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**Road vehicles — Controller area  
network (CAN) —**

**Part 3:  
Low-speed, fault-tolerant,  
medium-dependent interface**

*Véhicules routiers — Gestionnaire de réseau  
de communication (CAN) —*

*Partie 3: Interface à basse vitesse, tolérant les pannes, dépendante  
du support*



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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.

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.

ISO 11898-3 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This first edition of ISO 11898-3 cancels and replaces ISO 11519-2:1994, which has been technically revised.

ISO 11898 consists of the following parts, under the general title *Road vehicles — Controller area network (CAN)*:

- *Part 1: Data link layer and physical signalling*
- *Part 2: High-speed medium access unit*
- *Part 3: Low-speed, fault-tolerant, medium-dependent interface*
- *Part 4: Time triggered communication*
- *Part 5: High-speed medium access unit with low-power mode*

## Introduction

ISO 11898, first published in November 1993, covered the controller area network (CAN) data link layer as well as the high-speed physical layer.

In the reviewed and restructured ISO 11898:

- ISO 11898-1 describes the data link layer protocol as well as the medium access control;
- ISO 11898-2 specifies the high-speed medium access unit (MAU) as well as the medium dependent interface (MDI).

ISO 11898-1:2003 and ISO 11898-2:2003 cancel and replace ISO 11898:1993.

In addition to the high-speed CAN, the development of the low-speed CAN, which was originally covered by ISO 11519-2, gained new means such as fault tolerant behaviour. The subject of this part of ISO 11898 is the definition and description of requirements necessary to obtain a fault tolerant behaviour as well as the specification of fault tolerance itself. In particular, it describes the medium dependent interface and parts of the medium access control.

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# Road vehicles — Controller area network (CAN) —

## Part 3:

## Low-speed, fault-tolerant, medium-dependent interface

### 1 Scope

This part of ISO 11898 specifies characteristics of setting up an interchange of digital information between electronic control units of road vehicles equipped with the controller area network (CAN) at transmission rates above 40 kBit/s up to 125 kBit/s. The CAN is a serial communication protocol which supports distributed control and multiplexing.

This part of ISO 11898 describes the fault tolerant behaviour of low-speed CAN applications, and parts of the physical layer according to the ISO/OSI layer model. The following parts of the physical layer are covered by this part of ISO 11898:

- medium dependent interface (MDI);
- physical medium attachment (PMA).

In addition, parts of the physical layer signalling (PLS) and parts of the medium access control (MAC) are also affected by the definitions provided by this part of ISO 11898.

All other layers of the OSI model either do not have counterparts within the CAN protocol and are part of the user's level or do not affect the fault tolerant behaviour of the low speed CAN physical layer and therefore are not part of this part of ISO 11898.

### 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 2.1

##### **bus**

topology of a communication network where all nodes are reached by passive links which allow transmission in both directions

#### 2.2

##### **bus failure**

failures caused by a malfunction of the physical bus such as interruption, short circuits

#### 2.3

##### **bus value**

one of two complementary logical values: dominant or recessive

NOTE The dominant value represents a logical "0" the recessive represents a logical "1". During simultaneous transmission of dominant and recessive bits, the resulting bus value will be dominant.

#### 2.4

##### **bus voltage**

voltage of the bus line wires CAN\_L and CAN\_H relative to ground of each individual CAN node

NOTE  $V_{CAN\_L}$  and  $V_{CAN\_H}$  denote the bus voltage.