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Information technology — Office equipment — Information to be included in specification sheets — Data projectors

Technologies de l'information — Équipements de bureau — Information à inclure dans les feuilles de spécifications — Projecteurs de données

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO/IEC 21118 was prepared by Technical Committee ISO/TC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

This second edition cancels and replaces the first edition (ISO/IEC 21118:2005), which has been technically revised.

Information technology — Office equipment — Information to be included in specification sheets — Data projectors

1 Scope

This International Standard specifies the information to be included in the specification sheets for front projection type data projectors and the form of specification sheets. It is also applicable to data projectors that have a video signal input port as well as a computer signal input port.

It is not applicable to units for a rear screen projection or with a video input terminal alone.

2 Normative references

The following referenced documents are indispensable for the application 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 11201, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

IEC 61947-1, *Electronic projection — Measurement and documentation of key performance criteria — Part 1: Fixed resolution projectors*

IEC 60107-2, *Methods of measurement on receivers for television broadcast transmissions — Part 2: Audio channels — General methods and methods for monophonic channels*

3 Terms and definitions

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

3.1
light valve
light-modulation device (such as a transmissive or reflective liquid crystal display, or a micro mirror device) used to create an optical image from an external light source that corresponds to an electrical signal

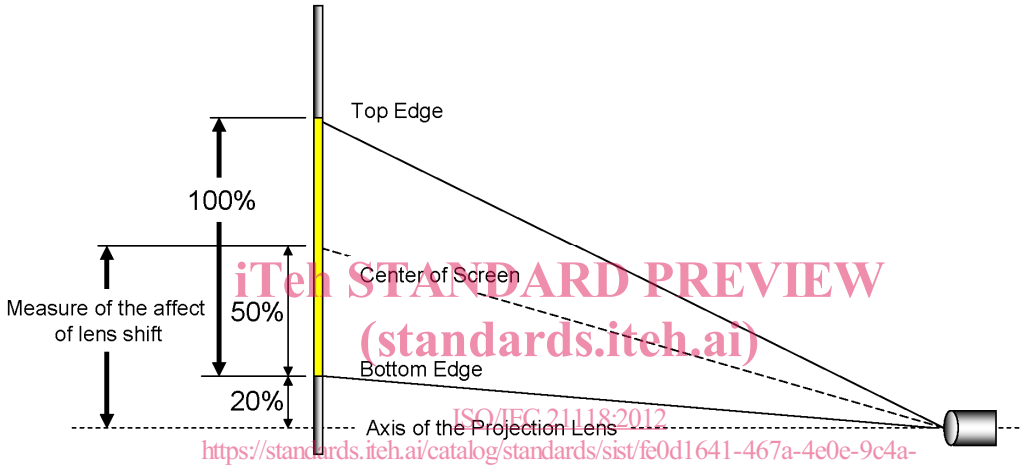
3.2
telephoto end
maximum focal length position of the zoom lens

3.3
wide-angle end
minimum focal length position of the zoom lens

3.4
resize
electronic process which converts an input image from one resolution to a different resolution

3.5
lens shift
vertical or horizontal repositioning of the projection lens relative to the light valve to compensate for projector to screen alignment differences

3.6
image position
measurement of lens shift
vertical or horizontal distance from the centre of the projected image to the point in which the axis of the projection lens intersects the screen (expressed as a percentage based on the overall height or width of the projected image)



NOTE This figure shows an example of the image position with 70 % vertical shift. (20 % + 50 %)

Figure 1 — Example of shifted image position

3.7
front screen projection
image projected on the audience side of a light-reflecting screen

[IEC 61947-1]

3.8
rear screen projection
image projected through a light-transmitting screen to the audience side of the screen

[IEC 61947-1]

3.9
standard outside dimensions
maximum dimensions of the product after removing the packaging, including any protrusions)

4 Measuring methods and conditions

Annex B (normative) describes the measuring methods and conditions in terms of the performance specification items in Table 1.

5 Items in specification sheets

Table 1 lists the items that should appear in the specification sheets. Items whose properties shall be included in the specification sheets are marked as “R” (required), while other items whose properties are given for information are marked as “O” (optional).

Values in the specification of light output, contrast ratio (full white/full black) and Center to corner zone ratio shall be defined as averages of productions. The lower-limit values of the projector shall be at least 80 % of the values in specification sheets for these 3 items. The products’ tolerance of lower limit at the time of shipment shall be clearly stated in the specification sheet.

The specification sheets shall have a statement indicating accordance with this International Standard. The terminology shown in the “Item” column of Table 1 shall be used in the specification sheets. Items marked as Optional may be omitted, along with any items that do not apply to the particular projector model. If an item is omitted; the order of items included in the specification sheets shall maintain the same order as shown in Table 1.

The form of the specification sheets is given in Annex A (normative).

NOTE The term “Specification Sheets” applies to documents which describe the performance characteristics of the data projector which may be included in instruction manuals, product catalogues or on websites.

Table 1 — Performance specification item

No.	Item	R/O	Item specification	Description example
1	Product number, type name, or model number	R	The product name, type name, model numbers, or product numbers shall be indicated.	
2	Display system	R	The light valve type and the display system shall be indicated.	a) LCD, micro mirror, other b) transmitting, reflecting c) single panel, 3 panel, other
3	Optical system	O	The optics for colour separation and convergence should be indicated.	a) Dichroic mirror separation-prism convergence system b) Time sharing separation/ convergence system c) other
4	Display device			
4.1	Size of effective display area	R	Diagonal size, number of panels and aspect ratio shall be indicated.	33mm × 3 / 1,3” × 3, aspect ratio 4:3
4.2	Number of pixels	R	Pixel count per display device, pixel dimensions and the number of display devices, shall be indicated.	786 432 pixels (1 024 ×768) × 3 sheets
4.3	Other	O	Additional features of the display device should be indicated.	without micro lens
5	Projection lens			
5.1	Zoom	R	Zoom magnifications shall be indicated.	Power zoom (1,4×)
5.2	Focus	R	Method of focus adjustment shall be indicated.	Manual or powered

Table 1 (*continued*)

No.	Item	R/O	Item specification	Description example
5.3	Lens shift	O	Image position, fixed/variable, manual/powered should be indicated. Indicate lens shift range, fixed/variable type and manual/powered. Range of single vertical lens shift may be described as "Lens shift XX% to XX %" Image position for fixed lens shift. Image position for variable shift. In the case of an optical axis position is unavailable, an illustration may be used.	Fixed lens shift : xx (%) Vertical lens shift range, XX%(up)-XX%(down) XX%(right)-XX%(left) (see 3.6)
5.4	Focal length f/number	O		*f* = 52 mm — 73 mm f/2,5 — 2,9
6	Light source	R	The light source lamp type (or name), wattage, and quantity shall be indicated. Lamp number may be omitted if only one lamp is used.	300 W high pressure mercury lamp
7	Screen size [Projection distance]	R	The minimum and maximum diagonal sizes of the projected image shall be indicated.	Minimum: 58.4cm / 23 inch to maximum: 762cm / 300 inch
		O	The associated projection distance should also be indicated. For products with an indefinite measurement, the projection distance should be indicated using illustrations.	Projection distance: 1,2 m to 11,5 m
8	Number of colours	O	The maximum number of reproducible colours shall be indicated.	16 700 000 colours
9	Light output	R	The Light output on a projected screen shall be measured and indicated.	As average value of production units. 2 000 lm (see B.2.2)
10	Contrast ratio (full white/full black)	O	The ratio of screen illuminance between the full white and full black levels of projected images should be indicated. Measurement conditions shall be indicated.	As average value of production units 2000:1 in high contrast mode for iris ON, standard lens (see B.2.3)
11	Center to corner zone ratio	O	The ratio between the center illuminance and 4-peripheral-point average illuminance of a full-white image should be indicated.	As average value of production units. 85 % (see B.2.4)
12	Speaker	R	The output power of the speaker shall be indicated.	10 W × 2 stereo (see B.3)
		O	The number of speakers and whether stereo or monaural should be indicated as well.	2 speakers, stereo
13	Displayable scanning frequency			
13.1	Horizontal	R	The range of displayable horizontal frequencies shall be indicated. Detail of corresponding frequency may be indicated in a separate sheet.	15 kHz to 100 kHz
13.2	Vertical	R	The range of displayable vertical frequencies shall be indicated. Detail of corresponding frequency may be indicated in a separate sheet.	50 Hz to 120 Hz

Table 1 (*continued*)

No.	Item	R/O	Item specification	Description example
14	Display resolution			
14.1	Computer signal input	R	The maximum display resolution for a computer input shall be indicated. Notational convention method shall be indicated as well. When the display resolution is beyond the native panel resolution, it shall be indicated.	Maximum display resolution 1024 X 768 dots (resizing display) Panel display resolution 800 x 600 dots
		O	If there are two or more signal types (systems), all of them should be specified.	
14.2	Video signal input	R	The displayable video signal type (system) shall be indicated.	NTSC, PAL/SECAM
15	Computer signal input/output	R	The signal type, connector type, and number of connectors shall be indicated. Any order of entries and contents are acceptable. If the terminal has several functions, these may be entered as remarks.	RGB input: 3 RGB output: 1 RGB input port (mini-D-sub 15-pin × 2, DVI-I x 1) RGB output port (mini-D-sub 15-pin) Audio input port (stereo mini jack)
16	Video signal input/output	R	The signal type, connector type, and number of connectors shall be indicated. Any order of entries and contents are acceptable. If the terminal has several functions, these may be entered as remarks.	Video/S-video input: 1 line Video input port (RCA pin) S-video port (mini-DIN 4-pin) Audio input port (RCA pin L/R)
17	Other signal input/output	O	Control signal input/output ports and other relevant descriptions should be given. Any order of entries and contents are acceptable.	RS-232C and mouse input ports LAN port and USB port
18	Acoustic noise	O	The noise value should be measured as a sound pressure level (see B.4). Acoustic power level should also be indicated. The operating mode should be indicated. Acoustic power level should be measured in accordance with ISO 7779.	Sound pressure level at the bystander positions: 35 dB at normal operation mode. Acoustic power level: 4,5 B at normal operation mode.
19	Operating temperature	R	The temperature range within which the product normally operates shall be indicated.	5 °C to 35 °C
	Operating humidity	O	The humidity range within which the product normally operates should be indicated.	20 % to 70 %
20	Power requirements	R	The rated voltage and frequency shall be indicated.	AC100V, 50/60Hz
21	Maximum power consumption	R	The maximum power consumption shall be indicated in watts. Information about other modes should also be indicated.	380 W (see B.5)
22	Standby mode power consumption	R	The standby mode power consumption shall be indicated in watts.	2 W (see B.6)
		O	The standby power consumption at various modes should also be indicated with the mode.	1 W at sleep mode
23	Standard outside dimensions	R	The standard outside dimensions of the product (width, height, and depth, in this order) shall be indicated in millimeters for maximum value. When dimensions without protrusions are also indicated, they shall be specified within parentheses.	W 270 mm × H 43 mm × D 199 mm W 270 mm × H 43 mm × D 199 mm (without protrusions)

Table 1 (*continued*)

No.	Item	R/O	Item specification	Description example
24	Weight	R	The weight of the main body of the product without accessories shall be indicated in kilograms or grams. Any conditions shall be indicated within parentheses.	15,1 kg (detachable remote controller included)
25	Accessories	R	The names of the accessories supplied together with the product shall be indicated. Numbers of accessories may also be indicated.	Remote controller, lens cap, RGB cable, mouse cable, power cable, and instruction manual
26	Other functions	O	Features and special functions other than those indicated in items 1 to 25 should be indicated.	
"R" in the R/O column means required items and "O" means optional items.				

Annex A
(normative)

Specification sheets

A.1 General

This annex specifies the form for the specification sheets (shown in Table A.1).

Table A.1 — Specification sheets form

Name of product type		
Display system		
Optical system		
Display device	Effective display size	Size: _____ mm / _____ inch _____ sheets Aspect ratio: _____ .
	Effective pixels	
	Other characteristics	
Projection lens	Zoom	
	Focus	
	Lens shift	
	Focal length f	_____ mm
	f/number	f/: _____ .
Light source		_____ W
Screen size and Projection distance		Size: _____ cm / _____ inch _____ m
Number of colours		_____ colours
Light output		_____ lm
Contrast ratio (full white/full black)		
Center to corner zone ratio		_____ %
Speaker		
Displayable scanning frequency	Horizontal	_____ kHz
	Vertical	_____ Hz
Display resolution	Computer signal input	
	Video signal input	
Computer signal input/output		
Video signal input/output		
Other signal input/output		