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Micrographics — Readers for transparent microforms — Performance characteristics

Micrographie — Appareils de lecture de microformes — Caractéristiques



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Foreword

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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.

International Standard ISO 6198 was prepared by Technical Committee ISO/TC 171, *Micrographics and optical memories for document and image recording, storage and use*.

Annex A of this International Standard is for information only.

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International Organization for Standardization
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Micrographics — Readers for transparent microforms — Performance characteristics

1 Scope

This International Standard specifies the essential performance characteristics of readers with magnification less than or equal to 50:1 designed for use with black-and-white roll microfilm and strips that have a maximum width of 35 mm. It also specifies the performance of readers for microfilm, microfiche, jackets containing microforms, and image cards. It is not applicable to reader-printers or to devices such as pocket readers.

2 Normative references

The following standards contain provisions 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 446:1991, *Micrographics — ISO character and ISO test chart No. 1 — Description and use.*

ISO 3272-3:1975, *Microcopying of technical drawings and other drawing office documents — Part 3: Unitized 35 mm microfilm carriers.*

ISO 3334:1989, *Micrographics — ISO resolution test chart No. 2 — Description and use.*

ISO 6196-1:1993, *Micrographics — Vocabulary — Part 01: General terms.*

ISO 6196-2:1993, *Micrographics — Vocabulary — Part 02: Image positions and methods of recording.*

ISO 6196-3:1983, *Micrographics — Vocabulary — Part 03: Film processing.*

ISO 6196-4:1987, *Micrographics — Vocabulary — Part 04: Materials and packaging.*

ISO 6196-5:1987, *Micrographics — Vocabulary — Part 05: Quality of images, legibility, inspection.*

ISO 6196-6:1992, *Micrographics — Vocabulary — Part 06: Equipment.*

ISO 6199:1991, *Micrographics — Microfilming of documents on 16 mm and 35 mm silver-gelatin type microfilm — Operating procedures.*

ISO 7565:1993, *Micrographics — Readers for transparent microforms — Measurement of characteristics.*

ISO 7779:1988, *Acoustics — Measurement of airborne noise emitted by computer and business equipment.*

ISO 9878:1990, *Micrographics — Graphical symbols for use in microfilming.*

ISO 9923:—¹⁾, *Micrographics — Transparent A6 microfiche image arrangements.*

IEC 417:1987, *Graphical symbols for use on equipment. Index, survey and compilation of the single sheets — Eighth supplement.*

IEC 950:1991, *Safety of information technology equipment, including electrical business equipment.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 6196 apply.

1) To be published.

4 Measurable characteristics

To comply with this International Standard, a reader shall conform to the following requirements.

4.1 Magnification

Measure the magnification in accordance with ISO 7565. The actual magnification shall be within $\pm 5\%$ of the manufacturer's stated magnification.

4.2 Image quality

4.2.1 Resolution

When the image of the microtest chart is positioned on the screen and with the reader at best focus²⁾, the minimum sized characters or test patterns as shown in table 1 or 2 for the specified magnification shall be resolved at all points within the measurement area of the screen (see figure 1). The resolution test is made with either of the two microtest charts (ISO No. 1 or ISO No. 2). The test image used shall be capable of resolving at least four patterns higher than specified in table 2 for the appropriate magnification.

For readers having a magnification between the values listed in table 1 or 2, the character or pattern to be resolved shall be that of the closest to the listed nominal magnification.

The methods of reading the character or pattern resolved are described in ISO 446 and ISO 3334.

4.2.2 Geometric distortion

When the image of a straight line is projected onto any part of the measurement area (see figure 1) of a flat reader screen, the projected image shall be compared to a straightedge held next to the projected line. When measured in accordance with ISO 7565, the pincushion or barrel distortion shall not exceed 0,5 % and the keystone or skew distortion shall not exceed 2 %. Less distortion may be required for technical drawing applications, whereas more distortion may be allowable for some office applications. Under these circumstances, the allowable distortion shall be agreed between manufacturer and purchaser.

Table 1 — Minimum sized ISO microtest chart No. 1 characters to be resolved in the screen image (values based upon prepared microtest chart)

Nominal magnification	Character of ISO No. 1 microtest chart to be read
10/1	125
15/1	112
20/1	100
25/1	90
30/1	80
35/1	71 ¹⁾
40/1	63 ¹⁾
45/1	56 ¹⁾
50/1	50 ¹⁾
1) The difficulty in obtaining such fine characters on the microtest chart can make the measurements incorrect.	

Table 2 — Minimum sized ISO microtest chart No. 2 pattern to be resolved in the screen image (values based upon specifically made microtest charts which may require calculations to give true values)

Nominal magnification	Pattern of ISO No. 2 microtest chart to be read line pairs/mm
10/1	6,3
15/1	4,5
20/1	4,0
25/1	3,6
30/1	3,2
35/1	3,2
40/1	2,8 ¹⁾
45/1	2,5 ¹⁾
50/1	2,5 ¹⁾
NOTE — Calculations involving the reduction used to make the microtest chart may be necessary to determine the actual resolution specified in table 2.	
1) The difficulty in obtaining such fine characters on the microtest chart can make the measurements incorrect.	

2) The best focus is the setting of the focusing control which is judged to produce the best overall level of screen image resolution within the measurement area. This setting is found experimentally and will usually be somewhere between the setting which produces the highest resolution at the centre of the screen and the settings which produce the highest resolution at the corners.