



SLOVENSKI STANDARD
SIST EN 61300-3-17:1999

01-maj-1999

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-17: Examinations and measurements - Endface angle of angle-polished ferrules (IEC 61300-3-17:1995)

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -- Part 3-17: Examinations and measurements - Endface angle of angle-polished ferrules

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Meßverfahren -- Teil 3-17: Untersuchungen und Messungen - Anschliffwinkel schräg polierter Stifte

Dispositifs d'interconnexion et composants passifs à fibres optiques - Méthodes fondamentales d'essais et de mesures -- Partie 3-17: Examens et mesures - Angle de la face terminale des embouts polis angulairement

Ta slovenski standard je istoveten z: EN 61300-3-17:1997

ICS:

33.180.20 Ú[ç^: [çæ] ^Á æ |æ^Á æ Fibre optic interconnecting devices
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SIST EN 61300-3-17:1999 **en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61300-3-17

August 1997

ICS 33.180.20

English version

**Fibre optic interconnecting devices and passive components
Basic test and measurement procedures
Part 3-17: Examinations and measurements
Endface angle of angle-polished ferrules
(IEC 61300-3-17:1995)**

Dispositifs d'interconnexion et
composants passifs à fibres optiques
Méthodes fondamentales d'essais et
de mesures
Partie 3-17: Examens et mesures
Angle de la face terminale des
embouts polis angulairement
(CEI 61300-3-17:1995)

Lichtwellenleiter - Verbindungselemente
und passive Bauteile - Grundlegende
Prüf- und Meßverfahren
Teil 3-17: Untersuchungen und
Messungen - Anschliffwinkel schräg
polierter Stifte
(IEC 61300-3-17:1995)

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SIST EN 61300-3-17:1999

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung
Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 61300-3-17:1995, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the formal vote and was approved by CENELEC as EN 61300-3-17 on 1997-07-01 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-06-01

Endorsement notice

The text of the International Standard IEC 61300-3-17:1995 was approved by CENELEC as a European Standard without any modification.

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NORME
INTERNATIONALE
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Dispositifs d'interconnexion et composants
passifs à fibres optiques –
Méthodes fondamentales d'essais
et de mesures –

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Partie 3-17:

Examens et mesures –

Angle de la face terminale des embouts
polis angulairement

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Fibre optic interconnecting devices
and passive components –
Basic test and measurement procedures –

Part 3-17:

Examinations and measurements –
Endface angle of angle-polished ferrules

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES
AND PASSIVE COMPONENTS –
BASIC TEST AND MEASUREMENT PROCEDURES –**

**Part 3-17: Examinations and measurements –
Endface angle of angle-polished ferrules**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

International Standard IEC 1300-3-17 has been prepared by sub-committee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this standard is based on the following documents:

DIS	Report on voting
86B/519/DIS	86B/592/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

IEC 1300 consists of the following parts, under the general title: *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*:

- Part 1: General and guidance
- Part 2: Tests
- Part 3: Examinations and measurements

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-17: Examinations and measurements – Endface angle of angle-polished ferrules

1 General

1.1 Scope and object

The object of this part of IEC 1300 is to describe a method to measure the endface angle of flat or convex angle-polished ferrules.

1.2 General description

The ferrule endface angle θ for flat endface angle-polished ferrules is defined as the angle between the plane perpendicular to the axis of the ferrule and the plane of the flat endface. The endface angle θ for convex polished angled endface ferrules is the angle between the plane perpendicular to the axis of the ferrule and the plane tangent to the dome at the axis of the ferrule (see figure 1).

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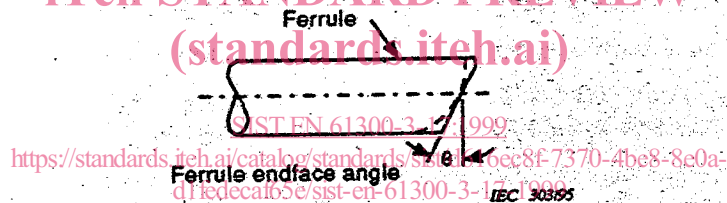


Figure 1 – Definition of ferrule endface angle

In this method, a visible light He-Ne beam aligned along the ferrule axis is reflected by the ferrule endface to impinge upon a screen as a spot pattern. The screen is normal to and surrounding the ferrule axis.

In the case of a flat polished ferrule endface, the spot pattern is typically a small visible, approximately uniformly illuminated circle showing little additional divergence of the laser beam. In the case of a convex polished ferrule endface, the pattern is typically a small ring (Airy disk) located at the centre of a large visible circle of beam diverged from the original laser beam. This small ring results from Fraunhofer diffraction of the He-Ne beam reflected from the convex ferrule endface containing a fibre or fibre hole as a centrally located aperture.

The ferrule endface angle θ is determined by measuring the deviation angle of the He-Ne beam measured to the centre of the visible circle or ring of the spot pattern as the ferrule is rotated around its axis.

The measurement results will be affected by the surface finish of the ferrule endface. This surface shall be polished to a sufficient level to form a well-defined specular reflection of the He-Ne beam.

1.3 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All normative documents are subject to revision and parties to agreements based on this part of IEC 1300 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2538: 1974, *Limits and fits – Series of angles and slopes on wedges and prisms*

2 Apparatus

The apparatus consists of the following elements:

- a V-groove or precision alignment sleeve (according to ISO 2538 the preferred angle for a V-groove is 108°);
- a screen perpendicular to the axis of the V-groove or precision sleeve;
- a He-Ne laser whose beam is aligned to be coincident with the axis of the V-groove or precision sleeve and thus impinges on the endface of the ferrule.

3 Procedure

- a) Place the ferrule in the V-groove or precision sleeve.
- b) Illuminate the ferrule endface with the He-Ne beam.
- c) Observe the beam spot pattern on the screen and adjust the position of the ferrule to obtain maximum visibility in the interference pattern (see figure 2).
- d) Rotate the ferrule through 360° in the V-groove or precision sleeve. The spot pattern traces concentrically along a target circle drawn on the screen.
- e) Find the diameter D of the circle locus of the spot pattern.
- f) The ferrule endface angle θ is calculated from the diameter D and the distance L between the ferrule endface and the screen. The ferrule endface angle θ is calculated by the following equation:

$$\theta = 1/2 \tan^{-1}(D/2L)$$

4 Details to be specified

The following details, as applicable, shall be specified in the detail specification:

- surface roughness of ferrule endface;
- distance L ;
- allowable ferrule endface angle.