INTERNATIONAL STANDARD

ISO/IEC 14473

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Information technology — Office equipment — Minimum information to be specified for image scanners

Technologies de l'information — Équipements de bureau — Informations minimales à prescrire pour les scanners d'image

Reference number
ISO/IEC 14473:1999(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 14473 was prepared by ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

Annex A of this International Standard is for information only.

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Information technology - Office equipment - Minimum information to be specified for image scanners

1 Scope

This International Standard is intended to facilitate user selection of an image scanner. This International Standard specifies the minimum information that shall be included by manufacturers in their specification sheets for scanners.

This International Standard is made for the average end user. For this reason it does not describe all specifications of scanners with special features such as double sided scanning or high speed. By insuring consistency of specification of scanner product information, this International Standard enables the end user to make meaningful comparisons of machine functionality and performance characteristics. The most meaningful parameters of function and performance are specified and defined, and measures of performance are provided.

This International Standard further applies to types of scanners which are most prevalent in use, including parameters for a scanning engine (an optomechanical physical device) and basic image processing only (those processes include digital data output with encoded gray scale, or unencoded single bit plus halftone data). It does not require specification of advanced application processing such as OCR, translation, vector conversion, etc. Because scanners use both software and/or hardware to achieve some scanner functions and controls, the standard contains some entries related to software even though the standard is primarily for scanner hardware. The manufacturer, at his option, may include description of such additional functionality which may be provided. This standard also does not consider image quality, nor does it provide or use related test targets.

2 Normative references

The following standards contain provision which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 216:1975, *Writing paper and certain classes of printed matter - Trimmed sizes - A and B series.*
ISO 554:1976, *Standard atmospheres for conditioning and/or testing - Specifications*.
ISO 7779:1988, *Acoustics - Measurement of airborne noise emitted by computer and business equipment*.
ISO 9295:1988, *Acoustics - Measurement of high-frequency noise emitted by computer and business equipment*.
ISO 9296:1988, *Acoustics - Declared noise emission values of computer and business equipment*.

3 Conformance

In order to comply with this International Standard, specification sheets shall contain, in the order shown, all items listed in clause 5 which are relevant to the machine being described.

4 Test and measurement conditions

Unless otherwise specified, all tests and measurements made by the manufacturer to provide data for scanner specification sheets satisfying this International Standard shall be conducted at the following conditions:

- temperature: 18 °C to 25 °C
- relative humidity 30% to 70%
- voltage: rated input voltage
- frequency: rated frequency
- paper size: A4
- paper weight: 60 g/m^2 to 90g/m^2

Whenever a capacity is given in sheets, the reference paper weight shall be specified.

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5 Information to be included in the specification sheets

The following table defines, for each parameter, the number, the name of the parameter, a short description of the entry, and the measurement method. These constitute the information to be included in the specification sheets. The heading of the specification sheet shall indicate that it has been prepared in accordance with this International Standard. The numbers and headings of the table in clause 5 shall be used. Parameters which are not applicable may be ignored, without changing the number of other parameters.

Parameter	Description of the entry	Remark and examples
1 .General		
1.1 Name and Model Number	Manufacturer's name and Model Identification	
1.2 Scanner Type		Flatbed, Sheet Feed, Handheld
1.3 Sensing Capability		Monochrome, Color
1.4 Maximum Document Size	__ mm x __ mm Give dimensions in millimeters or standard sizes.	
1.5 Optical Resolution	__ dots/25.4 mm (__ dpi) __ dots/mm Indicate the fundamental optical sampling rate of the sensor.	
1.6 Interface		SCSI, SCSI-2, Centronics IEEE-488, RS-232C Commonly called interface names as Centronics and RS-232C could be used.
2. Scanning		
2.1 Scanning Time		
2.1.1 Page Scanning Time	__seconds for 1 bit/pixel (line art) __seconds for 8 bit/pixel (256 gray) __seconds for 24 bit/pixel (color)	Scanning time shall be measured between start scanning and end of scanning. The start scanning is defined as pushing a start button either in application software or for a handheld scanner. The end of the scanning is defined as a time when a host PC is released from the scanning job. The test configuration used shall be stated: PC model name, memory size, interface, scanner driver and application software. *FB, SF : A4, Portrait, 150, 200 or 300 dpi *HH : A4 or A6, Portrait, 150, 200 or 300 dpi To be specified if available.
2.1.2 Line Scanning Time	__ms/line	The test configuration used shall be stated: resolution, color / 256 gray / line art etc.
2.2 Scanning Speed	__mm/s	The test configuration used shall be stated: resolution, color / 256 gray / line art etc.
2.3 AD Converter	Number of bits for AD conversion.	8-bit, 10-bit, 12-bit
2.4 Image Sensor Type		CCD, Contact type

Note*: FB=Flatbed scanner, SF=Sheet Feed Scanner, HH=Handheld Scanner

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Parameter	Description of the entry	Remark and examples
2.5 Light Source		Fluorescent lamp, LED, Halogen lamp, Color temperature and/or spectrum
2.6 Color Separation	State color separation method used.	R-G-B color sensor R-G-B light source switching
2.7 Color Sequence		3-pass, 1-pass
2.8 Drop-out Color		Red, Yellow-Green
3. Output		
3.1 Output Mode	State output mode.	R-G-B color, C-M-Y color, Gray scale, Line art, Dither, Error diffusion Indicate the matrix size or the number of halftones, for dither and error diffusion.
3.2 Gray Scale Level	Number of the Image Scanner output bits.	8-bit, 12-bit, R-G-B bits for each color.
3.3 Color Sequence		Dot sequential, Line sequential, Page sequential
3.4 Output Resolution	__dpi Indicate the value(s) or the range of calculated resolution.	100/200/300 dpi 50-600 dpi
3.5 Maximum Achievable Output Data Rate	__ MB/sec Indicate the value of maximum achievable output data rate by the scanner.	Indicate the value at each interface.
3.6 Average Achievable Output Data Rate	__ MB/sec	Indicate the value at each interface. The test configuration used shall be stated : PC model name, memory size, interface, scanner driver and application software.
4. Additional Functions and Controls Implemented by Hardware or Software	State if functions are achievable by hardware or by software included with the scanner.	
4.1 Scaling	__--__% Indicate the range of scaling based on the optical resolution.	50-200%
4.2 Contrast	Indicate the range of contrast control.	0-255 levels Contrast means the ratio of image and non-image area.
4.3 Brightness	Indicate the range of brightness control.	0-255 levels Brightness means the general density of image.
4.4 Others	State other functions.	Cropping, Compression, Gamma correction, Segmentation, Masking, Sharpness, Color correction, Automatic size sensing
5. Automatic Document Feeder (ADF)	State if standard or optional.	
5.1 ADF Type		Document feed, Document fixed
5.2 Document Size	From __ mm x __ mm to __ mm x __ mm Give dimensions in millimeters or standard sizes.	
5.3 Document Weight (Thickness)	From __ g/m^2 to __ g/m^2	
5.4 Capacity	Total thickness __ mm max. __ sheets max. (based on __g/m^2) Total thickness in millimeters or number of sheets.	The manufacturer shall indicate the nominal capacity with respect to the reference paper weight.

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Parameter	Description of the entry	Remark and examples
5.5 Page Scanning Speed of Scanner with ADF	__ pages/min. (PPM) Measure the maximum number of pages which can be scanned per minute using the ADF.	State configuration: page size, orientation, scanning resolution and bits/pixel. Use 200 dpi, 1 bit/pixel, A4 and portrait if available.
5.6 Dimensions of ADF	Width x depth x height (mm) Specify the dimensions if the ADF is optional.	Indicate if trays, knobs or other are not included.
5.7 Weight of ADF	__ kg Give weight in kilograms, if ADF is optional.	Indicate if trays are not included.
6. Transparency Scanning	State if standard or optional.	
6.1 Transparency Type	State transparency film type.	35mm Negative Film, 4»x5» Positive Film, OHF
6.2 Scanning Area	__ mm x __ mm Give dimensions in millimeters or standard sizes.	210 mm x 297 mm (A4), Letter, JIS B5
6.3 Dimensions of Transparency Unit	width x depth x height (mm) Give dimensions in millimeters, if transparency unit is optional.	Indicate if knobs or other are not included.
6.4 Weight of Transparency Unit	__ kg Give weight in kilograms, if transparency unit is optional.	
7. Physical Characteristics and Power Source		
7.1 Dimensions	width x depth x height (mm) Give dimensions in millimeters.	Indicate if trays, knobs or other are not included.
7.2 Weight	__ kg	Indicate if with or without accessories.
7.3 Voltage or Voltage Range	__ Volt, __ - __ Volt.	Indicate if AC or DC. Indicate if built-in battery. Indicate tolerance
7.4 Frequency or Frequency Range	__ Hz, __ - __ Hz	For AC power only. Indicate tolerance.
7.5 Power	__ Watt max. Indicate the value at the rated input voltage.	
7.6 Operating Environment	__ - __ °C, __ - __ %	
8. EMC and Safety		
8.1 EMC Requirements	Emission and immunity standards applied.	CISPR 22 (Class A or B), FCC Class A or B, VCCI-2 IEC 801/1-6
8.2 Safety Requirements	Indicate the applicable standards.	IEC, UL, CSA, EN
8.3 Acoustical Noise	Sound power level and sound pressure level	Measured according to ISO 7779 and ISO 9295. Declared according to ISO 9296. Specify for basic and maximum configuration.
9. Options/Accessories		
9.1 Options	Peripheral equipment that changes the functionality of the machine.	Feeding unit Large capacity input tray Fax adapter/board
9.2 Accessories		Interface kit, Interface board, Cable. Specify if high quality cables are necessary due to EMC requirements.
9.3 Bundled Software	List name of bundled software.	Utility software for Windows, Driver, Software on UNIX Specifications related to software may be described in section 4.

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Annex A
(informative)

Example of a layout for a specification sheet

1. General	
1.1 Name and Model Number	_____
1.2 Scanner Type	Flatbed scanner
1.3 Sensing Capability	Color and Monochrome
1.4 Maximum Document Size	216 mm x 297 mm
1.5 Optical Resolution	300 dpi x 300 dpi
1.6 Interface	SCSI
2. Scanning	
2.1 Scanning Time	
2.1.1 Page Scanning Time	_____ seconds (A4, Portrait, 300dpi, 1 bit/pixel)
Measurement system	PC name, (486/DX4/66MHz), Main memory size, Application, Scanner driver, Interface, etc._____
2.1.2 Line Scanning Time	_____ms/line (A4, Portrait, 300dpi, 1 bit/pixel)
2.2 Scanning Speed	_____mm/s
2.3 AD Converter	8-bit
2.4 Image Sensor Type	CCD
2.5 Light Source	Fluorescent lamp
2.6 Color Separation	R-G-B color sensor
2.7 Color Sequence	1-pass
2.8 Drop-out Color	Not applicable
3. Output	
3.1 Output Mode	R-G-B color Gray scale Line art Dither 4 x 4, 8 x 8 Error diffusion
3.2 Gray Scale Level	8 bit for each color
3.3 Color Sequence	Line sequential
3.4 Output Resolution	50 - 600 dpi
3.5 Maximum Achievable Output Data Rate	____ MB/sec
3.6 Average Achievable Output Data Rate	____ MB/sec
4. Additional Functions and Controls Implemented by Hardware or Software	
4.1 Scaling	100 - 200 %
4.2 Contrast	0 - 255 levels
4.3 Brightness	0 - 255 levels
4.4 Others	Gamma Correction, Compression
5. Automatic Document Feeder (ADF)	
5.1 ADF Type	Document Feed
5.2 Document Size	From ____ mm x ____ mm, to ____ mm x ____ mm
5.3 Document Weight (Thickness)	From ____ g/m^2, To___ g/m^2
5.4 Capacity	____ sheets max. (based on ____g/m^2)
5.5 Page Scanning Speed of Scanner with ADF	____ pages/min
5.6 Dimensions of ADF	____ mm[w] x ____ mm[d] x ____ mm[h]
5.7 Weight of ADF	____ kg

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6. Transparency Scanning

6.1 Transparency Type	35 mm Negative Film
6.2 Scanning Area	210 mm x 297 mm
6.3 Dimensions of Transparency Unit	____ mm[w] x ____ mm[d] x ____ mm[h]
6.4 Weight of Transparency Unit	____ kg

7. Physical Characteristic and Power Source

7.1 Dimensions	____ mm[w] x ____ mm[d] x ____ mm[h]
7.2 Weight	_____ kg
7.3 Voltage or Voltage Range	_____ V
7.4 Frequency or Frequency Range	_____ Hz
7.5 Power	_____ Watt max.
7.6 Operating Environment	
Temperature	min.____ °C max.____ °C
Relative humidity	min.____ % max.____ %

8. EMC and Safety

8.1 EMC Requirements	
Applied standards	_____
8.2 Safety Requirements	
Applied standards	_____
8.3 Acoustical Noise	
Declared sound power level	_____ B (A)
Sound pressure level	_____ dB(A)

9. Options/Accessories

9.1 Options	_____
9.2 Accessories	_____
9.3 Bundled Software	_____

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