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Multimedia systems and equipment for vehicles - Surround view system - Part 1: General

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EN IEC 63033-1

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English Version

Multimedia systems and equipment for vehicles - Surround view system - Part 1: General (IEC 63033-1:2022)

Systèmes et équipements multimédias pour véhicules - Système de vision panoramique - Partie 1: Généralités (IEC 63033-1:2022)

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The text of document 100/3728/FDIS, future edition 1 of IEC 63033-1, prepared by IEC/TC 100 "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63033-1:2022.

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Systèmes et équipements multimédias pour véhicules – Système de vision panoramique –
Partie 1: Généralités

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MULTIMEDIA SYSTEMS AND EQUIPMENT FOR VEHICLES – SURROUND VIEW SYSTEM –

Part 1: General

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IEC 63033-1 has been prepared by technical area 17: Multimedia systems and equipment for vehicles, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

This first edition cancels and replaces IEC TS 63033-1 published in 2017. This edition constitutes a technical revision.

The text of this International Standard is based on the following documents:

Draft	Report on voting
100/3728/FDIS	100/3751/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

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The language used for the development of this International Standard is English.

A list of all parts in the IEC 63033 series, published under the general title *Multimedia systems and equipment for vehicles – Surround view system*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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INTRODUCTION

The purpose of this document is to specify the model for generating the surrounding visual image of the surround view system, which provides drivers with an image of the car's surroundings. The surround view system is characterised by audio-visual monitoring and recording, which is part of the car's multimedia equipment.

When manoeuvring, the driver relies on the images provided by the rear-view monitor for parking assistance, the blind spot monitor for displaying views of the blind spots at intersections with poor visibility, and the bird's-eye view monitor. But each surround view system provides a different viewpoint to the driver. It's a heavy burden for a car driver to switch between these systems and quickly recognize the multiple fields of view. And the fields of view are limited to these camera systems, and they cannot freely change the viewpoint depending on the driving situation. Thus, the usage range of these systems is limited to such manoeuvres as parking assistance. Furthermore, on commercial vehicles such as trucks and buses, and special vehicles such as construction machinery and agricultural machinery, the usage range of these systems is even more limited. Nobody can assist drivers of large vehicles in ensuring the car's correct position.

With a surround view system, it is possible to quickly ensure the car's proper positioning in various driving situations. And not only for passenger cars, but good positioning can also be quickly ensured for commercial vehicles and special vehicles.

This document specifies the model for generating the surrounding visual image of the surround view system. IEC 63033-2 specifies the information sets that are provided by the surround view system, and recording methods for that information and visual images. IEC 63033-3 specifies the measurement methods of surrounding visual images for the surround view system.

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MULTIMEDIA SYSTEMS AND EQUIPMENT FOR VEHICLES – SURROUND VIEW SYSTEM –

Part 1: General

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1 Scope

This part of IEC 63033 specifies the model for generating the surrounding visual image of the surround view system.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1 Terms and definitions

3.1.1
car
powered wheeled vehicle of any kind

3.2 Abbreviated terms

3D	three dimensional
camera ECU	camera electronic control unit
CAN	controller area network
GUI	graphical user interface
AD	analogue-to-digital
DA	digital-to-analogue

4 System model

4.1 General

The system model of the surround view system is described in Figure 1. Cameras, which are mounted on the outside of the car, capture the visual image of the area surrounding the car and these visual data are projected onto a 3D projection surface. The visual image can then be displayed as a composite image. The images can be rendered from various viewpoints with the parameters for capture. The number of cameras required on vehicles other than automobiles can be more than four depending on the size and shape of the car. This model defines a system with four cameras for general application. The number of cameras actually used for each composite image changes depending on the viewpoint. The mounting positions and angles for the four cameras should be calibrated in accordance with the data described in 4.2 and 4.3.