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Office equipment — Minimum information to be included in specification sheets —

Part 2:
Class 3 and Class 4 printers

Équipements de bureau — Information minimale devant figurer dans les notices techniques —

Partie 2: Imprimantes classe 3 et classe 4

ICS: 35.180

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Contents

Page

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 type 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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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.

This document was prepared by Technical Committee ISO/TC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

This third edition cancels and replaces the second edition〔ISO/IEC 11160-2:2013〕, which has been technically revised.

The main changes compared to the previous edition are as follows:

— Reflect the contents of ISO/IEC 17629:2014(FPOT)

— Reflect the contents of ISO 9296-08:2017(Noise emission)

A list of all parts in the ISO/IEC 11160 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.

Introduction

Printers of many different types and capacities are now available and their specifications vary so widely that it is difficult for potential users to assess which machine might best meet their requirements.

Office equipment — Minimum information to be included in specification sheets —

Part 2:
Class 3 and Class 4 printers

1 Scope

This document specifies the minimum information to be included in the specification sheets of class 3 and class 4 printers in order for users to compare the characteristics of different machines.The term “Specification Sheets” applies to documents which describe the performance characteristics of the printers to be included in instruction manuals, product brochures or on websites.

This document applies to printers that could be operated in an office environment. Printers requiring specially equipped rooms or specially instructed operators are not considered in this document.

NOTE This document is intended to facilitate users in selecting a printer which meets their requirements. ISO/IEC 11160 series deal with different classes of printers, such as class 3 and class 4 printers defined in Annex C. Detailed descriptions of Class 3 and Class 4 printers are specified in Annex A. Serial printers are classified as Class 1 or Class 2 printers as defined in Annex C and covered by ISO/IEC 11160-1.

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 7779, *Acoustics — Measurement of airborne noise emitted by information technology and telecommunications equipment*

ISO 9295, *Acoustics — Determination of high-frequency sound power levels emitted by machinery and equipment*

ISO 9296, *Acoustics — Declared noise emission values of information technology and telecommunications equipment*

ISO/IEC 19752, *Information technology — Office equipment — Method for the determination of toner cartridge yield for monochromatic electrophotographic printers and multi-function devices that contain printer components*

ISO/IEC 19798, *Information technology — Office equipment — Method for the determination of toner cartridge yield for colour printers and multi-function devices that contain printer components*

ISO/IEC 24711, *Method for the determination of ink cartridge yield for colour inkjet printers and multi-function devices that contain printer components*

ISO/IEC 24734, *Information technology — Office equipment — Method for measuring digital printing productivity*

ISO/IEC 17629, *Information technology — Office equipment — Method for measuring first print out time for digital printing devices*

3 Terms and definitions

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

ISO and IEC maintain terminological database for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electoropedia: available at http://www.electropedia.org/

3.1
printer
physical device which contains the image transducer, the marking process and paper transport mechanism device

Note 1 to entry: This may also contain other functional unit such as Raster Image Processor (RIP).

3.2
Raster Image Processor (RIP)
device which converts coded character data and/or vector data into raster data

3.3
unit of printing
size of a partition with which a source file can be partitioned into blocks of data that correspond to a mechanical unit

3.4
paper grammage
gram per square meter (g/m2) of paper

Note 1 to entry: “paper weight” or “media weight” are also used.

4 Test and measurement conditions

Unless otherwise specified, all tests and measurements shall be conducted at the following conditions:

a)	Temperature:	23 °C ± 5°C
b)	Relative humidity:	50 % ± 20 %
c)	Line Voltage:	rated input voltage
d)	Line Frequency:	rated frequency
e)	Paper size:	A4
f)	Paper grammage:	60 g/m^2 to 90 g/m^2
g)	Paper transport direction:	standard direction

For the test pattern, the document in Annex B (Informative) should be used.

Annex B is derived from ISO/IEC 10561, where the guide line (character art, size etc.) is given for the creation of the test target. So long as the document is text only, a bit of modification causes no influence over the results of measurement.

For monochrome test pattern, all letters should be black. For colour test pattern, arbitrary letters should be colourized by using the primary colorants of the printer.

Besides A4 paper size, the size most commonly used in the country may be used, both for the test page and the copies. This shall be indicated in the specification sheet.

5 Information to be included in the specification sheets

Table 1 defines, for each parameter, the name of the parameter and a short description of the entry. These constitute the information to be included in the specification sheet. Parameters whose properties shall be included in the specification sheets are marked as "R" (required), while other parameters whose properties are recommended to be included are marked as "O" (optional).

The heading of the specification sheet shall indicate that it has been prepared in accordance with this part of ISO/IEC 11160. For every parameter, if any special instruction is not given, the name of the parameter of Table 1 shall be used without change. Non-applicable parameters may be ignored, without changing the order of remaining parameters.

Additional parameters may be adjacently inserted to the related parameter in Table 1 for the purpose of describing the function which is not covered by other parameters.

For a parameter with voluminous description, it may be stated separately and may use a figure or a table. In such case, the caption of the figure or the table shall be identical with the name of parameter shown in Table 1.

The "Remarks and examples" column is provided for the persons who prepare the information sheet, and it is not intended to appear in the specification sheet. The column includes informative examples and normative test methods and descriptions. Test methods to be applied, when not defined in other International Standards, are defined in this column.

Whenever a capacity is given in sheets, the reference paper grammage (g/m2) shall be specified.

Numbers attached to parameters are not normative but only for convenience.

Table 1 — Information to be included

Parameter	R/O	Description of the entry	Remarks and examples
1 General data			
1.1 Printer class	O	Class 3 or Class 4 printer.	See Annex A for description of classes.
1.2 Machine name, model and/or model number	R	Product name, model number.	
1.3 Type	O	State the machine type.	State if the machine is portable, desk-top or floor-standing for the standard configuration, without optional devices.
1.4 Printing method	R	The printing process used.	Such as ink-jet, thermal transfer, electro-photographic (laser), electrophotographic (LED).
1.5 Print resolution	R	Indicate horizontal and vertical dots per 25,4 mm (dpi), in this order. The maximum value shall be indicated in the order of horizontal and vertical. The design capability of the machine to place the dots.	Note that the theoretical writing resolution and the actual printing resolution may be different. If the dot density can be stepped up and down, all grades should be indicated. If technologies which can improve apparent resolution (line smoothing technology, bit depth control for each dot, etc.) are applied, resultant resolution, its method or trade name of such technology should be additionally indicated.
1.6 Tone	O	Indicate the available number of tone or colours in design theory.	
2. Performance data			

Table 1 *(continued)*

Parameter	R/O	Description of the entry	Remarks and examples
2.1 Warm-up time	R	Time required by a device to recover from off state given by the difference in FPOT between off state and ready state.	Measurement is carried out based on ISO/IEC 17629.
2.2 Recovery time	R	Time required by a device to recover from sleep state given by the difference in FPOT between sleep state and ready state.	Measurement is carried out based on ISO/IEC 17629.
2.3 First print out time (FPOT)	R	Number of seconds between the initiation of the job until the complete exit of the first sheet. A pointer to the full test report.	Measurement is carried out based on ISO/IEC 17629. In addition to the FPOT from Ready on the left, there are two FPOT items as options. 1) FPOT from Sleep The time from the start of the job in the sleep state to the time when the first sheet is completely discharged is described in seconds. 2) FPOT from Off Describe in seconds the time from the start of the job immediately after turning on the power to the time when the first sheet is completely discharged.
2.4 Continuous print speed	O	Measure the time (*t* in second) from just after complete discharge of the first sheet to end of discharge of the last sheet (n_{th} sheet) for more than one minute. The sustained throughput (*S*) is calculated using following equation: $S = \frac{60}{t \div (n-1)}$ For printers with duplex mode, measure the throughput at duplex printing mode. Indicate; For simplex print: pages/min For duplex print: images/min (doubling *S* obtained from the above equation)	The Continuous Print Speed shall not include the time for maintenance, such as cleaning. Significant digits for the sustained throughput (*S* in sheets/min) are, For less than 10 sheets/min: two digits ",0" can be deleted and make integer number (for example, 6,0 to 6). For 10 pages/min or more and less than 100 pages/min: two digits or three digits may be selected at company's option. For 100 pages/min or more: three digits Describe the value wherther it is for monochrome, colour or both. For the test pattern, see Clause 4.
2.5 Printing productivity	R	State ESAT parameters and a pointer to the full test report.	Measurement is carried out based on ISO/IEC 24734.
3 Control			Item 3.2 may be described together with item 3.1 at the end of 3.1.
3.1 Interface for hardware connection	R	State the hardware connections available. and the name of standard for connection, etc.	For example, IEEE1284, USB, 100BASE-TX/10BASE-T, wireless LAN(IEEE 802.11b). For optional feature, state as it is.
3.2 Interface for connection control	O	Identify communication protocols.	For example, TCP/IP, IPX/SPX, IPP, IPPS, etc.

Table 1 *(continued)*

Parameter	R/O	Description of the entry	Remarks and examples
3.3 Command	R	Identify page description language, emulation and/or host-based.	
3.4 Supported operating systems	O	Identify the supported operating systems.	
3.5 Processor	O	Identify the trade name and clock frequency of Processor.	
3.6 Memory			This item may be described together with item 3.6.1 and 3.6.2.
3.6.1 Standard memory	R	Describe the capacity of memory in number of bytes.	Megabyte (MB) or gigabyte (GB), etc.
3.6.2 Optional memory	O	Describe the capacity of optional memory in number of bytes. Method of installation may also be described.	Megabyte (MB) or gigabyte (GB), etc. Name of card or DIMM type may also be described.
3.6.3 Mass storage	O	Describe the capacity of mass storage in number of bytes.	If the mass storage is optional, describe as it is.
4 Fonts			
4.1 Standard fonts	O	List fonts or indicate number of fonts available in the printer. List the character set of standard equipment available.	Times Regular Type 1, Roman Italic True Type, 35 Type 1 fonts, 45 True Type.
4.2 Optional fonts	O	List fonts and character set optionally available. List the methods for optional font handling capability.	Download from a host computer. Additional mass storage needed for fonts.
5 Paper and paper handling			Item 5.1 to 5.5 for each paper input device may be described together.
5.1 Paper type	R	List paper type available.	Plain paper, recycled paper, coated paper, labels, postcards, envelopes, etc. If paper types are different between paper input devices, describe them for each input device.
5.2 Paper size	R	State paper size by the name of standard paper sizes or in millimetres (mm) of paper which is acceptable for the printer.	Name of standard paper sizes (ISO 216): A4, B4, etc. For free size paper, indicate in millimetres (mm) of width (maximum and minimum) and length (maximum and minimum), etc. If these are not same between paper input devices, describe them for each device.
5.3 Printable area	O	State the print margin.	For example, print margin for top, bottom and both sides is 4,1 mm.
5.4 Paper grammage	R	Minimum and maximum in g/m^2.	Describe for each paper feeding device.
5.5 Paper input tray and capacity	R	State the capacity for each paper feeder in number of sheets and paper grammage.	Manual, cassette, tray, drawer, etc. Indicate standard paper feed device or optional. Indicate how many paper feed devices can be installed at one time. Indicate paper feed direction, if applicable.