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**Photography — Electronic still picture  
imaging terminology —**

**Part 1:  
Supplemental vocabulary**

*Photographie — Terminologie des prises de vue électroniques —  
Partie 1: Vocabulaire supplémentaire*

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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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 42, *Photography*.

This first edition of ISO 12231-1 cancels and replaces the third edition (ISO 12231:2012), which has been technically revised. The main changes compared to the previous edition are as follows:

- ISO 12231 was renamed ISO 12231-1;
- the formatting has been switched from a comprehensive vocabulary standard to a supplemental vocabulary standard, supplementing the ISO Online Browsing Platform;
- unlike previous editions of this document, this edition no longer includes terms and definitions that were defined by other ISO/TC 42 deliverables (Standards, Technical Specifications or Technical Reports).

Therefore, from this edition, this document consists of:

- a) originally-defined terms and definitions, and
- b) useful terms and definitions for electronic still picture imaging that are referred from other standard bodies outside of ISO/TC 42.

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](http://www.iso.org/members.html).

## Introduction

Electronic still picture imaging concepts are drawn from traditional photography, electronics, video, and information technology. In some cases, the concepts are redefined to apply to electronic still picture imaging. For example, unlike traditional photography, measurements cannot be defined in terms of “film” or “sensitised material”, since images acquired by digital image capture devices are stored electronically and are not immediately exposed on film. The meaning of shutter and exposure time is also different for digital image capture devices, because an electronic imaging sensor typically has image acquisition characteristics that are different from those of film.

This document provides a vocabulary which standardizes the use and meaning of terms associated with electronic still picture imaging that were not defined by other ISO/TC 42 deliverables (see [Annex A](#) for a list of related WGs and documents). It is organized alphabetically and follows natural (English) word order wherever possible.

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# Photography — Electronic still picture imaging terminology —

## Part 1: Supplemental vocabulary

### 1 Scope

This document defines terms used in electronic still picture imaging that have not been defined by other ISO/TC 42 standards, Technical Specifications or Technical Reports.

### 2 Normative references

There are no normative references in this document.

### 3 Terms and definitions

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

##### **aliasing ratio**

value equal to the “maximum minus minimum” modulation divided by the “average” modulation of an electronic still picture camera when imaging a frequency burst of constant spatial frequency

[SOURCE: ISO 12231:2012, 3.8]

Note 1 to entry: This term was originally defined in ISO 12233, and was adopted to ISO 12231:1997.

#### 3.2

##### **application**

image application software for use on a personal computer

[SOURCE: ISO 12231:2012, 3.9]

Note 1 to entry: This term was originally defined in the past edition of ISO 12234-3, and was adopted to ISO 12231:2005.

#### 3.3

##### **colour sequential exposure**

acquisition of a picture by combining repeated exposures to capture different colour components

Note 1 to entry: *Colour sequential exposure* can be by means of three colour illuminations, or by three colour filters.

[SOURCE: ISO 12231:2012, 3.52.2]

Note 2 to entry: This term was originally defined in the past edition of ISO 12232, adopted to ISO 12231:1997 and was modified at ISO 12231:2005.

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### 3.4

#### **exposure process**

various methods to capture images in the electronic still picture camera

[SOURCE: ISO 12231:2012, 3.52]

Note 1 to entry: This term was originally defined in the past edition of ISO 12232, and was adopted to ISO 12231:1997.

### 3.5

#### **flare**

light falling on an image, in an imaging system, which does not emanate from the subject point

Note 1 to entry: *Flare* is also sometimes referred to as veiling glare.

cf. image flare, veiling flare, veiling glare

[SOURCE: ISO 12231:2012, 3.59]

Note 2 to entry: This term was originally defined in the past edition of ISO 3664, and was adopted to ISO 12231:2005.

### 3.6

#### **Nyquist limit**

spatial frequency equal to 1/2 times the inverse of the sampling period

Note 1 to entry: Energy at an input spatial frequency above the *Nyquist limit* will alias to a spatial frequency below the *Nyquist limit* in the output image. The *Nyquist limit* may be different in the two orthogonal directions.

[SOURCE: ISO 12231:2012, 3.117]

Note 2 to entry: This term was originally defined in the past edition of ISO 12232, and was adopted to ISO 12231:1997.

### 3.7

#### **photography**

acquisition, processing or reproduction of optically formed images using chemical or electronic technologies

[SOURCE: ISO 12231:2012, 3.131]

Note 1 to entry: This term was originally defined in ISO 12231:2005.

### 3.8

#### **pixel aspect ratio**

ratio of the distance between sampling points in the two orthogonal sampling directions

Note 1 to entry: If the distances are equal, the *pixel aspect ratio* equals 1:1, and is said to be "square".

[SOURCE: ISO 12231:2012, 3.12.2]

Note 2 to entry: This term was originally defined in the past edition of ISO 12232, and was adopted to ISO 12231:1997.

### 3.9

#### **single exposure**

acquisition of a picture by a *single exposure*, with one or more image sensors, that exposes all sensor pixels, all colours, and all image locations at the same time

[SOURCE: ISO 12231:2012, 3.52.1]

Note 1 to entry: This term was originally defined in the past edition of ISO 12232, adopted to ISO 12231:1997 and was modified at ISO 12231:2005.

**3.10****time sequential exposure**

acquisition of a picture by combining repeated exposures to capture different spatial components

Note 1 to entry: *Time sequential exposure* can be with a line array (line scanning) or an area array. With a line array, the picture is acquired by optical or physical sub-scanning with an image sensor in one dimension. With an area array, repeated exposures may integrate smaller pictures into a larger picture by means of image sensor shifting.

[SOURCE: ISO 12231:2012, 3.52.3]

Note 2 to entry: This term was originally defined in the past edition of ISO 12232, adopted to ISO 12231:1997 and was modified at ISO 12231:2005.

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## Annex A (informative)

### List of WGs related to electronic still picture imaging inside TC 42, and their responsible ISO deliverables

#### A.1 General

Inside TC 42, there are four WGs (WG 18, JWG 20, WG 23 and WG 25) that are related to electronic still picture imaging. List of ISO deliverables developed under those WGs are provided for readers' convenience to locate terms and definitions that were removed from the previous editions of this document.

#### A.2 WG 18: Electronic still picture imaging

- ISO 516, *Camera shutters — Timing — General definition and mechanical shutter measurements*
- ISO 12232, *Photography — Digital still cameras — Determination of exposure index, ISO speed ratings, standard output sensitivity, and recommended exposure index*
- ISO 12233, *Photography — Electronic still picture imaging — Resolution and spatial frequency responses*
- ISO 12234-1, *Electronic still-picture imaging — Removable memory — Part 1: Basic removable-memory model*
- ISO 12234-2, *Electronic still-picture imaging — Removable memory — Part 2: TIFF/EP image data format*
- ISO 14524, *Photography — Electronic still-picture cameras — Methods for measuring opto-electronic conversion functions (OECFs)*
- ISO 15739, *Photography — Electronic still-picture imaging — Noise measurements*
- ISO 15740, *Photography — Electronic still picture imaging — Picture transfer protocol (PTP) for digital still photography devices*
- ISO 15781, *Photography — Digital still cameras — Measuring shooting time lag, shutter release time lag, shooting rate, and start-up time lag*
- ISO 16067-1, *Photography — Spatial resolution measurements of electronic scanners for photographic images — Part 1: Scanners for reflective media*
- ISO 16067-2, *Photography - Electronic scanners for photographic images - Spatial resolution measurements — Part 2: Film scanners*
- ISO 17850, *Photography — Digital cameras — Geometric distortion (GD) measurements*
- ISO 17957, *Photography — Digital cameras — Shading measurements*
- ISO 18383, *Photography — Digital cameras — Specification guideline*
- ISO 18844, *Photography — Digital cameras — Image flare measurement*
- ISO 19084, *Photography — Digital cameras — Chromatic displacement measurements*
- ISO 19093, *Photography — Digital cameras — Measuring low-light performance*

- ISO/TR 19247, *Photography — Guidelines for reliable testing of digital still cameras*
- ISO/TS 19567-1, *Photography — Digital cameras — Texture reproduction measurements — Part 1: Frequency characteristics measurements using cyclic pattern*
- ISO/TS 19567-2, *Photography — Digital cameras — Part 2: Texture analysis using stochastic pattern*
- ISO 20087, *Photography — Digital still cameras — Battery life measurement*
- ISO 20462-1, *Photography — Psychophysical experimental methods for estimating image quality — Part 1: Overview of psychophysical elements*
- ISO 20462-2, *Photography — Psychophysical experimental methods for estimating image quality — Part 2: Triplet comparison method*
- ISO 20462-2/Cor.1, *Photography — Psychophysical experimental methods for estimating image quality — Part 2: Triplet comparison method — Technical Corrigendum 1*
- ISO 20462-3, *Photography — Psychophysical experimental methods for estimating image quality — Part 3: Quality ruler method*
- ISO 20954-1, *Digital cameras — Measurement method for image stabilization performance — Part 1: Optical systems*
- ISO 21550, *Photography — Electronic scanners for photographic images — Dynamic range measurements*

### **A.3 JWG 20: Joint ISO/TC 42-IEC WG: Digital still cameras**

- ISO 17321-1, *Graphic technology and photography — Colour characterisation of digital still cameras (DSCs) — Part 1: Stimuli, metrology and test procedures*
- ISO/TR 17321-2, *Graphic technology and photography — Colour characterization of digital still cameras (DSCs) — Part 2: Considerations for determining scene analysis transforms*
- ISO/TR 17321-3, *Graphic technology and photography — Colour characterization of digital still cameras (DSCs) — Part 3: User controls and readouts for scene-referred imaging applications*
- ISO/TS 17321-4, *Graphic technology and photography — Colour characterization of digital still cameras (DSCs) — Part 4: Programmable light emission system*

### **A.4 WG 23: Joint ISO/TC 42 - ISO/TC 130 - CIE WG: Extended colour encodings for digital image storage, manipulation and interchange**

- ISO 22028-1, *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange — Part 1: Architecture and requirements*
- ISO 22028-2, *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange — Part 2: Reference output medium metric RGB colour image encoding (ROMM RGB)*
- ISO/TS 22028-3, *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange — Part 3: Reference input medium metric RGB colour image encoding (RIMM RGB)*
- ISO/TS 22028-4, *Photography and graphic technology — Extended colour encodings for digital image storage, manipulation and interchange — Part 4: European Colour Initiative RGB colour image encoding [eciRGB (2008)]*