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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**

*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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## Foreword

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

This third edition cancels and replaces the second edition (ISO 11992-3:2003), which has been technically revised. It also incorporates the Amendment ISO 11992-3:2003/Amd. 1:2008.

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](http://www.iso.org/members.html).

Introduction

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

This document is structured according to the Open Systems Interconnection (OSI) Basic Reference Model, in accordance with ISO/IEC 7498-1 and ISO/IEC 10731 [5], which structures communication systems into seven layers. When mapped on this model, the application layer protocol and data link layer framework requirements specified/referenced in the ISO 11992 series are structured according to Figure 1.

Figure 1 illustrates a simplified communication framework:

- vehicle normal communication framework,
- vehicle diagnostic communication framework,
- vehicle-specific use case framework, and the
- vehicle lower-layers framework.

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

The vehicle diagnostic communication framework is composed of ISO 14229-1 [8], ISO 14229-2 [9], ISO 14229-3 [10] and ISO 11992-4 [6].

The vehicle-specific use case framework is composed of ISO 11992-4 [6], ISO 22901-1 [13] or vehicle manufacturer-specific diagnostic data definition.

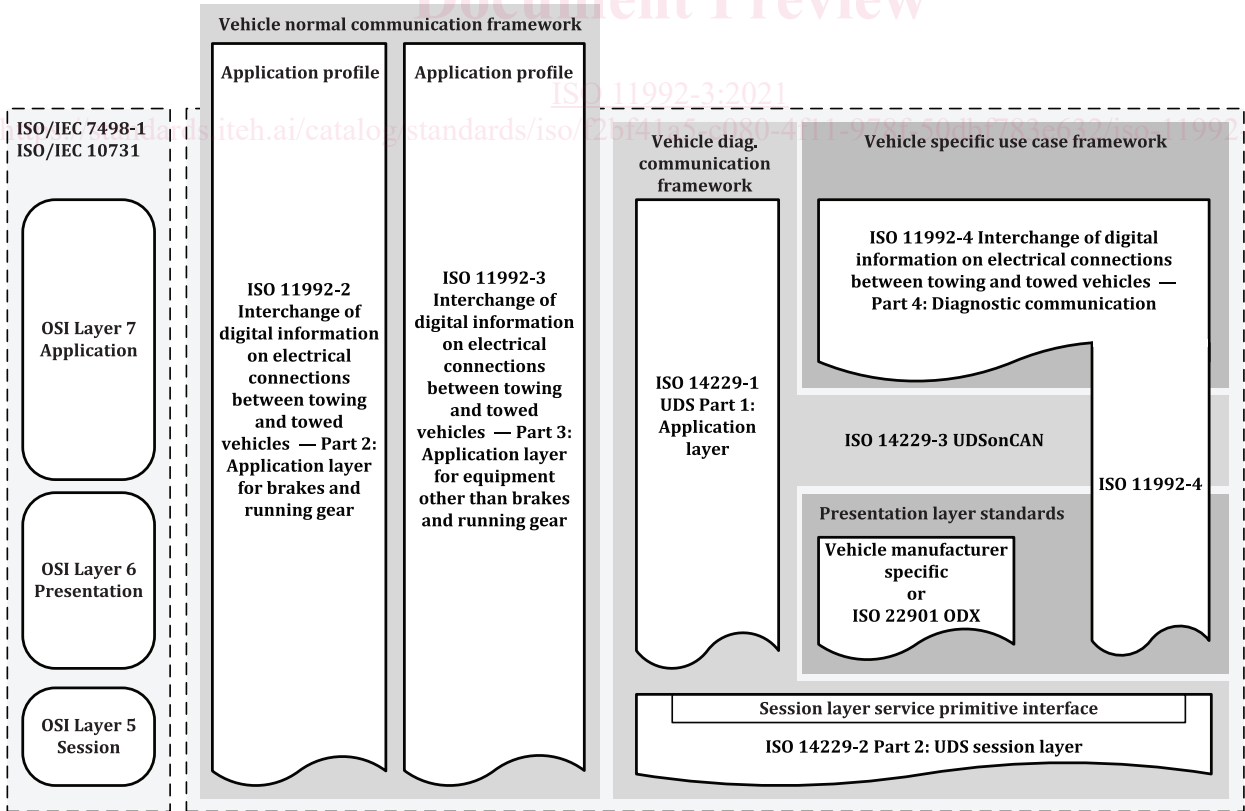


Figure 1 — ISO 11992 documents reference according to the OSI model

# 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 brakes and running gears, 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.

This document supports 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

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

ISO/IEC 8859-1, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

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

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

SAE J1939-21, *Data Link Layer*

SAE J1939-71:2020, *Vehicle Application Layer*

SAE J1939-DA, *J1939 Digital Annex*

SAE J1850, *Class B Data Communications Network Interface*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11992-2 and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 3.1

### mean value

sum of all sample values divided by the number of samples

Note 1 to entry: to entry:

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

where

$\{x_1, x_2, \dots, x_N\}$  are the observed values of the sample items;

$N$  is the number of observations in the sample.

## 3.2

### standard deviation

positive square root of the variance

Note 1 to entry: to entry:

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

where

$x$  is the sample value;

$\bar{x}$  is the mean value;

$i$  is the sample counter;

$N$  is the number of observations in the sample.

[SOURCE: IEC Electropedia, 103-08-13, modified — Note 1 to entry has been added.]

## 3.3

### trailer

towed or towing vehicle but not a commercial vehicle

## 4 Abbreviated terms

|     |                                                |
|-----|------------------------------------------------|
| ABS | anti-lock braking system                       |
| APP | application                                    |
| ASR | anti-spin regulation (traction control system) |
| CAN | controller area network                        |
| DA  | destination address                            |

|      |                                              |
|------|----------------------------------------------|
| DP   | data page                                    |
| ECU  | electronic control unit                      |
| ERR  | error                                        |
| GE   | group extension                              |
| GPM  | general purpose messages                     |
| MSB  | most significant bit/byte                    |
| N/A  | not applicable                               |
| OD   | object detection                             |
| ODM  | object detection message                     |
| ODD  | obstacle detection device                    |
| P    | priority                                     |
| PDU  | protocol data unit                           |
| PDU1 | PDU send in unicast                          |
| PDU2 | PDU send in broadcast/multicast              |
| PF   | PDU format                                   |
| PGN  | parameter group number                       |
| PS   | PDU-specific                                 |
| PTO  | power take-off                               |
| R    | reserved                                     |
| SA   | source address                               |
| SLOT | scaling, limit, offset and transfer function |
| SNA  | signal not available                         |
| SPN  | suspect parameter number                     |

## 5 APP – Parameter specification

### 5.1 General definitions

Interpretation of suspect parameter values are specified in SAE J1939-71. Parameter ranges are of 1-byte, 2-byte, and 4-byte in size. Discrete and control command (status) parameters are coded as 2-bit values.

### 5.2 Rear obstacle distance

This parameter indicates the actual distance between the back of the towed vehicle and any obstacle.

|            |                                                                   |
|------------|-------------------------------------------------------------------|
| <b>REQ</b> | <b>7.1 APP – Parameter specification – Rear obstacle distance</b> |
|------------|-------------------------------------------------------------------|

[Table 1](#) specifies the parameter attributes.

**Table 1 — Rear obstacle distance attributes**

| Attribute   | Value          |
|-------------|----------------|
| Data length | 1 byte         |
| Resolution  | 2 cm per bit   |
| Offset      | 0 cm           |
| Data range  | 0 cm to 500 cm |
| Type        | measured       |

### 5.3 Thermal body temperature

This parameter indicates the actual temperature in a thermal body on the towed vehicle.

#### REQ 7.2 APP – Parameter specification – Thermal body

[Table 2](#) specifies the parameter attributes.

**Table 2 — Thermal body attributes**

| Attribute   | Value              |
|-------------|--------------------|
| Data length | 1 byte             |
| Resolution  | 1 °C per bit       |
| Offset      | -125 °C            |
| Data range  | -125 °C to +125 °C |
| Type        | measured           |

### 5.4 Obstacle detection device (ODD) request

This parameter indicates the command signal to switch on or off the ODD.

#### REQ 7.3 APP – Parameter specification – Obstacle detection device (ODD) request

[Table 3](#) specifies the parameter attributes.

**Table 3 — Obstacle detection device (ODD) request attributes**

| Attribute   | Value                                                 |
|-------------|-------------------------------------------------------|
| Data length | 2 bit                                                 |
| Data range  | 00 <sub>2</sub> : ODD off<br>01 <sub>2</sub> : ODD on |
| Type        | status                                                |

### 5.5 Anti-theft device – Status request

This parameter indicates the command signal to activate the anti-theft device.

#### REQ 7.4 APP – Parameter specification – Anti-theft device – Status request

[Table 4](#) specifies the parameter attributes.