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BSI Standards Publication

Intelligent transport systems — Bicyclist detection and collision mitigation systems (BDCMS) — Performance requirements and test procedures

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National foreword

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

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Introduction

Bicyclist detection and collision mitigation systems (BDCMS) reduce the severity of collisions between a human-driven vehicle and bicyclists that cannot be avoided and may reduce the likelihood of such collisions by automatically activating emergency braking (EB). BDCMS assist in slowing the subject vehicle (SV) when a collision is likely.

BDCMS functions may be used as a stand-alone system or might be part of a driver assistance system. As depicted in Figure 1, the BDCMS will provide information to the driver and perform SV actuation in the form of longitudinal control.

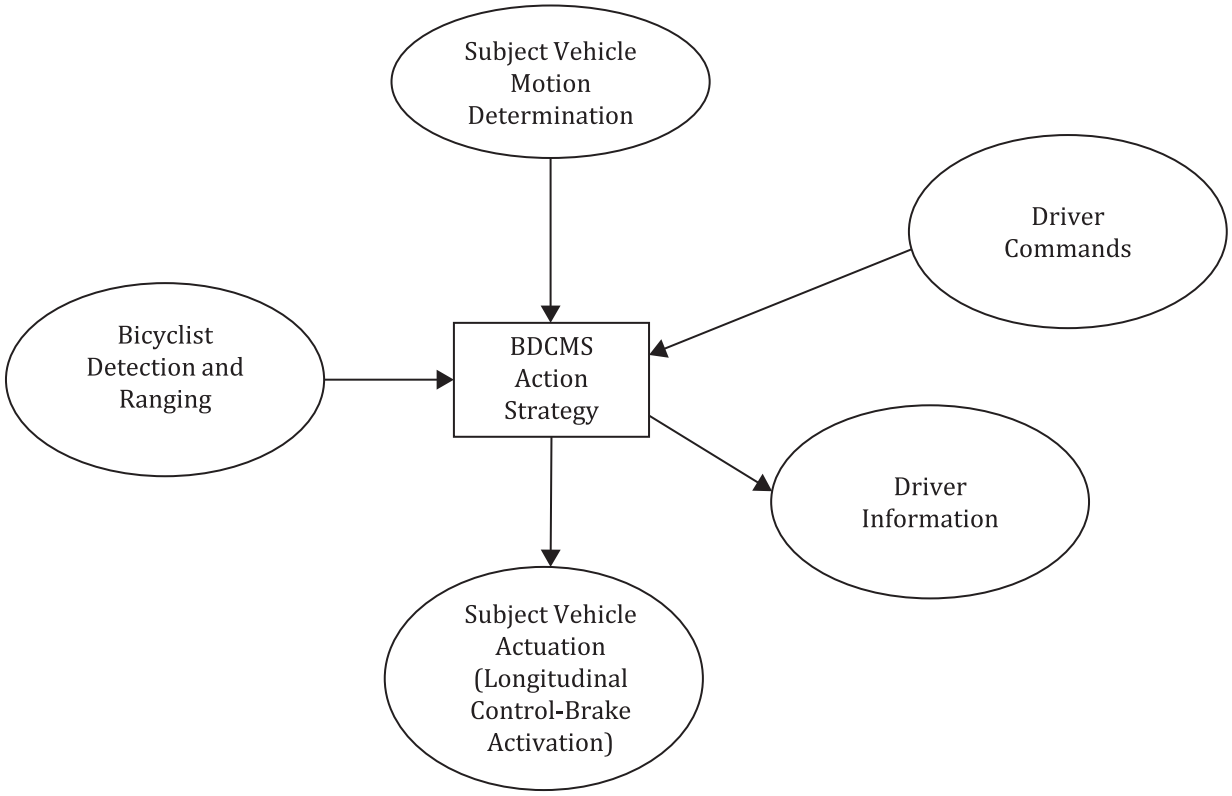

Figure 1 — BDCMS functional elements

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Intelligent transport systems — Bicyclist detection and collision mitigation systems (BDCMS) — Performance requirements and test procedures

1 Scope

This document specifies the concept of operation, minimum functionality, system requirements, system interfaces, and test procedures for bicyclist detection and collision mitigation systems (BDCMS). It also defines the system test criteria necessary to verify that a given implementation meets the requirements of this document. Implementation choices are left to system designers, wherever possible.

BDCMS are fundamentally intended to provide emergency braking (EB) of equipped vehicles in order to mitigate collision severity between the subject vehicle (SV) and a bicyclist. BDCMS detect bicyclists forward of the SV, determine if the detected bicyclists are in a hazardous situation with respect to the SV, and initiate EB if a hazardous situation exists and a collision is imminent. Systems that include other countermeasures such as evasive steering are outside the scope of this document.

This document defines two types of BDCMS (based on operation in different ambient illuminance) and two classes of BDCMS (based on operation on different vehicle size classes), as depicted in Table 1. This document does not apply to motorcycles. The operational design domain is public roads. BDCMS is not intended for off-road use.

Table 1 — Types and classes of BDCMS

	BDCMS class I	BDCMS class II
BDCMS type I	Daytime only Light vehicles only	Daytime only Heavy vehicles only
BDCMS type II	Daytime, twilight, and night-time Light vehicles only	Daytime, twilight, and night-time Heavy vehicles only

Responsibility for the safe operation of the vehicle remains with the driver.

Licensable motor vehicles intended for use on public roads (i.e. motorcycles, cars, light trucks, buses, motor coaches), and other heavy vehicles as hazards are outside the scope of this document and are covered under ISO 22839.

Pedestrians are outside the scope of this document and are covered under ISO 19237.

Annex A contains informative information relative to BDCMS.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 8608, *Mechanical vibration — Road surface profiles — Reporting of measured data*

ISO 19206-4:—[1], *Road vehicle — Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions —Part 4: Requirements for bicyclist targets*

ISO/CIE 19476, *Characterization of the performance of illuminance meters and luminance meters*

1) Under preparation. Stage at the time of publication: ISO/DIS 19206-4:2020.

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