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Road vehicles — Unified diagnostic services (UDS) — Specification and requirements

Véhicules routiers — Services de diagnostic unifiés (SDU) — Spécification et exigences

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

This second edition of ISO 14229 cancels and replaces the first edition (ISO 14229:1998), which has been technically revised.

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Introduction

ISO 14229 has been established in order to define common requirements for diagnostic systems, whatever the serial data link is.

To achieve this, it 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:

— unified diagnostic services (layer 7); and

— communication services (layers 1 to 6).

NOTE The diagnostic services in ISO 14229 are implemented in various applications, e.g. ISO 16844 (all parts), ISO 11992 (all parts), ISO 9141 (all parts), ISO 14230 (all parts), etc. Future modifications to this International Standard will provide long-term backward compatibility with the implementation standards as described above.

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

Applicability	OSI layer	Enhanced diagnostics services (non-emissions-related)	
Seven layers according to ISO/IEC 7498-1 and ISO/IEC 10731	Application (layer 7)	ISO 14229/ISO 15765-3/ISO 11992-4	ISO 14229/further standards
	Presentation (layer 6)	—	—
	Session (layer 5)	ISO 15765-3/ISO 11992-4	further standards
	Transport (layer 4)	ISO 15765-2/ISO 11992-4	further standards
	Network (layer 3)	ISO 15765-2/ISO 11992-4	further standards
	Data link (layer 2)	ISO 11898/ISO 11992-1/SAE J1939-15	further standards
	Physical (layer 1)	ISO 11898/ISO 11992-1/SAE J1939-15	further standards

Figure 1 shows an example of the possible future implementation of ISO 14229 onto various data links.

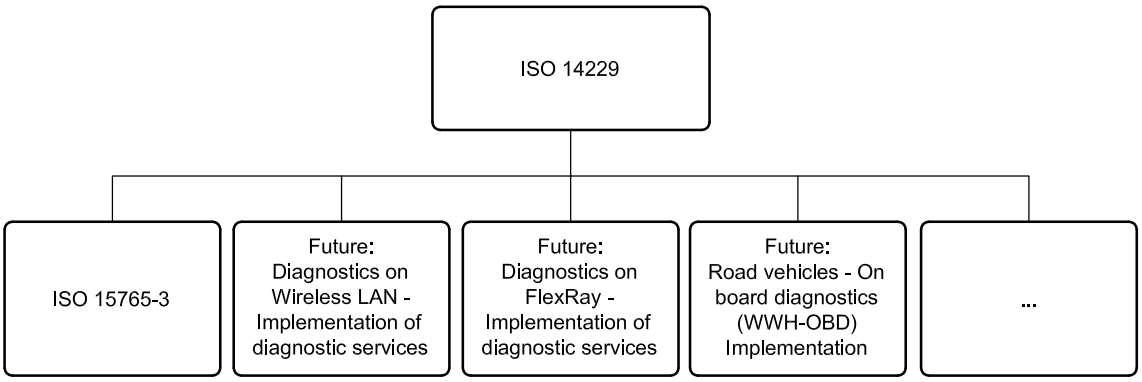

Figure 1 — Available International Standards and possible future implementations of ISO 14229

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Road vehicles — Unified diagnostic services (UDS) — Specification and requirements

1 Scope

ISO 14229 specifies data link independent requirements of diagnostic services, which allow a diagnostic tester (client) to control diagnostic functions in an on-vehicle Electronic Control Unit (server) such as an electronic fuel injection, automatic gear box, anti-lock braking system, etc. connected on a serial data link embedded in a road vehicle. It specifies generic services which allow the diagnostic tester (client) to stop or to resume non-diagnostic message transmission on the data link. ISO 14229 does not apply to non-diagnostic message transmission or to use of the communication data link between two Electronic Control Units. It does not specify any implementation requirements.

The vehicle diagnostic architecture of ISO 14229 applies to:

— a single tester (client) that may be temporarily or permanently connected to the on-vehicle diagnostic data link; and

— several on-vehicle Electronic Control Units (servers) connected directly or indirectly.

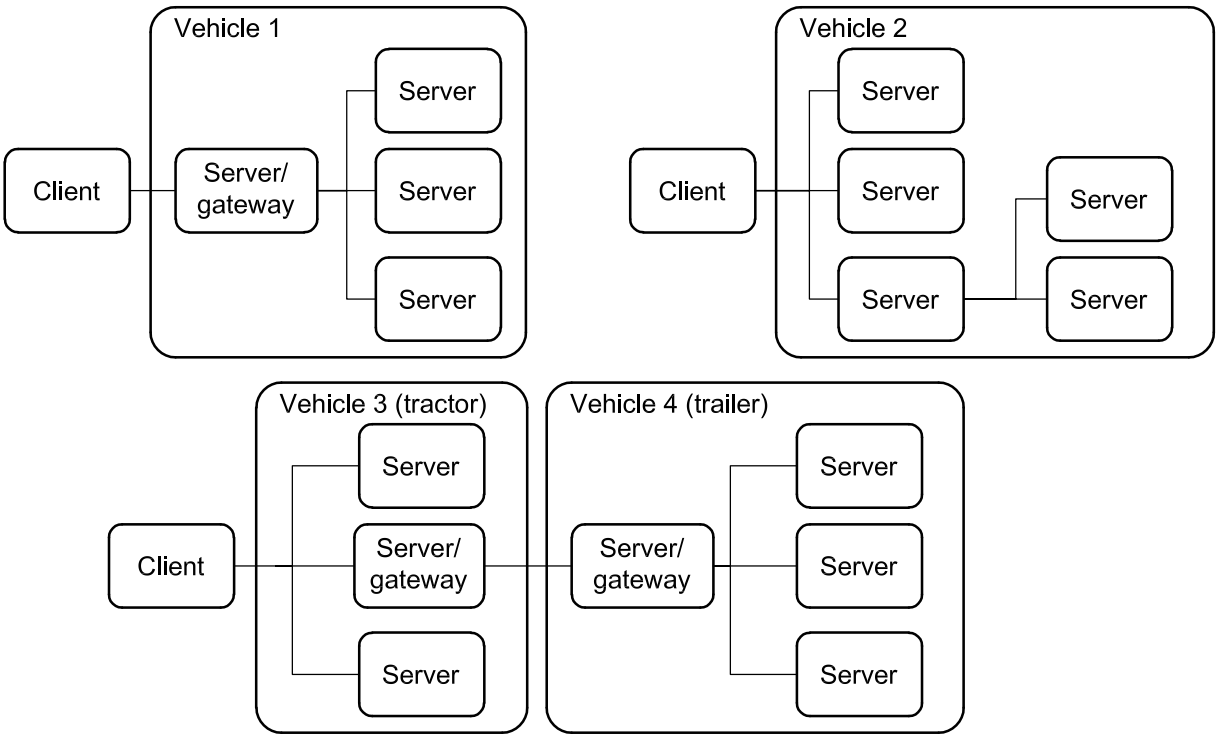

Figure 2 — Vehicle diagnostic architecture

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