International Standard

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Road vehicles — Controller area network (CAN) —

Part 2: High-speed physical medium attachment (PMA) sublayer

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

Partie 2: Sous-couche de l'unité d'accès au support à haute vitesse (PMA)

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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).

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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 fourth edition cancels and replaces the third edition (ISO 11898-2:2024), which has been technically revised.

The main changes are as follows:

— bugs have been fixed, clarifications have been made and figures have been updated;

— the common mode range specification of the receiver has become extended towards +/− 8 V differential (see Table 7).

A list of all parts in the ISO 11898 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.

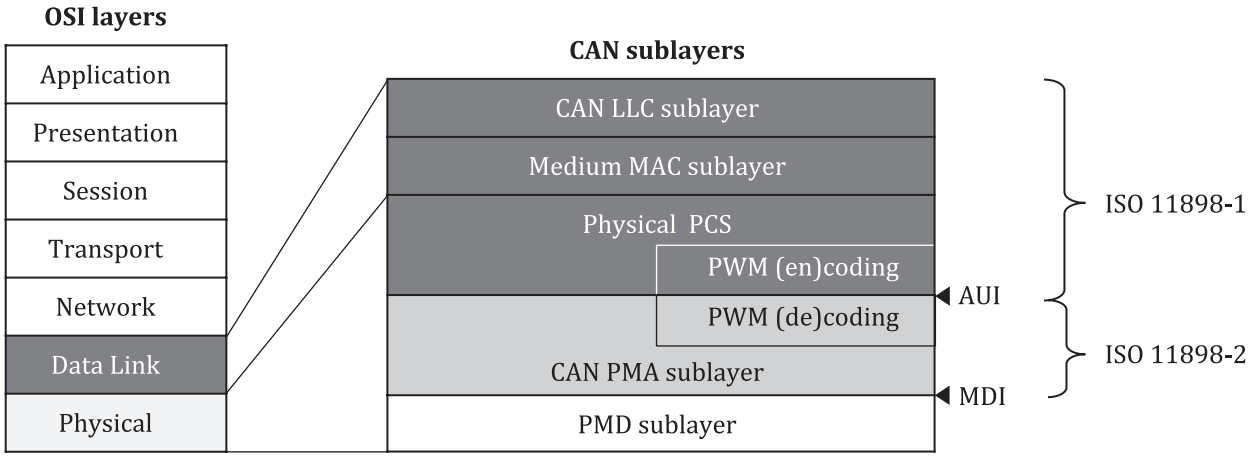
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Introduction

The ISO 11898 series provides requirement specifications for the CAN data link layer and physical layer. It is intended for chip implementers, e.g. ISO 11898-1 for CAN protocol controllers and this document for CAN transceivers. Related conformance test plans are given in the ISO 16845 series. The CAN data link layer models the open system interconnect (OSI) data link layer; it is internally subdivided into logic link control (LLC) and medium access control (MAC). ISO 11898-1 also specifies the CAN physical coding sublayer (PCS) by means of the attachment unit interface (AUI). Optionally, the PCS also provides the pulse-width modulation (PWM) encoding to be linked to a CAN SIC XL transceiver, which provides the PWM decoding.

The OSI layers above the data link layer (e.g. the network layer) are not specified in the ISO 11898 series.

Figure 1 shows the relation between the OSI layers and the CAN sublayers.



Key

AUI	attachment unit interface
LLC	logic link control
MAC	medium access control
MDI	medium dependent interface
PCS	physical coding sublayer
PMA	physical medium attachment
PMD	physical medium dependent
PWM	pulse-width modulation

Figure 1 — CAN data link and physical sublayers relation to the OSI model

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Road vehicles — Controller area network (CAN) —

Part 2:
High-speed physical medium attachment (PMA) sublayer

1 Scope

This document specifies physical medium attachment (PMA) sublayers for the controller area network (CAN). This includes the high-speed (HS) PMA without and with low-power mode capability, without and with selective wake-up functionality. Additionally, this document specifies PMAs supporting the signal improvement capability (SIC) mode and the FAST mode in Annex A. The physical medium dependent (PMD) sublayer is not in the scope 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/IEC 7498-1, *Information technology — Open Systems Interconnection — Basic Reference Model: The Basic Model*

ISO 11898-1, *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical coding sublayer*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 7498-1, ISO 11898-1 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

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

3.1
active recessive
intermediate high-speed *physical medium attachment* (3.13) (HS-PMA) output drive with a dedicated lower than nominal impedance at transitions from dominant state or level_0 state towards the *passive recessive* (3.11) state with a dedicated duration

3.2
bus state
state of the *medium dependent interface (MDI)* (3.8), which is dominant or recessive if the *physical medium attachment (PMA)* (3.13) sublayer is in arbitration mode, or is level_0 or level_1 otherwise

Note 1 to entry: The dominant state represents the logical 0 and the recessive state represents the logical 1. During simultaneous transmission of dominant and recessive bits, the resulting bus state is dominant. When no transmission is in progress, the bus is idle. During idle time, it is in recessive state.

Note 2 to entry: The level_0 state represents the logical 0, and the level_1 state represents the logical 1.

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