
**Information technology — MPEG
audio technologies —**

**Part 4:
Dynamic range control**

*Technologies de l'information — Technologies audio MPEG —
Partie 4: Contrôle de gamme dynamique*

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 document 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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia, and hypermedia*.

This second edition cancels and replaces the first edition (ISO 23003-4:2015), which has been technically revised. It also incorporates the Amendments ISO 23003-4:2015/Amd.1:2017 and ISO 23003-4:2015/Amd.2:2017. The main changes compared to the previous edition are as follows:

- Amendments to the previous edition that include enhancements, definitions of profiles and levels, reference software, and conformance are integrated.

A list of all parts in the ISO/IEC 23003 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Consumer audio systems and devices are used in a large variety of configurations and acoustical environments. For many of these scenarios, the audio reproduction quality can be improved by appropriate control of content dynamics and loudness.

This document provides a universal dynamic range control tool that supports loudness normalization. The DRC tool offers a bitrate efficient representation of dynamically compressed versions of an audio signal. This is achieved by adding a low-bitrate DRC metadata stream to the audio signal. The DRC tool includes dedicated sections for clipping prevention, ducking, and for generating a fade-in and fade-out to supplement the main dynamic range compression functionality. The DRC effects available at the DRC decoder are generated at the DRC encoder side. At the DRC decoder side, the audio signal may be played back without applying the DRC tool, or an appropriate DRC tool effect is selected and applied based on the given playback scenario.

Loudness normalization is fully integrated with DRC and peak control to avoid clipping. A metadata-controlled equalization tool is provided to compensate for playback scenarios that impact the spectral balance, such as downmix or DRC. Furthermore, the DRC tool supports metadata-based loudness equalization to compensate the effect of playback level changes on the spectral balance.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

ISO and IEC take no position concerning the evidence, validity and scope of these patent rights

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Information technology — MPEG audio technologies —

Part 4: Dynamic range control

1 Scope

This document specifies technology for loudness and dynamic range control. It is applicable to most MPEG audio technologies. It offers flexible solutions to efficiently support the widespread demand for technologies such as loudness normalization and dynamic range compression for various playback scenarios.

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/IEC 14496-12, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*

ISO/IEC 14496-26:2010, *Information technology — Coding of audio-visual objects — Part 26: Audio Conformance*

ISO/IEC 23008-3:2019, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 3: 3D audio*

ISO/IEC 23091-3, *Information technology — Coding-independent code points — Part 3: Audio*

3 Terms, definitions and mnemonics

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 14496-12 and the following apply.

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

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

3.1.1

DRC sequence

series of DRC gain values that can be applied to one or more audio channels