

DRAFT INTERNATIONAL STANDARD

ISO/DIS 11992-3

ISO/TC 22/SC 31

Secretariat: DIN

Voting begins on:
2020-01-08

Voting terminates on:
2020-04-01

Road vehicles — Interchange of digital information on electrical connections between towing and towed vehicles —

Part 3: Application layer for equipment other than brakes and running gear

Véhicules routiers — Échange d'informations numériques sur les connexions électriques entre véhicules tracteurs et véhicules tractés —

Partie 3: Couche d'application pour les équipements autres que les équipements de freinage et les organes de roulement

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ICS: 43.040.15

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Reference number
ISO/DIS 11992-3:2020(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.

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

The main changes compared to the previous edition are as follows:

- Introduced requirements structure;
- Clause 7: Added new parameters;
- Clause 8: Added new messages;
- Added Annex A (informative) Object detection (OD) sensor states; and
- Added Annex B (informative) Message flow.

A list of all parts in the ISO 11992 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

372 ISO 11992 series standard specifies the interchange of digital information between road vehicles with a
 373 maximum authorised total mass greater than 3 500 kg, and towed vehicles, including communication
 374 between towed vehicles in terms of parameters and requirements of the lower OSI layers (physical and
 375 data link layer) of the electrical connection used to connect the electrical and electronic systems.

376 This document is subject to additions, which becomes necessary in order to keep pace with experience
 377 and technical advances. Care has been taken to ensure that these additions are introduced in a
 378 compatible way, so that vehicles implementing previous version still can be used – of course, without
 379 the additional functionalities. In particular, it may become necessary to standardize new parameters
 380 and parameter groups.

381 This document is structured according to the Open Systems Interconnection (OSI) Basic Reference
 382 Model, in accordance with ISO/IEC 7498-1 and ISO/IEC 10731 [6], which structures communication
 383 systems into seven layers. When mapped on this model, the application layer protocol and data link
 384 layer framework requirements specified/referenced in ISO 11992 series standard are structured
 385 according to Figure 1.

386 Figure 1 illustrates a simplified communication framework:

- 387 — Vehicle normal communication framework,
- 388 — Vehicle diagnostic communication framework,
- 389 — Vehicle-specific use case framework, and the
- 390 — Vehicle lower-layers framework.

391 The vehicle normal communication framework is composed of ISO 11992-2 and ISO 11992-3.

392 The vehicle diagnostic communication framework is composed of ISO 14229-1 [3], ISO 14229-2 [11],
 393 ISO 14229-3 [12] and ISO 11992-4 [3].

394 The vehicle-specific use case framework is composed of ISO 11992-4, ISO 22901-1 or vehicle
 395 manufacturer-specific diagnostic data definition.

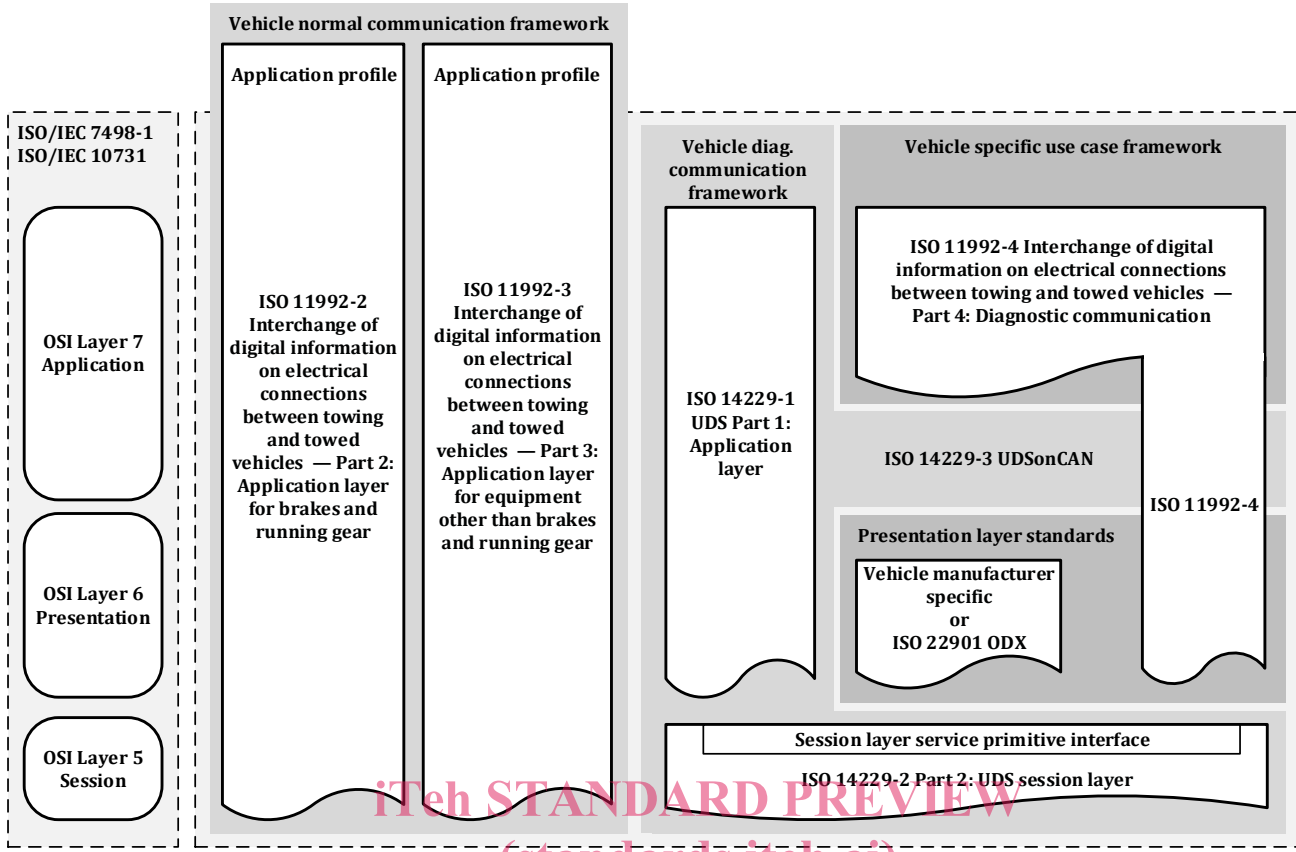


Figure 1 — ISO 11992-3 documents reference according to the OSI model

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Road vehicles — Interchange of digital information on electrical connections between towing and towed vehicles — Part 3: Application layer for equipment other than brakes and running gear

1 Scope

This document specifies the application layer, the payload of messages, and parameter groups for equipment other than braking and running gear, to ensure the interchange of digital information between road vehicles with a maximum authorized total mass greater than 3 500 kg and their towed vehicles, including communication between towed vehicles.

The edition of this document has been extended to support the parameters and message sets for object detection (OD). The installation of the object detection (OD) device compliant to this document in the towed vehicle is identified by a dedicated message.

Additionally, some lighting parameters and messages are specified.

The conformance and interoperability test plans are not part of this document.

2 Normative references

ISO/DIS 11992-3

<https://standards.iteh.ai/catalog/standards/sist/f2bf41a5-c080-4f11-978f-50b0f3314a6a/iso-11992-3>

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of ISO 11992-1, SAE J1939/21_201012, SAE J1939/71, and SAE J1939DA (including any amendments) apply.

ISO 612:1978, *Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions*

ISO 11992-2, *Road vehicles — Interchange of digital information on electrical connections between towing and towed vehicles — Application layer for brakes and running gear*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

EN 50325-4:2002, *EN 50325-4 Industrial communications subsystem based on ISO 11898 (CAN) for controller-device interfaces — Part 4: CANopen*

SAE J1939/21_201012, *Truck Bus Control and Communications Network Committee — Data Link Layer*

SAE J1939/71_201610, *Truck Bus Control and Communications Network Committee — Vehicle Application Layer*

SAE J1939DA_201904, *Truck Bus Control and Communications Network Committee — The J1939 Digital Annex*

430 **3 Terms and definitions**

431 For the purposes of this document, the terms and definitions given in ISO 11992-1 and the following
 432 apply.

433 **3.1**
 434 **mean value**

435 sum of all sample values divided by the number of samples

436
$$\bar{x} = \frac{\sum_{i=1}^N x_i}{N}$$

437 where:

438 $\{x_1, x_2, \dots, x_N\}$ are the observed values of the sample items, and N is the number of observations in the
 439 sample.

440 **3.2**
 441 **standard deviation**

442 corrected sample standard deviation is the square root of the quotient formed from the sum of squared
 443 differences between sample value and mean value and the number of samples minus one

444
$$s = \sqrt{\frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N - 1}}$$

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446 **4 Abbreviations**

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447	ABS	anti-lock braking system
448	ASR	anti-spin regulation (traction control system)
449	CAN	controller area network
450	DA	destination address
451	DP	data page
452	ECU	electronic control unit
453	ERR	error
454	GE	group extension
455	GPM	general purpose messages
456	MSB	most significant bit/byte
457	N/A	not applicable
458	OD	object detection

459	ODM	object detection message
460	ODD	obstacle detection device
461	P	priority
462	PDU	protocol data unit
463	PDU1	PDU for a specific destination address (device)
464	PDU2	PDU for multiple destinations address (devices)
465	PF	PDU format
466	PGN	parameter group number
467	PS	PDU-specific
468	PTO	power take-off
469	R	reserved
470	SA	source address
471	SLOT	scaling, limit, offset and transfer function
472	SNA	signal not available

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