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Intelligent transport systems — Partially-automated parking systems (PAPS) — Performance requirements and test procedures

Systèmes de transport intelligents — Systèmes de stationnement partiellement automatisés (PAPS) — Exigences de performance et procédures d'essai

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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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 204, *Intelligent transport systems*.

This second edition cancels and replaces the first edition (ISO 20900:2019), which has been technically revised.

The main changes are as follows:

— the concept of an "area where partially-automated parking systems (PAPS) control is permitted" within parking scenarios has been removed;

— the concept of a "narrow situation" within parking scenarios has been introduced.

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.

Introduction

Partially-automated parking systems (PAPS) perform parking manoeuvres controlling both longitudinal and lateral movement of the vehicle to mitigate the driver's burden. Information about the intended parking space should be available prior to starting the system operation, via on-board sensors and potentially via external infrastructural information sources, in order to determine the strategic path to follow.

The system consists of driver command input device(s) and non-contact sensors for acquiring external information. In addition, the system involves the automatic control of propulsion, brake, transmission and steering, through which the vehicle is manoeuvred into an intended relative position and is made to stop within certain tolerances without the driver's direct manipulations.

A human-machine interface (HMI) provides system information to the driver. The system function is initiated by a driver command. The system monitors the vicinity of the vehicle to detect and avoid hazards. The vehicle behaviour and safety conditions are supervised by the driver.

The driver is able to cancel/halt the system operation at any time necessary.

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Intelligent transport systems — Partially-automated parking systems (PAPS) — Performance requirements and test procedures

1 Scope

This document addresses light vehicles,[1] for example passenger cars, pick-up trucks, light vans and sport utility vehicles (motorcycles excluded), equipped with partially-automated parking systems (PAPS).

This document establishes minimum functionality requirements that the driver can expect and that are to be taken into account by the manufacturer.

There are two possible types of PAPS configuration.

— Type 1: the system is supervised by the conventional driver located in the driver's seat.

— Type 2: the system is supervised by the remote driver (present within or outside the vehicle), who is not necessarily located in the driver's seat. The vehicle remains in the line of sight of the remote driver.

This document addresses minimum requirements and conditions for safety, system performance and function, including human-machine interface (HMI) information content and a description of system operating states, for both types of system.

The requirements include the driver, who supervises the safety throughout the system manoeuvres.

System test requirements are also addressed, including test criteria, method and conditions.

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 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
partially-automated parking system
PAPS
system capable of measuring the dimensions of a *parking space* (3.2)/*parking slot* (3.3)/*garage* (3.4), calculating an applicable trajectory, performing lateral and longitudinal (longitudinal in both directions) control of the vehicle while manoeuvring into the space/slot/garage and providing necessary instructions to the driver

3.2
parking space
area which exists between two bordering vehicles and is available for parking