PUBLICLY AVAILABLE SPECIFICATION

ISO/PAS 11585

First edition
2023-09

Road vehicles — Partial driving automation — Technical characteristics of conditional hands-free driving systems

Véhicules routiers — Automatisation partielle de la conduite — Caractéristiques techniques des systèmes de conduite mains-libres conditionnels

Reference number
ISO/PAS 11585:2023(E)

© ISO 2023



COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Published in Switzerland

© ISO 2023 – All rights reserved

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Functionality **3**
4.1 Overall system context 3
4.2 General requirements 5
4.3 State: L2 hands-free 6
4.3.1 Control loop 6
4.3.2 Possibility for the driver to deactivate, overrule and override the L2 hands-free state 6
4.3.3 ODD monitoring 7
4.3.4 Driver monitoring 7
4.3.5 Driver information and warning 7
4.4 Transitions 8
4.4.1 Enter "L2 hands-free state" from "manual-driving mode", "L1-driving mode" or "PADS active-driving mode" 8
4.4.2 Leaving "L2 hands-free state" due to drivers' intervention 8
4.4.3 Leaving "L2 hands-free state" due to system intervention 8
4.4.4 Leaving "L2 hands-free state" due to risk-mitigation 9
5 Technical characteristics of "L2 hands-free subsystems" **9**
5.1 Driver-monitoring system 9
5.2 Driver information and warning system 10
5.3 ODD-monitoring system 10
5.4 Risk-mitigation system 11
Annex A (informative) **Driver information and warning system** **12**
Bibliography **14**

© ISO 2023 – All rights reserved

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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

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 33, *Vehicle dynamics, chassis components and driving automation systems testing*.

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.

© ISO 2023 – All rights reserved

Introduction

This document can be used as a system level standard by other standards, which extend the combination of ACC according to ISO 15622 and PADS according to ISO 21717 with additional requirements motivated by costumer use-cases and by safety to a more detailed standard for a higher level of functionality which will include the hands-free use case in certain conditions.

The main functionality of a "L2 hands-free system" is to control and limit the vehicle behaviour for longitudinal and lateral control, as it is described in ISO 15622 and ISO 21717, with respect to the performance, the intended ODD and the driver's capabilities. Together with an appropriate driver monitoring, which is typically realized with a driver monitoring camera and in addition a hands-on/off detection regarding to the steering wheel, it is possible for a system to operate while the driver can take the hands away from the steering without losing the ability and the responsibility to control the DDT.

This document contains the basic control strategy, basic driver interface elements and a minimum set of requirements for a L2 hands-free system. This document is applicable for, but not limited to, passenger cars. It is not applicable to automated driving systems of Level 3 according to ISO/SAE PAS 22736 or higher.

While a lane change functionality is not specified in this document, it is explicitly considered.

Regional regulation, e.g. UN/ECE R79, can limit the applicability of parts of this document.

© ISO 2023 – All rights reserved

Road vehicles — Partial driving automation — Technical characteristics of conditional hands-free driving systems

1 Scope

This document provides technical characteristics of partial driving automation system according to ISO/SAE PAS 22736 and associated control strategies enabling hands-free driving.

These technical characteristics, together with an appropriate operational design domain enable the proper usage of such partial driving automation systems which is supervised by drivers.

This document does not address performance limits, verification and validation of such systems.

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
ODD
operational design domain
operating conditions under which the driving automation system is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of certain traffic or roadway characteristics

[SOURCE: ISO/SAE PAS 22736:2021, 3.21, modified —The notes to entry and examples have been removed.]

3.2
EOR
eyes-on request
request by the L2 hands-free system to the driver to monitor the traffic situation

3.3
HOW
hands-on warning
warning by the L2 hands-free system to the driver to *direct control* (3.12) the vehicle, at least by lateral steering control of the vehicle

Note 1 to entry: An HOW could be represented by a yellow warning signal accompanied by an acoustic warning.

© ISO 2023 – All rights reserved