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Intelligent transport systems — Assisted parking system (APS) — Performance requirements and test procedures

Systèmes intelligents de transport — Système de stationnement assisté (APS) — Exigences de performance et modes opératoires d'essai

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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 16787:2016), of which it constitutes a minor revision.

The main changes compared to the previous edition are as follows:

— some editorial errors have been corrected, such as the term, “must”, replaced with the term, “shall”;

— the figures and keys have been updated for clarity.

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Introduction

Assisted parking system (APS) consists of non-contact sensors and steering control which assist the driver in parking the vehicle. The assistance starts with searching a suitable parking area, getting information on the area around the vehicle (environmental map), calculating the trajectory and finishes with the lateral control of the vehicle. APS also assists the driver in recognizing obstacles while manoeuvring into the parking slot.

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Intelligent transport systems — Assisted parking system (APS) — Performance requirements and test procedures

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1 Scope

This document covers the assisted parking system (APS) for light-duty vehicles, e.g. passenger cars, pick-up trucks, light vans and sport utility vehicles (motorcycles excluded) equipped with such APS. This document establishes minimum functionality requirements that the driver can expect of the system, such as the detection of suitable parking spaces, calculation of trajectories and lateral control of the vehicle. Information on the presence of relevant obstacles in the driving path of the vehicle can also be included in the functionality of such systems. This document also sets minimum requirements for failure indication as well as performance test procedures. It includes rules for the general information strategy, but does not restrict the kind of information or display system.

APS is intended to provide automated parking assistance functionality to the driver. The APS searches the environment adjacent to the vehicle for suitable parking areas between other parked vehicles or markings on the road such as painted lines, evaluates the required information to calculate parking trajectories and sends steering commands to an electronic interface of the steering system for lateral control of the vehicle during the parking manoeuvre.

The basic APS function is to assist the driver with lateral control of the vehicle during parking manoeuvres. As an optional extension, APS can also offer limited longitudinal control of the vehicle movement, e.g. braking assistance while manoeuvring into the parking slot.

This document contains requirements for the lateral control capability of APS. It does not address longitudinal control.

During the parking manoeuvre, the driver can take over the control of the vehicle movement at any time and is also fully responsible for the parking manoeuvre.

APS uses object-detection devices for detection and ranging in order to search the environment for suitable parking areas. Such devices can be sensors with distance information or vision-based systems. In addition, sensors or counters, as well as relevant data available on the vehicle network (e.g. CAN), may be used to calculate the position of the vehicle relative to the parking area.

APS is an extension of systems which inform the driver about obstacles in parking manoeuvres (e.g. ISO 17386 and ISO 22840).

This document does not include assisted parking systems, reversing aids and obstacle-detection devices for use on heavy commercial vehicles or on vehicles with trailers.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp/

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