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Intelligent transport systems — Low speed following (LSF) systems — Performance requirements and test procedures

Systèmes intelligents de transport — Systèmes suiveurs à basse vitesse (LSF) — Exigences de performance et méthodes 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.

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 22178 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

Introduction

The main system function of low speed following is to control vehicle speed adaptively to a forward vehicle by using information about: (1) ranging to forward vehicles, (2) the motion of the subject (LSF equipped) vehicle and (3) driver commands (see Figure 1 — Functional LSF elements). Based upon the information acquired, the controller (identified as “LSF control strategy” in Figure 1) sends commands to actuators for carrying out its longitudinal control strategy and also sends status information to the driver.

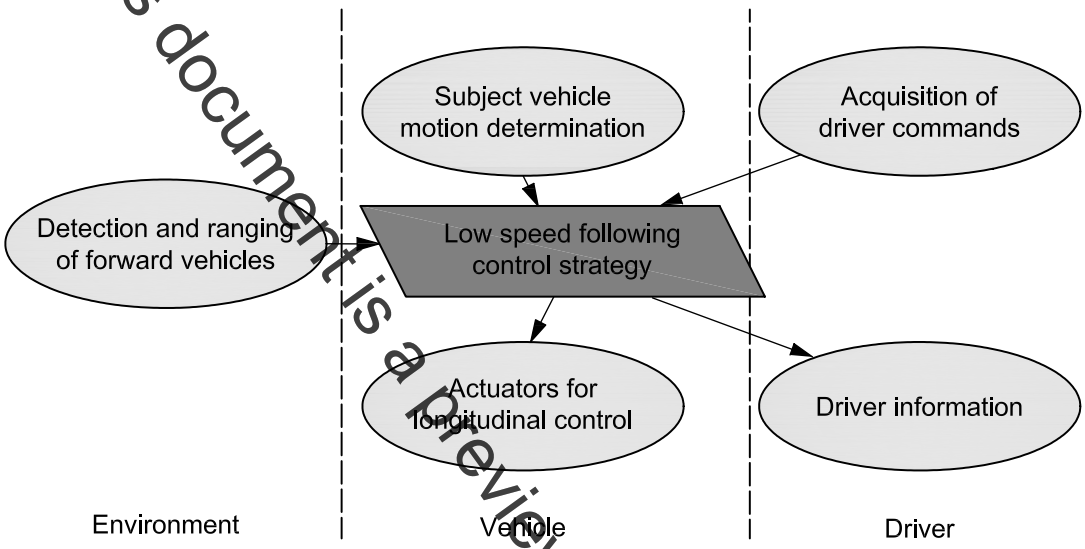

Figure 1 — Functional LSF elements

The goal of LSF is a partial automation of the longitudinal vehicle control to reduce the driver’s workload.

This International Standard may be used as a system level standard by other standards, which extend the LSF to a more detailed standard, e.g. for specific detection and ranging sensor concepts or higher level of functionality. Therefore, issues like specific requirements for the detection and ranging sensor function and performance or communication links for co-operative solutions will not be considered here.

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1 Scope

This International Standard contains the basic control strategy, minimum functionality requirements, basic driver-interface elements, minimum requirements for diagnostics and reaction to failure, and performance test procedures for low speed following (LSF) systems.

An LSF system is primarily intended to reduce the driver's workload of repeatedly operating the accelerator and the brake pedal under congested traffic in order to keep a proper following distance behind the target vehicle for a relatively long period on roadways where there are no objects like pedestrians and bicyclists who might interrupt motorized traffic flow. An LSF system provides automatic car-following at lower speed by use of a driver interface mechanism and a speed adjustment system. The LSF system does not normally provide speed regulator control.

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 2575, *Road vehicles — Symbols for controls, indicators and tell-tales*

3 Terms and definitions [1)]

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

3.1
clearance
distance from the forward vehicle's trailing surface to the subject vehicle's leading surface

3.2
congested traffic
traffic condition where the driver, at lower speed, repeatedly starts, follows a forward vehicle**,** and stops in order to keep a proper following distance behind the forward vehicle

3.3
cutting out
situation in which the target vehicle changes lanes from behind a preceding vehicle

1) Definitions are in accordance with the Glossary of ISO/TC 204/WG 14.