



Technical Specification

ISO/TS 5283-1

Road vehicles — Driver readiness and intervention management —

Part 1:

Partial automation (Level 2)

*Véhicules routiers — Gestion de la préparation et de
l'intervention du conducteur —*

Partie 1: Automatisation partielle (niveau 2)

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Foreword

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This document was prepared by Technical Committee ISO/TC 22 *Road vehicles*, Subcommittee SC 39, *Ergonomics*.

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Introduction

According to the Society for Automotive Engineers (SAE) guidelines, in Level 2 partial driving automation (ISO/SAE PAS 22736), the driver is expected to be engaged in the dynamic driving task (DDT). Namely, supervising the automated system while both longitudinal and lateral control of the vehicle are executed by the system, and managing the object and event detection and response (OEDR), in case the system does not respond properly. This may be because of system limitations, when particular objects or events are not detectable by the system, operation condition is out of the vehicle's operational design domain (ODD), or due to a system malfunction. In each case, the driver is expected to immediately resume parts or all aspects of the DDT, managing the situation to either continue safe driving in manual mode or stop the vehicle safely. There are currently two types of Level 2 systems available in the market. Hands-on systems are features which require the driver to keep their hands on the steering wheel, while hands-off systems do not. However, the driver's role in performing the OEDR task, supervising system performance, and resuming control, without hesitation and when necessary, is the same for both hands-on and hands-off systems.

Overall, in Level 2 partial driving automation, the driver is always required to supervise system operation and be ready to resume part or all of the DDT, when necessary, whether or not the system issues an alert signal. Supervision of automated systems can entail multiple responsibilities and tasks. Among these are often one or more vigilance-based tasks—with which humans are known to struggle.^{[1][2]} In the context of partial driving automation behavioural effects include reduced attention to driving related tasks, and increased boredom, and distraction,^{[3][4]} although this depends on how the system is implemented.^[5] To mitigate these driver states, dedicated in-vehicle systems are used to monitor relevant aspects of driver readiness, and help bring drivers back into a desirable state, so that they are ready to intervene, when needed.

This document summarizes key findings on human interaction with L2 driving automation systems as well as related standards and regulations. It also offers a conceptual framework for driver readiness and intervention management, providing high-level considerations on the design of these systems, as well as a synthesis of information required for their validation.

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