INTERNATIONAL STANDARD

ISO 21094

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Optics and photonics — Telescopic systems — Specifications for night vision devices

Optique et photonique — Systèmes télescopiques — Spécifications pour dispositifs de vision de nuit

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Foreword

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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 21094 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 4, *Telescopic systems*.

Optics and photonics — Telescopic systems — Specifications for night vision devices

1 Scope

This International Standard applies to night vision devices such as binoculars, monoculars and goggles that are used for observation activities at night such as rescue actions under low light conditions, urgent repairs in the dark and night time surveillance.

The International Standard does not cover thermal imaging technology.

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 14132-1, *Optics and optical instruments — Vocabulary for telescopic systems — Part 1: General terms and alphabetical indexes of terms in ISO 14132*

ISO 14132-2, *Optics and optical instruments — Vocabulary for telescopic systems — Part 2: Terms for binoculars, monoculars and spotting scopes*

ISO 14132-5 [1)], *Optics and optical instruments — Vocabulary for telescopic systems — Part 5: Terms for night vision devices*

ISO 14490-8 [1)], *Optics and photonics — Test methods for telescopic systems — Part 8: Test methods for night-vision devices*

3 Terms and definitions

For terms and definitions that apply to night vision devices refer to ISO 14132-5.

For terms and definitions and reference of letter symbols that apply to telescopic systems in general refer to ISO 14132-1.

For terms and definitions that apply to binocular and monocular systems refer to ISO 14132-2.

1) To be published.

4 Specifications

4.1 General

The tests for compliance of night vision devices to values and tolerances specified in Table 1 and Table 2 shall be carried out in accordance with ISO 14490-8.

4.2 Tolerances

Acceptable deviations of the optical characteristics of night vision devices shall be within the limits given in Table 1.

Table 1 — Acceptable deviations of optical characteristics

Characteristics	Values of tolerances	
	for binoculars and monoculars	for goggles
Magnification [a], Γ	± 7 %	
Range of vision [b]	± 20 %	
Night vision device gain	± 10 %	
Field of view in the object space	± 5%	± 10%
Eye relief, in millimetres	–1 to +5	
Zero-setting error of dioptre scale, in dioptres	± 1,0	
Image rotation, in degrees of arc	± 1,5	
Disparity of image rotations [c], in minutes of arc	40	
Relative difference in magnification [c]	2 %	3 %
Non-parallelism of axes of beams emergent from eyepieces [c], in minutes of arc:		
dipvergence	30	
divergence	100	
convergence	40	

[a] For variable (zoom or discrete) magnification instruments this refers to minimum and maximum magnifications.

[b] For variable (zoom or discrete) magnification instruments this refers to the maximum magnification.

[c] Not applicable for monoculars.