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ISO/TS 22741-10

**Intelligent transport systems —
Roadside modules AP-DATEX data
interface —**

**Part 10:
Variable message signs**

Systèmes de transport intelligents — Interface de données AP-DATEX pour les modules en bord de route —

Partie 10: Panneaux à messages variables

**First edition
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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

A list of all parts in the ISO 22741 series can be found on the ISO website.

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0.1 Background

A variable message sign (VMS) is an electronic traffic sign installed on the roadside to provide real-time traffic information to travellers, thereby improving their efficiency in using road traffic. A VMS is a major physical component of the intelligent transportation system (ITS), to which it supplies information for improvement of the safety on the road.

More VMSs are expected to be installed and operated due to increasing demand for the establishment of ITS and the replacement of existing VMSs which have exceeded their durability terms.

Operators of traffic management centres need real-time data exchange between a VMS and the centre in order to supply information to the VMS in real time and to control and manage the VMS.

However, no standards for the information transmitted and received between the traffic management centre and the VMS have been established, leading to the development of various protocols and their application to each VMS construction project. As a result, a variety of problems have arisen, including redundant investment in development costs and forced dependence on the protocol of the previous operator when replacing the existing VMSs with new ones.

This document therefore defines the data items (messages), formats and communication protocols (application, presentation, session and transport layers) required to ensure the interoperability of the information transmitted and received between the VMS and the traffic management centre, thereby ensuring interoperability between the VMS and the centre.

0.2 Overview

This document defines the message, the data elements making up the message, and the application layer profile for message transmission in order to ensure the interoperability between the VMS and the traffic management centre.

In particular, in order to ensure the interoperability between the VMS and the traffic management centre, the interoperability is developed based on OSI (open system interconnection) 7 layers. A collection of standard protocols for each layer is referred to as a "profile".

ISO/IEC TR 10000-2 defines the basic classification and object presentation of OSI profiles as follows.

- a) Interchange format and representation profiles define the information on and message structure of the data exchanged by applications.
- b) Application profiles define the transmission mechanism for data exchange (concerning OSI layers 5 to 7 – session, presentation and application layers).
- c) Transport profiles define the procedures and methods to exchange data packets between systems (concerning ;OSI layers 1 to 4 – transport, network, data link and physical layers).
- d) Relay profiles define the relaying function which enables the interconnection between systems while using different transmission profiles.

This document specifies "interchange format and representation" as defined in ISO/IEC TR 10000-2, covering the following points:

- 1) components and data elements of basic messages define the messages and detailed data elements which the operator of the traffic information system needs for operation of the VMS;
- 2) the data exchange communication profile defines the procedures and encoding methods for information exchange between the traffic management centre and the VMS.

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0.3 Document approach and layout

This document specifies the following:

- a) physical architecture for variable message signs ([Clause 6](#));
- b) user needs that are deemed to be common to many types of field devices ([Clause 7](#));
- c) requirements for implementing the identified user needs, organized by major feature ([Clause 8](#));
- d) dialogues for exchange data between variable message signs and the central/local computer ([Clause 9](#));
- e) the data packet structures for the features defined by this document ([Annex A](#));
- f) a requirements traceability table that traces requirements to the design elements ([Annex B](#)).

In addition, a simplified version of the conformance table and the data packet structures are available electronically at <https://standards.iso.org/iso/ts/22741/-10/ed-1/en/>.

ISO 22741-1 provides additional details about how the ISO 22741 series relates to the overall ITS architecture.