

ANSI/I3A IT10.7000-2004

American National Standard

for Photography –

*Digital Still Cameras –
Guidelines for Reporting
Pixel-Related Specifications*



This is a preview of "ANSI/I3A IT10.7000-2...". [Click here to purchase the full version from the ANSI store.](#)

ANSI/I3A IT10.7000-2004

American National Standard
for Photography—

**Digital Still Cameras —
Guidelines for Reporting
Pixel-Related Specifications**

Secretariat

International Imaging Industry Association

Approved June 24, 2004

American National Standards Institute, Inc.

American National Standard

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgement of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by

**American National Standards Institute, Inc.
25 West 43rd Street, New York, NY 10036**

Copyright © 2004 by International Imaging Industry Association (I3A)
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

Contents

	Page
Foreword	ii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Relationship between pixel-related terms for image sensors and DSCs.....	3
5 Rules for reporting	5
5.1 Number of effective pixels	6
5.2 Total number of image sensor cells.....	6
5.3 Number of Recorded Pixels.....	7
5.4 Number of Output Pixels	7
5.5 Image File Size.....	8
5.6 Image Data Compression Ratio	8
5.7 Sensor Cell Pitch	9
5.8 Focal Plane Size.....	9
5.9 35mm-equivalent Focal Length	10
5.10 Sensor optical format.....	10
Table	
1 Sensor optical formats.....	11
Figures	
1 Relationships of pixel-related terms for image sensors	4
2 Relationship of pixel-related terms for image sensors and DSCs	5
Annexes	
A Examples of suitable specifications.....	12
B Bibliography.....	13

Foreword (This foreword is not part of American National Standard ANSI/I3A IT10.7000-2004.)

This standard has been developed in order to meet the industry need for a standardized method of reporting the pixel-related specifications (e.g., the "number of pixels") for digital still cameras (DSCs). Without an ANSI standard, several different methods will continue to be used by various camera vendors, causing significant user confusion. In July 2001, the Japan Camera Industries Association (JCIA) in Japan adopted a "Guideline for Noting Digital Camera specifications in Catalogs", which provides standardized pixel-related definitions for DSCs. In July 2002, JCIA was dissolved and the Camera and Imaging Products Association (CIPA) was formed. CIPA now has responsibility for the JCIA guideline. I3A/IT10 and CIPA have cooperated in the development of this complementary standard for the USA.

The pixel-related specifications defined in this standard are not a ranking of the image quality of the DSC. For example, it is possible that a first DSC with a smaller reported value will provide better image quality than a second DSC having a larger reported value. ISO TC42 - Photography has developed a number of standards for measuring image quality related attributes of a DSC. These include ISO 12232:1998, *Photography - Electronic still picture cameras - Determination of ISO speed*; ISO 12233:2000, *Photography - Electronic still picture cameras - Resolution measurements*; ISO 14524:1999, *Photography - Electronic still picture camera - Methods for measuring opto-electronic conversion functions (OECFs)*; and ISO 15739:2003, *Photography - Electronic still picture imaging - Noise measurements*.

It is possible that an ISO standard specifying guidelines for reporting pixel-related specifications for DSCs will be developed in the future. Once such an ISO standard is published, it is anticipated that this standard will be withdrawn.

Annexes A and B of this standard are for information only.

Suggestions for the improvement of this standard will be welcome. They should be forwarded to the International Imaging Industry Association, Inc. (I3A), 550 Mamaroneck Avenue, Suite 310, Harrison, NY 10528, e-mail: i3astds@i3a.org.

This standard was processed and approved for submittal to ANSI by I3A Technical Committee IT10, Electronic Still Picture Imaging. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this edition of the standard, the IT10 Committee had the following members:

Kenneth Parulski, I3A/IT10 Chair
Jack Holm, I3A/IT10 Vice-Chair
James A. Peyton, I3A/IT10 Secretariat

<i>Organization Represented</i>	<i>Name of Representative</i>
Adobe Systems, Inc.	Scott Foshee
Canon Development Americas, Inc.	Sharon Henley
	Todd Newman (Alt.)
Eastman Kodak Company.....	Kenneth Parulski
	Daryl Hunt (Alt.)
	Kevin Spaulding (Alt.)
	Brian Keelan (Alt.)
	Sean Kelly (Alt.)
	Tim Looney (Alt.)
	Timothy Whitcher (Alt.)
	Don Williams (Alt.)
	Scott Houchin (Alt.)

<i>Organization Represented</i>	<i>Name of Representative</i>
Fotonation	Eran Steinberg
Foveon, Inc.	Paul Hubel
Hewlett-Packard Company	Jack Holm
	Ramon Garrido (Alt.)
	Ingeborg Tastl (Alt.)
	Mark Gorzynski (Alt.)
	Pieter van Zee (Alt.)
Intel Corporation.....	Werner Metz
Jostens Research & Development.....	John Souter
Lifetouch, Inc.	Ron Antos
RIT	Franziska Frey
Samsung Electronics	Jangwook Shim
Sony Electronics	Eric Edwards
	Andrew Chiu (Alt.)
ViewQuest Technologies, Inc.....	Jeff Lee

Individual Expert
Eric Walowit

American National Standard
for Photography—

Digital Still Cameras – Guidelines for Reporting Pixel-Related Specifications

1 Scope

This standard specifies guidelines for reporting pixel-related specifications (e.g., the number of camera pixels) of a digital still camera, for the purposes of camera labeling, camera packaging, advertising, and the like. It is applicable to monochrome and color digital still cameras using one or more image sensors

2 Normative references

The following standard contains provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

ISO 12231:1998 *Photography – Electronic still picture imaging – Terminology*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

3.1

digital still camera (DSC)

A device that incorporates an image sensor and produces a digital signal representing a still picture.

NOTE: A digital camera is typically a portable, hand-held device. The digital signal is usually recorded on a digital storage media, such as a solid-state memory card or magnetic disk.

3.2

effective pixels

The number of photoelements included in an area equal to the picture area plus the ring pixel area, as defined in this standard.

NOTE: The definition of effective pixels is based on the definition of the “Number of Effective Pixels” in the JCIA *Guideline for Noting Digital Camera Specifications in Catalogs*.