INTERNATIONAL STANDARD

**ISO 22839**

First edition
2013-06-01

# Intelligent transport systems — Forward vehicle collision mitigation systems — Operation, performance, and verification requirements

*Systèmes intelligents de transport — Systèmes d'atténuation de collision de véhicule frontale — Exigences de fonctionnement, de performance et de vérification*

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Reference number
ISO 22839:2013(E)

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Published in Switzerland

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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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

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# Introduction

Forward Vehicle Collision Mitigation Systems (FVCMS) reduce the severity of forward vehicle collisions that cannot be avoided, and may reduce the likelihood of collision with forward vehicles. FVCMS require information about range to forward vehicles, motion of forward vehicles, motion of the subject vehicle, driver commands and driver actions. FVCMS detect vehicles ahead, determine if detected vehicles represent a hazardous condition, and warn the driver if a hazard exists. They estimate if the driver has an adequate opportunity to respond to the hazard. If there is inadequate time available for the driver to respond, and if appropriate criteria are met, FVCMS determine that a collision is imminent. Based upon this assessment, the FVCMS will activate vehicle brakes to mitigate collision severity.

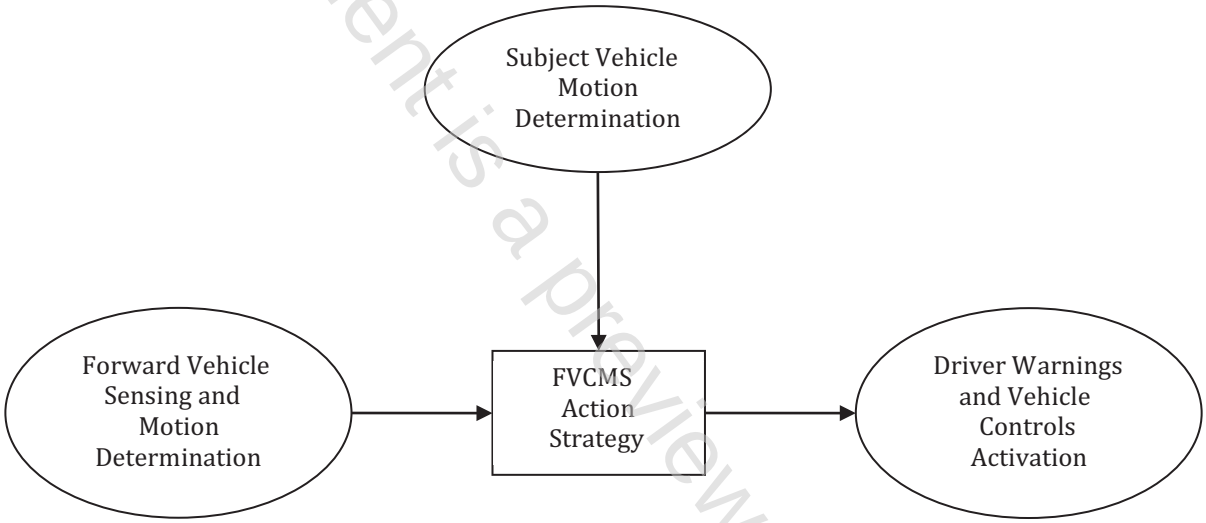


**Figure 1 — Forward Vehicle Collision Mitigation Systems (FVCMS) Functional Elements**

System designers and other users of this International Standard may apply it to stand-alone FVCMS or to the integration of the FVCMS functions into other driving assistance and support systems.

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# Intelligent transport systems — Forward vehicle collision mitigation systems — Operation, performance, and verification requirements

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## 1 Scope

This International Standard specifies the concept of operation, minimum functionality, system requirements, system interfaces, and test methods for Forward Vehicle Collision Mitigation Systems (FVCMS). It specifies the behaviours that are required for FVCMS, and the system test criteria necessary to verify that a given implementation meets the requirements of this International Standard. Implementation choices are left to system designers, wherever possible.

FVCMS mitigate rear-end collisions. By reducing the collision energy, FVCMS reduce the degree of property damage, personal injury, or the likelihood of fatality. They supplement crashworthiness systems such as airbags, seatbelts and other energy-absorbing systems by reducing the impact energy that must be isolated from the occupants. By automatically activating collision mitigation braking after a Collision Warning occurs, FVCMS assist in slowing the vehicle when a collision is likely. While collision avoidance is not required, this International Standard permits collision avoidance to be attempted by a system that conforms to FVCMS. Responsibility for the safe operation of the vehicle remains with the driver.

With the exceptions of single-track vehicles and trucks with dual or triple trailers, FVCMS are for use on road vehicles intended for public and non-public roadways. These systems are not intended for off-road use.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15622, *Intelligent transport systems — Adaptive Cruise Control systems — Performance requirements and test procedures*

ISO 15623, *Transport information and control systems — Forward vehicle collision warning systems — Performance requirements and test procedures*

ISO 22179, *Intelligent transport systems — Full speed range adaptive cruise control (FSRA) systems — Performance requirements and test procedures*

## 3 Terms and definitions

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

**3.1**
**adaptive cruise control**
**ACC**
enhancement to conventional cruise control systems which allows the subject vehicle to follow a forward vehicle at an appropriate distance by controlling the engine and/or power train and optionally the brake

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