
Optična vlakna – 1-45. del: Metode merjenja in preskusni postopki – Premer polja načina (IEC 60793-1-45:2001 + Popravek 2002, prirejen)*

Optical fibres - Part 1-45: Measurement methods and test procedures - Mode field diameter (IEC 60793-1-45:2001 + corrigendum 2002, modified)

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EUROPEAN STANDARD

EN 60793-1-45

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2003

ICS 33.180.10

Partly supersedes EN 188000:1992
Incorporates Corrigendum April 2004

English version

Optical fibres
Part 1-45: Measurement methods and test procedures –
Mode field diameter
(IEC 60793-1-45:2001 + corrigendum 2002, modified)

Fibres optiques
Partie 1-45: Méthodes de mesure
et procédures d'essai –
Diamètre du champ de mode
(CEI 60793-1-45:2001 +
corrigendum 2002, modifiée)

Lichtwellenleiter
Teil 1-45: Messmethoden und
Prüfverfahren –
Modenfelddurchmesser
(IEC 60793-1-45:2001 +
Corrigendum 2002, modifiziert)

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This European Standard was approved by CENELEC on 2003-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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.

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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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 document 86A/674/FDIS, future edition 1 of IEC 60793-1-45, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60793-1-45 on 2001-10-01.

A draft amendment, prepared by the Technical Committee CENELEC TC 86A, Optical fibres and optical fibre cables, was submitted to the Unique Acceptance Procedure and was approved by CENELEC for inclusion into EN 60793-1-45 on 2003-11-01.

This European Standard supersedes subclause 4.24 (test method 314) and subclause 4.25 (test method 315) of EN 188000:1992.

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) 2004-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-11-01

Annexes designated "normative" are part of the body of the standard.

In this standard, Annexes A, B, C, D and ZA are normative and annex E is informative.

Annex ZA has been added by CENELEC.

Compared to IEC 60793-1:1989 and IEC 60793-2:1992, IEC/SC 86A has adopted a revised structure of the new IEC 60793 series: The individual measurement methods and test procedures for optical fibres are published as "Part 1-XX", the product standards are published as "Part 2-XX".

The general relationship between the new series of EN 60793 and the superseded European Standards of the EN 188000 series is as follows:

EN	Title	supersedes
EN 60793-1-XX	Optical fibres -- Part 1-XX: Measurement methods and test procedures	Individual subclauses of EN 188000:1992
EN 60793-2-XX	Optical fibres -- Part 2-XX: Product specifications	EN 188100:1995 EN 188101:1995 EN 188102:1995 EN 188200:1995 EN 188201:1995 EN 188202:1995

EN 60793-1-4X consists of the following parts, under the general title: Optical fibres:

- Part 1-40: Measurement methods and test procedures – Attenuation
- Part 1-41: Measurement methods and test procedures – Bandwidth
- Part 1-42: Measurement methods and test procedures – Chromatic dispersion
- Part 1-43: Measurement methods and test procedures – Numerical aperture
- Part 1-44: Measurement methods and test procedures – Cut-off wavelength
- Part 1-45: Measurement methods and test procedures – Mode field diameter
- Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance
- Part 1-47: Measurement methods and test procedures – Macrobending loss
- Part 1-48: Measurement methods and test procedures – Polarization mode dispersion
- Part 1-49: Measurement methods and test procedures – Differential mode delay

The contents of the corrigendum of April 2004 have been included in this copy.

Endorsement notice

The text of the International Standard IEC 60793-1-45:2001 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Annex D

Replace the 3rd paragraph by:

The measurement can either be performed at the end-face of the fibre or it can be applied to measure the MFD variation along the length of the fibre. OTDR non-linearity must be taken into account when measuring the MFD variation along the length of the fibre.

D.3 Calculations

D.3.2 Change the title as follows:

D.3.2 Computation of the specimen MFD end-face measurement

Add a new Subclause D.3.3:

D.3.3 MFD evaluation along the length of the fibre

The above-described approach can be adopted to evaluate variations of the MFD along the length of the fibre. Starting from the bi-directional traces and from the MFD values measured on the end-faces, the repeated application of equation (D.2) allows to estimate the value of the MFD in any point of the sample. In this case, the terms in equation (D.2) will have the following meanings:

- W_s = MFD of the point under test;
- W_A = MFD of the initial end-face or of the point immediately preceding the point under test (as evaluated in advance by this same technique), named "reference point";
- L_A, L_B = Difference between the backscattered power from the reference point to the point under test, as seen by the two end-faces of the fibre, A and B.

Renumber the original D.3.3 to D.3.4:

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-1-40 (mod)	2001	Optical fibres Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	2003
IEC 60793-2	1998	Optical fibres Part 2: Product specifications	—	—

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Corrigendum to EN 60793-1-45:2003

English version

Add at the end of the common modifications:

Renumber the original D.3.3 to D.3.4:

April 2004

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CEI
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60793-1-45

Première édition
First edition
2001-07

Fibres optiques –

Partie 1-45:

**Méthodes de mesure et procédures d'essai –
Diamètre du champ de mode**

iTeh STANDARD PREVIEW

Optical fibres –

Part 1-45:

**Measurement methods and test procedures –
Mode field diameter**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
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*Pour prix, voir catalogue en vigueur
For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

**Part 1-45: Measurement methods and test procedures –
Mode field diameter**

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 co-operation 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 express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, 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.
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International Standard IEC 60793-1-45 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This standard, together with the other standards in the IEC 60793-1-4X series, replaces the second edition of IEC 60793-1-4, of which it constitutes a technical revision.

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

FDIS	Report on voting
86A/674/FDIS	86A/698/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annexes A, B, C and D form an integral part of this standard.

Annex E is for information only.

IEC 60793-1-1 and IEC 60793-1-2 cover generic specifications.

IEC 60793-1-4X consists of the following parts, under the general title: Optical fibres:

- Part 1-40: Measurement methods and test procedures – Attenuation
- Part 1-41: Measurement methods and test procedures – Bandwidth
- Part 1-42: Measurement methods and test procedures – Chromatic dispersion
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- Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance
- Part 1-47: Measurement methods and test procedures – Macrobending loss
- Part 1-48: Measurement methods and test procedures – Under consideration
- Part 1-49: Measurement methods and test procedures – Under consideration

The committee has decided that the contents of this publication will remain unchanged until 2003. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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The contents of the corrigendum of July 2002 have been included in this copy.

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