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Part 4: Dynamic range control

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Foreword

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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 third edition cancels and replaces the second edition (ISO/IEC 23003-4:2020), which has been technically revised. It also incorporates the Amendments ISO/IEC 23003-4:2020/Amd 1:2022 and ISO/IEC 23003-4:2020/Amd 2:2023.

The main changes are as follows:

— Functionality for side chain normalization and loudness leveling, related reference software, and conformance have been integrated.

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

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 and www.iec.ch/national-committees.

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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/leveling, 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.

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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 (DRC). 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 14496-26:2024, *Information technology — Coding of audio-visual objects — Part 26: Audio Conformance*

ISO/IEC 23008-3:2022, *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 symbols

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 terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
DRC sequence
series of DRC gain values that can be applied to one or more audio channels

3.1.2
DRC set
defined set of DRC sequences that produce a desired effect if applied to the audio signal

3.1.3
album
collection of audio recordings that are mastered in a consistent way

Note 1 to entry: Traditionally, a collection of songs released on a Compact Disk belongs into this category, for example.

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