INTERNATIONAL STANDARD

ISO/IEC 23091-2

Second edition
2021-10

Information technology — Coding-independent code points —

Part 2: Video

Technologies de l'information — Points de code indépendants du codage —

Partie 2: Vidéo

Reference number
ISO/IEC 23091-2:2021(E)

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Published in Switzerland

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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 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 or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*, in collaboration with ITU-T [as Rec. ITU-T H.273 (07/2021)].

This second edition cancels and replaces the first edition (ISO/IEC 23091-2:2019), which has been technically revised.

The main changes are as follows:

— the addition of a code point for chroma sampling grid alignment indication for the 4:2:0 colour format;

— correction of the range of values specification for sample aspect ratio indication;

— correction of the formulae for the IC_TC_P colour representation for the hybrid-log-gamma (HLG) transfer function specified in Rec. ITU-R BT.2100-2;

— correction of the formulae for the transfer function for the sYCC colour representation specified in IEC 61966-2-1.

A list of all parts in the ISO/IEC 23091 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.

Introduction

In a number of specifications, there is a need to identify some characteristics of video (or still image) media content that are logically independent of the compression format. These characteristics can include, for example, aspects that relate to the sourcing or presentation, or the role of the video (or still image) media component. These characteristics have typically been documented by fields that take an encoded value or item selected from an enumerated list, herein called code points.

These code points are typically defined in the specification of compression formats to document these characteristics of the media. In past practices, the definition of these fields has been copied from document to document, sometimes with new values being added in later documents (and sometimes with later amendments specified to add new entries to existing documents).

This past practice has raised a number of issues, including the following:

a) A lack of a formal way to avoid conflicting assignments being made in different documents.

b) Having additional values defined in later specifications that can be practically used with older compression formats, but without clear formal applicability of these new values to older documents.

c) Any update or correction of code point semantics can incur significant effort to update all documents in which the code point is specified, instead of enabling a single central specification to apply across different referencing specifications.

d) The choice of reference for other specifications (such as container or delivery formats) not being obvious; wherein a formal reference to a compression format document appears to favour that one format over others, and also appears to preclude definitions defined in other compression format specifications.

e) Burdensome maintenance needs to ensure that a reference to material defined in a compression format specification is maintained appropriately over different revisions of the referenced format specification, as the content of a compression format specification can change over time and is ordinarily not intended as a point of reference for defining such code points.

This document provides a central definition of such code points for video and image applications to address these issues. This document can be used to provide universal descriptions to assist interpretation of video and image signals following decoding, or to describe the properties of these signals before they are encoded.

Information technology — Coding-independent code points —

Part 2: Video

1 Scope

This document defines various code points and fields that establish properties of a video (or still image) representation and are independent of the compression encoding and bit rate. These properties can describe the appropriate interpretation of decoded data or can, similarly, describe the characteristics of such a signal before the signal is compressed by an encoder that is suitable for compressing such an input signal.

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/CIE 11664-1, *Colorimetry — Part 1: CIE standard colorimetric observers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
bottom field
assembly of the odd-numbered rows of samples of the *components* (3.3) of a video frame using a numbering of rows that starts with row number 0 as the top row

3.2
chroma
sample array or single sample representing one of the two colour difference signals related to the primary colours, represented by the symbols Cb and Cr

Note 1 to entry: The term "chroma" is used rather than "chrominance" in order to avoid the implication of the use of linear light transfer characteristics that is often associated with "chrominance".

3.3
component
array or single sample from one of the three arrays [*luma* (3.4) and two *chroma* (3.2)] that compose a *picture* (3.5) in 4:2:0, 4:2:2, or 4:4:4 colour format or the array or a single sample of the array that compose a *picture* in monochrome format