INTERNATIONAL STANDARD

ISO 13209-3

Second edition
2022-06

Road vehicles — Open Test sequence eXchange format (OTX) —

Part 3: Standard extensions and requirements

Véhicules routiers — Format public d'échange de séquence-tests (OTX) —

Partie 3: Exigences et spécifications des extensions du standard

Reference number
ISO 13209-3:2022(E)

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Published in Switzerland

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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.

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 ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

This second edition cancels and replaces the first edition (ISO 13209-3:2012), which has been technically revised.

The main changes are as follows:

— DiagMetaData: introduced **`ComChannelGroup`** and **`EcuVariantGroup`**;

— EventHandling: introduced **`CompositeEventSource`**, **`GetEventSourceFromEvent`**, **`IsEventHasException`**;

— DiagCom: introduced **`textIdTarget`**, **`GetParameterValueTextId`**;

— added new checker rules.

A list of all parts in the ISO 13209 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.

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Introduction

Diagnostic test sequences are utilized whenever automotive components or functions with diagnostic abilities are being diagnosed, tested, reprogrammed or initialized by off-board test equipment. Test sequences define the succession of interactions between the user (i.e. workshop or assembly line staff), the diagnostic application (the test equipment) and the vehicle communication interface as well as any calculations and decisions that have to be carried out. Test sequences provide a means to define interactive, guided diagnostics or similar test logic.

Today, the automotive industry mainly relies on paper documentation and/or proprietary authoring environments to document and to implement such test sequences for a specific test application. An author who is setting up engineering, assembly line or service diagnostic test applications needs to implement the required test sequences manually, supported by non-uniform test sequence documentation, most likely using different authoring applications and formats for each specific test application. This redundant effort can be greatly reduced if processes and tools support the OTX concept.

The ISO 13209 series proposes an open and standardized format for the human- and machine-readable description of diagnostic test sequences. The format supports the requirements of transferring diagnostic test sequence logic uniformly between electronic system suppliers, vehicle manufacturers and service dealerships/repair shops.

ISO 13209-2 represents the requirements and technical specification for the fundament of the OTX format, namely the "OTX Core". The core describes the basic structure underlying every OTX document. This comprises detailed data model definitions of all required control structures by which test sequence logic is described, but also definitions of the outer, enveloping document structure in which test sequence logic is embedded. To achieve extensibility the core also contains well-defined extension points that allow a separate definition of additional OTX features—without the need to change the core data model.

This document extends the core by a set of additional features, using the extension mechanism rules described in ISO 13209-2. The extensions defined herein comprise features which allow diagnostic communication to a vehicle's diagnostic interface, flashing, executing diagnostic jobs, controlling measurement equipment, internationalisation, working with physical units, accessing the environment, communication via a human machine interface (HMI) and other utility extensions.

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Road vehicles — Open Test sequence eXchange format (OTX) —

Part 3: Standard extensions and requirements

1 Scope

This document defines the Open Test sequence eXchange (OTX) extension requirements and data model specifications.

The requirements are derived from the use cases described in ISO 13209-1. They are listed in Clause 4.

The data model specification aims at an exhaustive definition of all features of the OTX extensions which have been implemented to satisfy the requirements. This document establishes rules for the syntactical entities of each extension. Each of these syntactical entities is accompanied by semantic rules which determine how OTX documents containing extension features are to be interpreted. The syntax rules are provided by UML class diagrams and XML schemas, whereas the semantics are given by UML activity diagrams and prose definitions.

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 639-1, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 13209-1, *Road vehicles — Open Test sequence eXchange format (OTX) — Part 1: General information and use cases*

ISO 13209-2, *Road vehicles — Open Test sequence eXchange format (OTX) — Part 2: Core data model specification and requirements*

W3C XLink, *W3C Recommendation: XML Linking Language (XLink) Version 1.1*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13209-1, ISO 13209-2 and the following apply.

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

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

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

3.1.1
custom screen
screen with attributes and fields defined by a test sequence author

3.1.2
dialog
screen with predefined attributes and fields which can be set or read from an OTX sequence

3.1.3
ECOS measurement device
widely-used embedded system for testing electrical consumer's current and voltage curves

3.1.4
modal dialog
dialog (3.1.2) which is blocking the flow execution until the user dismisses it

3.1.5
non-modal screen
asynchronous, non-blocking screen which is still displayed while the test sequence execution continues

3.1.6
tester
computer system attached to a vehicle via a vehicle communication interface, running a diagnostic application

3.1.7
text ID
string reference to a thesaurus data base entry containing localized string translations

3.2 Abbreviated terms

API	Application Programming Interface
DTC	Diagnostic Trouble Code
ECOS	Electric Check-Out System
ECU	Electronic Control Unit
GUI	Graphical User Interface
HMI	Human Machine Interface
IFD	Interface Definition (OTX extension)
NOP	No Operation Performed
OEM	Original Equipment Manufacturer
OTX	Open Test sequence eXchange
PDU	Protocol Data Unit
UI	User Interface
UML	Unified Modeling Language
VCI	Vehicle Communication Interface

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