
Postopki za preskušanje komunikacijskih podsistemov z optičnimi vlakni – 4-1. del: Kabelska oprema in povezave - Meritve slabljenja večrodne optične kabelske opreme (IEC 61280-4-1:2003)

Fibre-optic communication subsystem test procedures - Part 4-1: Cable plant and links - Multimode fibre-optic cable plant attenuation measurement (IEC 61280-4-1:2003)

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EUROPEAN STANDARD

EN 61280-4-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2004

ICS 33.180.01

English version

**Fibre-optic communication subsystem test procedures
Part 4-1: Cable plant and links –
Multimode fibre-optic cable plant attenuation measurement
(IEC 61280-4-1:2003)**

Procédures d'essai des sous-systèmes
de télécommunication à fibres optiques
Partie 4-1: Installation de câbles et liens -
Mesure de l'affaiblissement
des installations de câbles
à fibres optiques multimodales
(CEI 61280-4-1:2003)

Prüfverfahren für Lichtwellenleiter-
Kommunikationsunterssysteme
Teil 4-1: Lichtwellenleiter-Kabelanlagen -
Dämpfungsmessung in Mehrmoden-LWL-
Kabelanlagen
(IEC 61280-4-1:2003)

STANDARD PREVIEW
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This European Standard was approved by CENELEC on 2004-05-01. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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 86C/550/FDIS, future edition 1 of IEC 61280-4-1, prepared by SC 86C, Fibre optic systems and active devices, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61280-4-1 on 2004-05-01.

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) 2005-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61280-4-1:2003 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61280-4-2	NOTE	Harmonized as EN 61280-4-2:1999 (not modified).
IEC 61300-3-31	NOTE	Harmonized as EN 61300-3-31:2003 (not modified).
IEC 61315	NOTE	Harmonized as EN 61315:1997 (not modified).

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

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.

NOTE Where 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 60825-1	1993	Safety of laser products Part 1: Equipment classification, requirements and user's guide	EN 60825-1 + corr. February + A11	1994 1995 1996
IEC 61281-1	1999	Fibre optic communication subsystems Part 1: Generic specification	EN 61281-1	1999
IEC 61300-3-4	2001	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures Part 3-4: Examinations and measurements - Attenuation	EN 61300-3-4	2001

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC

61280-4-1

Première édition
First edition
2003-09

**Procédures d'essai des sous-systèmes
de télécommunication à fibres optiques –**

Partie 4-1:

Installation de câbles et liens –

**Mesure de l'affaiblissement des installations
de câbles à fibres optiques multimodales**

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**Fibre-optic communication subsystem
test procedures –**

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Part 4-1:

Cable plant and links –

**Multimode fibre-optic cable plant
attenuation measurement**

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International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

**Part 4-1: Cable plant and links –
Multimode fibre-optic cable plant attenuation measurement**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61280-4-1 has been prepared by subcommittee 86C: Fibre-optic systems and active devices, of IEC technical committee 86: Fibre-optics.

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

FDIS	Report on voting
86C/550/FDIS	86C/572/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 2.

IEC 61280 consists of the following parts under the general title *Fibre optic communication subsystem test procedures* ¹ :

Part 1: General communication subsystems ²⁾

Part 2: Digital systems ³⁾

Part 4: Cable plant and links ⁴⁾

Part 3 is in preparation.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

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- 1) The general title of the IEC 61280 series has changed. Previous parts were published under the general title *Fibre optic communication subsystem basic test procedures*
 - 2) The title of Part 1 has changed. Parts 1-1 and 1-3 were published under the title *Test procedures for general communication subsystems*.
 - 3) The title of Part 2 has changed. Parts 2-1, 2-2, 2-4 and 2-5 were published under the title *Test procedures for digital systems*.
 - 4) The title of Part 4 has changed. Part 4-2 was published under the title *Fibre optic cable plant*.

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-1: Cable plant and links – Multimode fibre-optic cable plant attenuation measurement

1 Scope

This part of IEC 61280 establishes preferred measurement principles and practices to assure that meaningful data describing the optical loss performance of installed cable plants can be obtained. It is not intended for component testing, nor does it define those elements of an installation that need to be measured. Establishment of requirements for installation, maintenance, repair or conformance testing is left to the specifier of this test method.

This procedure is a specific test associated with IEC 61281-1.

This procedure can be used to measure the optical loss between any two passively connected points, including end terminations, of a multimode optical fibre cable plant. The optical fibre cable plant, as the term is used here, may consist of optical fibre cables, connectors, mounting panels, jumper cables, and other passive components, but may not include active components. An example of a cable plant could be a portion of a LED (light emitting diode)-based local area network. This could include optical switches or couplers, but would exclude gain elements in the connected path.

The accuracy of this test method depends upon proper selection of the test methods contained herein and other factors. Refer to Annex B for additional information.

[SIST EN 61280-4-1:2005](#)

This test method utilizes test jumpers to facilitate a field measurement that includes all loss elements within the cable plant. It may, therefore, depending on the method chosen, include connection losses that do not appear in method B of IEC 60793-1-40 – insertion loss technique (for fibres). For guidance in selecting a method, refer to Annex B.

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.

IEC 60793-1-40:2001, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

IEC 60825-1, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide*

IEC 61281-1, *Fibre optic communication subsystems – Part 1: Generic specification*

IEC 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examination and measurements – Attenuation*