INTERNATIONAL STANDARD

ISO 15006

Second edition
2011.10.01

Road vehicles — Ergonomic aspects of transport information and control systems — Specifications for in-vehicle auditory presentation

Véhicules routiers — Aspects ergonomiques des systèmes de commande et d'information du transport — Spécifications concernant la présentation des informations auditives à bord du véhicule

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Reference number
ISO 15006:2011(E)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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.

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 15006 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 13, *Ergonomics applicable to road vehicles*.

This second edition cancels and replaces the first edition (ISO 15006:2004), which has been technically revised.

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Introduction

The driver and the vehicle are an integrated system that includes the environment, the primary vehicle controls, the instrumentation, and the transport information and control systems (TICS). The driving task, and human capabilities and limitations, are other primary factors. TICS are intended to support the driver's primary task, and therefore it is expected that the overall workload of the driver will not be negatively influenced, while performance and comfort should be increased.

The multitude of information to be displayed to the driver through TICS may create the need to minimize visual load and make more and better use of the auditory channel. This International Standard provides ergonomic specifications for the design and installation of auditory displays presenting speech and tonal information while driving. The aim of these specifications is to help designers to provide auditory signals which meet usability, comfort and safety criteria.

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1 Scope

This International Standard establishes ergonomic specifications for the presentation of auditory information related to transport information and control systems (TICS) through speech or sounds. It applies primarily to the use of auditory displays to the driver when the vehicle is in motion, but it may also be applied when the vehicle is stationary. It presents a set of requirements and recommendations for in-vehicle auditory signals from TICS, and provides characteristics and functional factors for maximizing auditory signal intelligibility and utility while helping prevent auditory or mental overload.

2 Normative references

The following referenced documents are indispensable for the application 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 532, *Acoustics — Method for calculating loudness level* [1)]

ISO 5128:1980, *Acoustics — Measurement of noise inside motor vehicles*

ISO/TS 16951, *Road vehicles — Ergonomic aspects of transport information and control systems (TICS) — Procedures for determining priority of on-board messages presented to drivers*

3 Terms and definitions

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

3.1
ambient auditory noise
auditory sensory stimulus bearing no informational relationship to the presence or completion on the immediate task that surrounds the driver in the vehicle's environment, including sound emanating from inside and outside the vehicle

3.2
audibility
degree to which an auditory signal can be heard by a person with normal hearing

3.3
auditory icon
auditory signal that represents an event or action

NOTE This auditory signal can be a synthesized sound that gives the impression of specific event or a recorded sound from everyday life.

3.4
auditory signal
tone or verbal cues emitted by an in-vehicle device, which provide information to the driver or passengers

1) The German standard DIN 45631 is largely identical to ISO 532. In practice, references for calculating loudness according to ISO 532 usually implement the code given in DIN 45631 [8].

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