



**International
Standard**

ISO 23150-14

**Road vehicles — Logical interface
between sensors and data fusion
unit for automated driving
functions —**

**Part 14:
Ultrasonic specific interfaces**

*Véhicules routiers — Interface logique entre capteurs et unité de
fusion de données pour les fonctions de conduite automatisée —*

Partie 14: Interfaces spécifiques de capteur ultrasonique

**First edition
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Sample Document

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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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <http://www.iso.org/directives>).

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

This first edition of ISO 23150-14, together with ISO 23150-1 [\[1\]](#), ISO 23150-2 [\[2\]](#), ISO 23150-11 [\[3\]](#), ISO 23150-12 [\[4\]](#), ISO 23150-13 [\[5\]](#), ISO 23150-15 [\[6\]](#) and ISO 23150-20 [\[7\]](#), cancels and replaces ISO 23150:2023, which has been technically revised.

The main changes are as follows:

- reorganisation of the document structure; use of generic interfaces, generic signals, generic profiles and terms and definitions defined in ISO 23150-1 [\[1\]](#) as a basis for this document;
- specific collection of interfaces in separated documents; in this document specific collection of all technology specific interfaces for ultrasonic;
- revise of the logical interfaces.

A list of all parts in the ISO 23150 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.

Introduction

Vehicle environmental perception sensors (single sensor or sensor cluster) provide logical interfaces according to the ISO 23150 series to the fusion unit or automated driving functions. The fusion unit generates a surround model and interprets the scene around the vehicle based on the sensor data. Interfaces are defined on different levels and described in a modular and semantic representation. The interfaces on feature level, advanced detection level and detection level are technology specific and differ by each technology.

[Figure 1](#) shows the schematic and contextual relationships between the documents relating to logical interfaces of the ISO 23150 series.

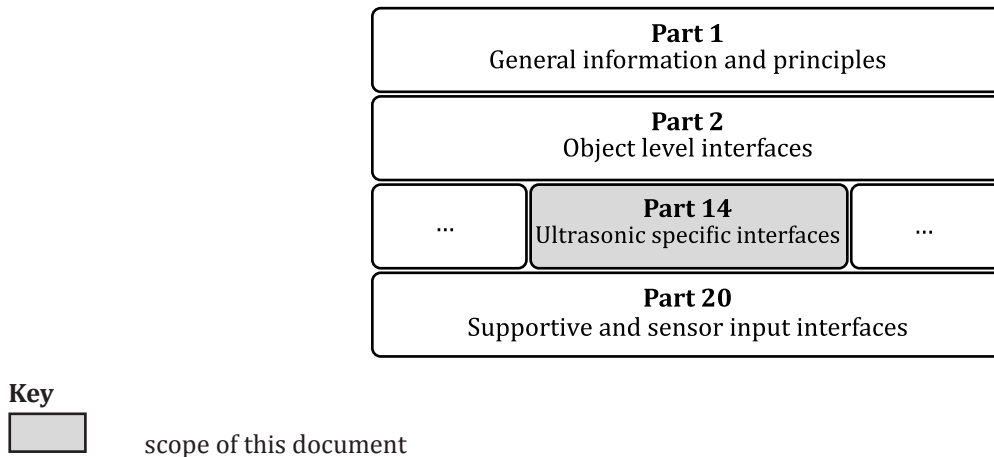


Figure 1 — Relationship of the ISO 23150 series

This document specifies technology-specific interfaces for ultrasonic sensors as well as sensor clusters. The interfaces are based on the generic specifications of the interfaces in ISO 23150-1 [\[1\]](#). This document references the generic specifications of signals for the interface header, the generic interface levels and the profiles.

An ultrasonic sensor or sensor cluster may also implement (provide or receive) logical interfaces:

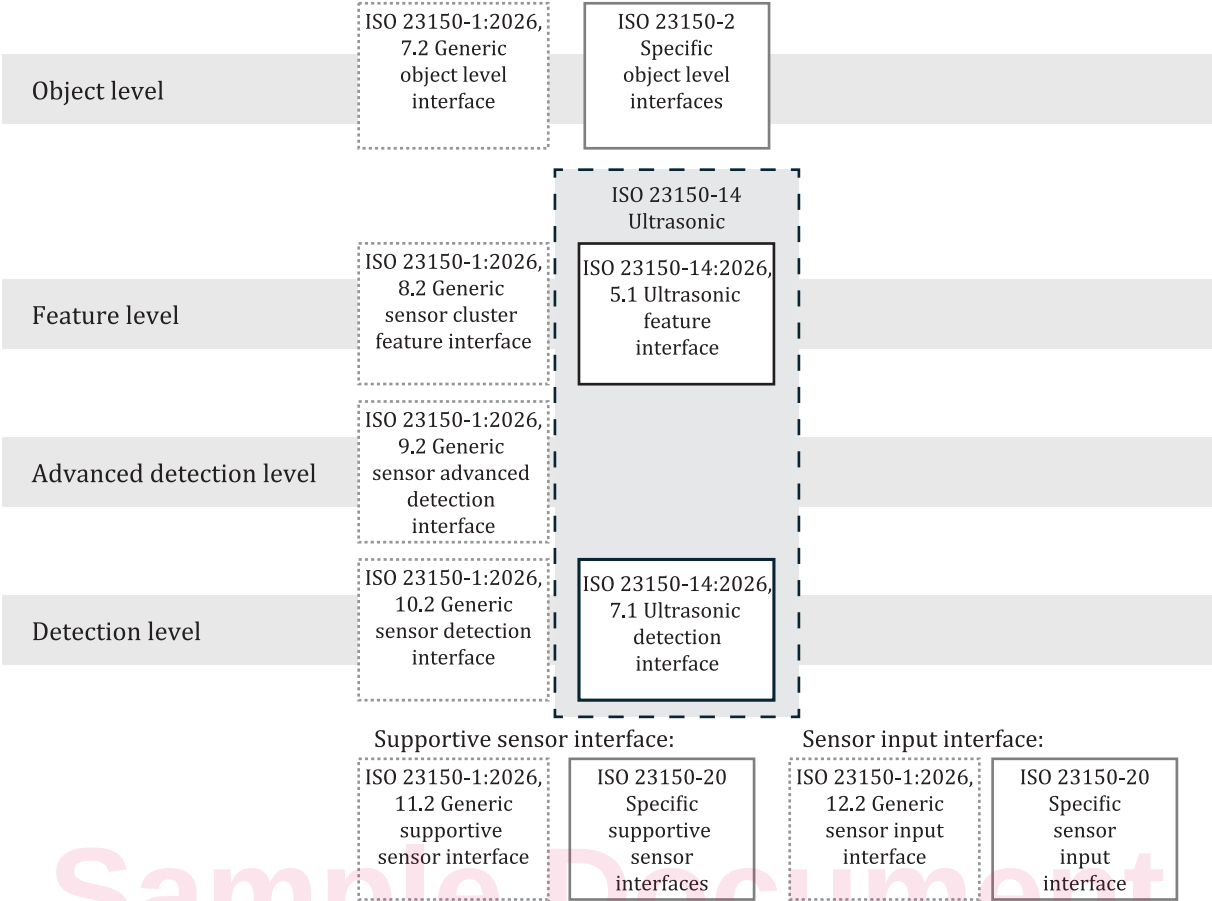
- on object level (see ISO 23150-2 [\[2\]](#));
- for additional interfaces as supportive sensor interfaces and sensor input information interfaces (see ISO 23150-20 [\[7\]](#)).

This document is not intended to replace the logical interface specifications of other documents in the ISO 23150 series.

This document is based on the generic specifications in ISO 23150-1 [\[1\]](#) as shown in [Figure 2](#):

- generic sensor cluster feature interface;
- generic sensor advanced detection interface;
- generic sensor detection interface;
- general level-independent profiles.

ISO 23150-14:2026(en)



Key



scope of this document

Figure 2 — Interfaces in the scope of this document and the related interfaces of the ISO 23150 series

Road vehicles — Logical interface between sensors and data fusion unit for automated driving functions —

Part 14: Ultrasonic specific interfaces

1 Scope

This document is applicable to road vehicles with automated driving functions and specifies the technology-specific logical interfaces for ultrasonic sensors or sensor clusters:

- feature level interface;
- advanced detection level interface;
- detection level interface.

This document does not provide electrical and mechanical interface specifications. Raw data interfaces are also excluded.

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 23150-1, *Road vehicles — Logical interface between sensors and data fusion unit for automated driving functions — Part 1: General information and principles*

ISO 23150-1:2026, *Road vehicles — Logical interface between sensors and data fusion unit for automated driving functions — Part 1: General information and principles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 23150-1 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/>

4 Abbreviated terms

For the purposes of this document, the abbreviated terms given in ISO 23150-1 and the following apply.

A2I	assign to interface
AD	automated driving
ADLI	advanced detection level interface
AER	alternative entity representation
C	conditional
CADI	camera advanced detection interface
CDI	camera detection interface
CFI	camera feature interface
D	dimensional
DE	default enumerators
DLI	detection level interface
ECU	electronic control unit
EES	extended enumeration signal
EM	error model
FLI	feature level interface
ID	identifier
IQR	interquartile range
IR	infrared
IRI	international roughness index
IV	implicit value
LL	list length
LSG	logical signal group
M	mandatory
O	optional
OLI	object level interface
RL	requirement level
SII	sensor input interface
SSI	supportive sensor interface
UDI	ultrasonic detection interface
UFI	ultrasonic feature interface
UTL	unrolling tuple list

VRO value representation optimisation

5 Feature level

5.1 Ultrasonic feature interface

The generic specification of the feature interfaces is defined in ISO 23150-1:2026 [8], Clause 8. The ultrasonic feature interface shall base on the generic sensor cluster feature interface as specified in ISO 23150-1:2026, 8.2. [Table 1](#) provides the logical structure of the [UFI](#).

Table 1 — Ultrasonic feature interface structure

Structure	Multiplicity	Option
Ultrasonic feature header (5.2)	1	
Features	Multiple	Size type: dynamic/fixed

The logical structure of the [UFI](#) shall be implemented in accordance with the interface definition specified in [Table 2](#), the signals as defined in [Annex A](#) and ISO 23150-1:2026, Annex A. Furthermore, the generic profiles as defined in [5.4](#) and in ISO 23150-1 [1] as well as the signal options defined in ISO 23150-1:2026, Annex B shall also be considered.

Table 2 — Ultrasonic feature interface

LSG	RL LSG M/C/O	Signal	RL signal M/C/O	Option
Information: interface	M	Interface version ID {major, minor, patch} (ISO 23150-1:2026 [8], A.1.2)	M	Profile: Uniqueness of interface versioning (ISO 23150-1:2026 [8], 6.5.1)
		Interface ID (ISO 23150-1:2026 [8], A.1.3)	O	Profile: Uniqueness of interface versioning (ISO 23150-1:2026 [8], 6.5.1)
		Number of valid serving sensors (ISO 23150-1:2026 [8], A.1.4)	M	Profile: Uniqueness of interface versioning (ISO 23150-1:2026 [8], 6.5.1) Optimise LL (ISO 23150-1:2026 [8], B.1.2) Alternative UTL (ISO 23150-1:2026 [8], B.1.7) Key: Sensor ID (ISO 23150-1:2026 [8], A.1.5)
		Size type: dynamic/fixed Size #: Number of valid serving sensors (ISO 23150-1:2026 [8], A.1.4)		
		Sensor ID (ISO 23150-1:2026 [8], A.1.5)	M	Profile: Uniqueness of interface versioning (ISO 23150-1:2026 [8], 6.5.1) Alternative VRO (ISO 23150-1:2026 [8], B.1.4)
		Time stamp – prediction (ISO 23150-1:2026 [8], A.1.6.1)	M	

^a Features may not be tracked continuously. The same feature may be tracked as a new entity multiple times. Therefore, the profile does not provide the signal "Age" (ISO 23150-1:2026 [8], A.2.22) on FLI.