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Digital imaging — Image storage —

Part 1: Reference model

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 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 Technical Committee ISO/TC 42, *Photography*.

This fourth edition cancels and replaces the third edition (ISO 12234-1:2012), which has been technically revised.

The main changes are as follows:

— subclauses 6.4.2 and 6.4.3 replace subclause 6.6 in the previous edition;

— Table 2 of the previous edition has been divided into Tables 4, 5 and 6 according to the feature classifications defined in Table 2 in 6.4.2, and each metadata item is given a post processing rank according to Table 3 in 6.4.3.

A list of all parts in the ISO 12234 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.

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Introduction

This document addresses image storage requirements for digital photography systems, devices, and components, including digital cameras. A digital photography system typically divides the imaging chain into discrete components devoted to image acquisition, processing, storage, transmission and display. Since the components can be made by different manufacturers, there is a need to specify a standard format for image data interchange among the various components of the digital photography system.

The initial editions of ISO 12234-1 described image data interchange using only removable storage media, such as removable memory cards, floppy disks, and removable hard drives. The removable storage media was used to transport the digitized image data to other components in the imaging chain. However, many current digital cameras, including the digital cameras incorporated into smartphones and tablet computers, utilize internal non-volatile memory rather than removable memory. Therefore, the title and scope of this document have been broadened to include devices and systems that utilize non-removable image storage technologies.

This document specifies the required information content for storing images in digital photography components, devices and systems. The information content includes both the image data and data items describing the image. Annexes A, B and C describe various conforming formats. The data features supported by each of these formats are also described in Clause 6. The information content further includes a description of the file system which organizes the files containing digitized image data. Annex D describes a conforming file system. The file system features are described in Clause 7.

An implementation is considered to be in conformity if, at a minimum, all mandatory elements are present. Recommended features are not required, but will substantially enhance interoperability, performance and/or robustness.

In developing the earlier editions of ISO 12234, as well as this document, a structured methodology has been followed. A reference model describes the environment as well as the overall system architecture. The architecture separates the software layers (termed the “image data format” and the “file system”) from the hardware technology-dependent layer (termed the “media profile”). An image data format is media independent and contains the image data, image-related data and a means for structuring these data elements. A file system defines the data organization on the internal or removable storage media used, but it is independent of the media.

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Digital imaging — Image storage —

Part 1:
Reference model

1 Scope

This document specifies a basic reference model for digital photography systems, including digital cameras. The reference model includes image file formats for storing image data and metadata, file system requirements for storing and retrieving the image files using internal or removable memory, and media profiles which are specific to a given storage technology. The reference model allows the image data and metadata to be interchanged among the various components of a digital photography system.

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 12234-2, *Electronic still-picture imaging — Removable memory — Part 2: TIFF/EP image data format*

ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

ISO/IEC 15444-2, *Information technology — JPEG 2000 image coding system — Part 2: Extensions*

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
file system
software structure which specifies how the data is logically organized on a given internal or removable storage media

3.2
image data format
structure and content which specify image data and the organization of the image related data in a device-independent manner

3.3
image storage application profile
ISAP
media profile, the *file system* (3.1) and the *image data format* (3.2)

Note 1 to entry: The ISAP specifies all the information necessary to completely implement image storage.

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