
**Road vehicles — Modular vehicle
communication interface (MVCI) —**

**Part 1:
Hardware design requirements**

*Véhicules routiers — Interface de communication modulaire du véhicule
(MVCI) —*

Partie 1: Exigences de conception du matériel



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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.

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ISO 22900-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 22900 consists of the following parts, under the general title *Road vehicles — Modular vehicle communication interface (MVCI)*:

- *Part 1: Hardware design requirements*
- *Part 2: Diagnostic protocol data unit application programming interface (D-PDU API)*
- *Part 3: Diagnostic server application programming interface (D-Server API)*

Introduction

The ISO 22900 series of standards is applicable to diagnose and program vehicle electronic control modules with off-board applications through the vehicle's communication interface.

This part of ISO 22900 has been established in order to define the requirements of cascading multiple communication interfaces supporting current, future, and legacy standardized and original equipment manufacturer (OEM) proprietary protocols implemented by different tool manufacturers. Today's situation in the automotive after-market requires different vehicle communication interfaces for different vehicle OEMs. Many vehicle communication interfaces are incompatible with regard to their interconnect ability because this was not a requirement when designed.

The objective of this part of ISO 22900 is to specify the hardware design requirements to support a “plug and play” type concept of different vehicle communication interfaces from different tool manufacturers. The hardware design requirements are applicable to different levels of compliance, and they will address the inter-vendor operability at the vehicle diagnostic connector end as well as the test equipment end, which executes the applications (Electronic Control Unit diagnostics, programming, etc.).

Implementation of the Modular Vehicle Communication Interface (MVCI) server concept supports overall cost reduction to the end user because a single diagnostic or programming application will support many vehicle communication interfaces supporting different protocols.

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Road vehicles — Modular vehicle communication interface (MVCI) —

Part 1: Hardware design requirements

1 Scope

This part of ISO 22900 provides the framework to allow diagnostic and reprogramming software applications from all vehicle manufacturers the flexibility to work with multiple vehicle communication interfaces (VCI) from multiple tool suppliers. This system enables each vehicle manufacturer to support all vehicle communication interfaces to perform diagnostics and to control the programming sequence for electronic control units (ECUs) in their vehicles.

This part of ISO 22900 describes the applicable use cases to justify the benefits of ISO 22900. It also specifies the design requirements to be followed by diagnostic and programming vehicle communication interface designers. The design requirements are categorized into different levels of conformance classes to provide:

- “software compliance”, a set of requirements for existing VCIs, which are software but not hardware compliant;
- “electrical compliance”, defining all signals and electrical interfaces that allow a system integrator to connect more than one VCI Protocol Module to the vehicle diagnostic connector and the host system;
- “mechanical compliance”, defining standard connectors on the VCI Protocol Module to interface to the vehicle Data Link Connector (DLC) and the host system, as well as defining a cabling concept to support interfacing more than one VCI Protocol Module.

The technical requirements specified in this part of ISO 22900 have been influenced by the requirements of legal authority with regard to “vehicle OBD and programming”.

The Modular Vehicle Communication Interface hardware design requirements will provide appropriate development guidance for vehicle communication interface manufacturers to meet legal authority and automotive manufacturer demands with regard to inter-vendor operability.

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 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*