INTERNATIONAL STANDARD

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Optics and optical instruments — Optical transfer function — Application —

Part 3:
Telescopes

Optique et instruments d'optique — Fonction de transfert optique — Application —

Partie 3: Télescopes

Reference number
ISO 9336-3:1994(E)

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.

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 9336-3 was prepared by Technical Committee ISO/TC 172, *Optics and optical instruments*, Subcommittee SC 1, *Fundamental standards*.

ISO 9336 consists of the following parts, under the general title *Optics and optical instruments — Optical transfer function — Application*:

— *Part 1: Interchangeable lenses for 35 mm still cameras*

— *Part 2: Lenses for office copiers*

— *Part 3: Telescopes*

Annexes A and B of this part of ISO 9336 are for information only.

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Optics and optical instruments — Optical transfer function — Application —

Part 3: Telescopes

1 Scope

This part of ISO 9336 specifies a method of testing telescopes in terms of imaging states aimed at making valid optical transfer function measurements.

Information is also given on the testing of some of their components and sub-assemblies.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9336. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9336 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 9334:—[1], *Optics and optical instruments — Optical transfer function — Definitions and mathematical relationships.*

ISO 9335:—[1], *Optics and optical instruments — Optical transfer function — Principles and procedures of measurement.*

CIE Publication No. 18.2 (1983), *The basis of physical photometry.*

1) To be published.

3 Definitions

For the purposes of this part of ISO 9336, the definitions given in ISO 9334 apply.

4 General description of test specimen types and the relevance of OTF tests

The specimens considered are direct view telescopes which generally give the observer an enlarged presentation of a distant scene and include many instruments such as theodolite telescopes, hand-held binoculars and vehicle-mounted observation instruments.

Some, such as theodolite telescopes, have small fields of view, say $\pm$ 1° in object space, present a flat field with little or no astigmatism and have magnifications of about × 20. On the other hand, binoculars and other similar instruments have larger fields of view, say up to $\pm$ 3,5° in object space with a magnification of × 10. Such instruments can have significant curvature of field coupled with astigmatism depending on the aims of the optical designer. For example, curvature of field can be minimized in one section but considerable astigmatism can be left or alternatively the astigmatism can be reduced to a negligibly low level with field curvature of 1 or 2 dioptres at the edge of the field.

Ideally, instruments would be best with no astigmatism and no curvature of field coupled with good chromatic correction but frequently compromises as mentioned above must be tolerated.