



SLOVENSKI STANDARD
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Optics and photonics - Lasers and laser-related equipment - Measurement of phase retardation of optical components for polarized laser radiation (ISO 24013:2006)

Optik und Photonik - Laser und Laseranlagen - Messung der Phasenverschiebung optischer Komponenten für polarisierte Laserstrahlung (ISO 24013:2006)

Optique et photonique - Lasers et équipements associés aux lasers - Mesurage du retard de phase des composants optiques pour le rayonnement laser polarisé (ISO 24013:2006)

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Ta slovenski standard je istoveten z: EN ISO 24013:2006

ICS:

31.260	Optoelektronika, laserska oprema	Optoelectronics. Laser equipment
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ICS 31.260

English Version

Optics and photonics - Lasers and laser-related equipment -
Measurement of phase retardation of optical components for
polarized laser radiation (ISO 24013:2006)

Optique et photonique - Lasers et équipements associés
aux lasers - Mesurage du retard de phase des composants
optiques pour le rayonnement laser polarisé (ISO
24013:2006)

Optik und Photonik - Laser und Laseranlagen - Messung
der Phasenverschiebung optischer Komponenten für
polarisierte Laserstrahlung (ISO 24013:2006)

This European Standard was approved by CEN on 14 November 2006.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN ISO 24013:2006) has been prepared by Technical Committee ISO/TC 172 "Optics and optical instruments" in collaboration with Technical Committee CEN/TC 123 "Lasers and photonics", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2007, and conflicting national standards shall be withdrawn at the latest by May 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 24013:2006 has been approved by CEN as EN ISO 24013:2006 without any modifications.

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**Optics and photonics — Lasers and
laser-related equipment — Measurement
of phase retardation of optical
components for polarized laser radiation**

*Optique et photonique — Lasers et équipements associés aux lasers —
Mesurage du retard de phase des composants optiques pour le
rayonnement laser polarisé.*

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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 24013 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 9, *Electro-optical systems*.

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Introduction

Normally it is desirable that the state of polarization be not influenced by the optical components used. For the generation or maintenance of specific states of polarization the influence of optical components on the beam polarization is crucial. For generating circularly polarized radiation from linearly polarized radiation $\pi/2$ phase retarders are used.

This International Standard describes methods to determine the relative phase retardation of optical components with respect to the x- and y-axes of the polarization and s- and p-polarization, respectively. This International Standard is necessary for optics manufacturers, suppliers and customers of such optics for the determination of the influence of phase retardation of optical components.

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Optics and photonics — Lasers and laser-related equipment — Measurement of phase retardation of optical components for polarized laser radiation

1 Scope

This International Standard specifies test methods for the determination of the optical phase retardation of optical components by polarized laser beams.

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 11145, *Optics and photonics — Lasers and laser-related equipment — Vocabulary and symbols*

ISO 12005, *Lasers and laser-related equipment — Test methods for laser beam parameters — Polarization*

ISO 14644-1:1999, *Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11145 and ISO 12005 apply.

4 Symbols and abbreviated terms

Symbols used and units of measure

Symbol	Unit	Term
ρ	1	degree of linear polarization
ϕ	rad	angle of analyser
a_1	V/m	amplitude of electric field in x-direction
a_2	V/m	amplitude of electric field in y-direction
a, b	V/m	principal axes of the vibrational ellipse
δ	rad	phase difference
$\Delta\delta$	rad	phase retardation
E	V/m	electric field vector
α_x	1	absorptance in x-direction
α_y	1	absorptance in y-direction
ψ	rad	angle of the principle axis of the vibrational ellipse