagnostic services (UDS) —

### Part 2: Session layer services

Véhicules routiers — Services de diagnostic unifiés (SDU) —  
Partie 2: Séquence des couches de services



Reference number  
ISO 14229-2:2013(E)

© ISO 2013

This is a preview of "ISO 14229-2:2013". Click here to purchase the full version from the ANSI store.



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

This is a preview of "ISO 14229-2:2013". Click here to purchase the full version from the ANSI store.

## Contents

Page

1	<b>Scope .....</b>	1
2	<b>Normative references.....</b>	1
3	<b>Terms, definitions and abbreviated terms .....</b>	1
3.1	<b>Terms and definitions .....</b>	1
3.2	<b>Abbreviated terms .....</b>	2
4	<b>Conventions.....</b>	2
5	<b>Document overview.....</b>	3
6	<b>Session layer services .....</b>	4
6.1	<b>General .....</b>	4
6.2	<b>Specification of session layer service primitives .....</b>	6
6.3	<b>Session data unit specification.....</b>	7
7	<b>Timing parameter definition .....</b>	9
7.1	<b>General application timing considerations.....</b>	9
7.2	<b>Application timing parameter definitions – defaultSession.....</b>	10
7.3	<b>Example for P4Server without enhanced response timing.....</b>	15
7.4	<b>Example for P4Server with enhanced response timing .....</b>	16
7.5	<b>Session timing parameter definitions for the non-default session.....</b>	17
7.6	<b>Client and server timer resource requirements .....</b>	19
7.7	<b>Error handling .....</b>	20
8	<b>Timing handling during communication.....</b>	21
8.1	<b>Physical communication .....</b>	21
8.2	<b>Functional communication.....</b>	29
8.3	<b>Minimum time between client request messages.....</b>	36
	<b>Annex A (normative) T_PDU interface .....</b>	43
	<b>Annex B (informative) Vehicle diagnostic OSI layer architecture examples .....</b>	44
B.1	<b>Vehicle diagnostic OSI layer gateway example .....</b>	44
B.2	<b>Vehicle diagnostic OSI layer CAN router example .....</b>	45
B.3	<b>Vehicle diagnostic OSI layer CAN switch example.....</b>	46
	<b>Bibliography.....</b>	47

This is a preview of "ISO 14229-2:2013". Click here to purchase the full version from the ANSI store.

## 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 14229-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 14229 consists of the following parts, under the general title *Road vehicles — Unified diagnostic services (UDS)*:

- *Part 1: Specification and requirements*
- *Part 2: Session layer services*
- *Part 3: Unified diagnostic services on CAN implementation (UDSonCAN)*
- *Part 4: Unified diagnostic services on FlexRay implementation (UDSonFR)*
- *Part 5: Unified diagnostic services on Internet Protocol implementation (UDSonIP)*
- *Part 6: Unified diagnostic services on K-Line implementation (UDSonK-Line)*

The following part is under preparation:

- *Part 7: Unified diagnostic services on Local Interconnect Network implementation (UDSonLIN)*

The titles of future parts will be drafted as follows:

- *Part n: Unified diagnostic services on ... implementation (UDSon...)*

This is a preview of "ISO 14229-2:2013". Click here to purchase the full version from the ANSI store.

## Introduction

ISO 14229 has been established in order to define common requirements for diagnostic systems that are independent of the underlying serial data link.

To achieve this, ISO 14229 is based on the Open Systems Interconnection (OSI) Basic Reference Model in accordance with ISO 7498-1 and ISO/IEC 10731, which structures communication systems into seven layers. When mapped on this model, the services used by a diagnostic tester (client) and an Electronic Control Unit (ECU, server) are broken into the following layers in accordance with Table 1:

- Application layer (layer 7), unified diagnostic services specified in ISO 14229-1, ISO 14229-3 UDSonCAN, ISO 14229-4 UDSonFR, ISO 14229-5 UDSonIP, ISO 14229-6 UDSonK-Line, ISO 14229-7 UDSonLIN, further standards and ISO 27145-3 WWH-OBD.
- Presentation layer (layer 6), vehicle manufacturer specific, ISO 27145-2 WWH-OBD.
- Session layer services (layer 5) specified in this part of ISO 14229.
- Transport layer services (layer 4), specified in ISO 15765-2 DoCAN, ISO 10681-2 Communication on FlexRay, ISO 13400-2 DoIP, ISO 27145-4 WWH-OBD.
- Network layer services (layer 3), specified in ISO 15765-2 DoCAN, ISO 10681-2 Communication on FlexRay, ISO 13400-2 DoIP, ISO 27145-4 WWH-OBD.
- Data link layer (layer 2), specified in ISO 11898-1, ISO 11898-2, ISO 17458-2, ISO 13400-3, IEEE 802.3, ISO 14230-2 and further standards, ISO 27145-4 WWH-OBD.
- Physical layer (layer 1), specified in ISO 11898-1, ISO 11898-2, ISO 17458-4, ISO 13400-3, IEEE 802.3, ISO 14230-1, further standards, ISO 27145-4 WWH-OBD.

**Table 1 — Example of diagnostic/programming specifications applicable to the OSI layers**

Applicability	OSI seven layer	Enhanced diagnostics services					WWH-OBD
Seven layer according to ISO/IEC 7498-1 and ISO/IEC 10731	Application (layer 7)	ISO 14229-1, ISO 14229-3 UDSonCAN, ISO 14229-4 UDSonFR, ISO 14229-5 UDSonIP, ISO 14229-6 UDSonK-Line, ISO 14229-7 UDSonLIN, further standards					ISO 27145-3
	Presentation (layer 6)	vehicle manufacturer specific					ISO 27145-2
	Session (layer 5)	ISO 14229-2					
	Transport (layer 4)	ISO 15765-2	ISO 10681-2	ISO 13400-2	Not applicable	further standards	ISO 27145-4
	Network (layer 3)					further standards	
	Data link (layer 2)	ISO 11898-1, ISO 11898-2	ISO 17458-2	ISO 13400-3, IEEE 802.3	ISO 14230-2	further standards	
	Physical (layer 1)					ISO 14230-1	