



SLOVENSKI STANDARD
SIST EN 180000:1999
01-maj-1999

Generic specification: Fibre optic attenuators

Generic specification: Fibre optic attenuators

Fachgrundspezifikation: Lichtwellenleiter (LWL) Dämpfungsglieder

Spécification générique: Atténuateurs de fibres optiques

Ta slovenski standard je istoveten z: EN 180000:1995

[SIST EN 180000:1999](https://standards.iteh.ai/catalog/standards/sist/aa2b16bc-456e-4bf6-aa2a-972ae60890e5/sist-en-180000-1999)

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ICS:

33.180.20 Ú[ç^: [çæ) ^Á æ | æ^Á æ Fibre optic interconnecting devices
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 180000

June 1995

Supersedes CECC 80 000:1994

English version

Generic specification: Fibre optic attenuators

Spécification générale: Atténuateurs
de fibres optiques

Fachgrundspezifikation: Lichtwellenleiter
(LWL) Dämpfungsglieder

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This European Standard was approved on 1995-03-06. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

At the request of Working Group CLC/TC CECC/WG 27, the text of CECC 80 000:1994, Issue 1, was submitted to the formal vote for conversion into a European Standard. It was approved by CENELEC as EN 180000 on 1995-03-06.

The following date was 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) 1996-03-01

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FOREWORD

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardisation (CENELEC) who wish to take part in a harmonized system for electronic components of assessed quality.

The object of the system is to facilitate international trade by the harmonisation of the specifications and quality assessment procedures for electronic components, and by the grant of international recognized Mark, or certificate, of conformity. The components produced under the system are thereby accepted by all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the system who wish to issue national harmonized specifications for fibre optic attenuators. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

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PREFACE

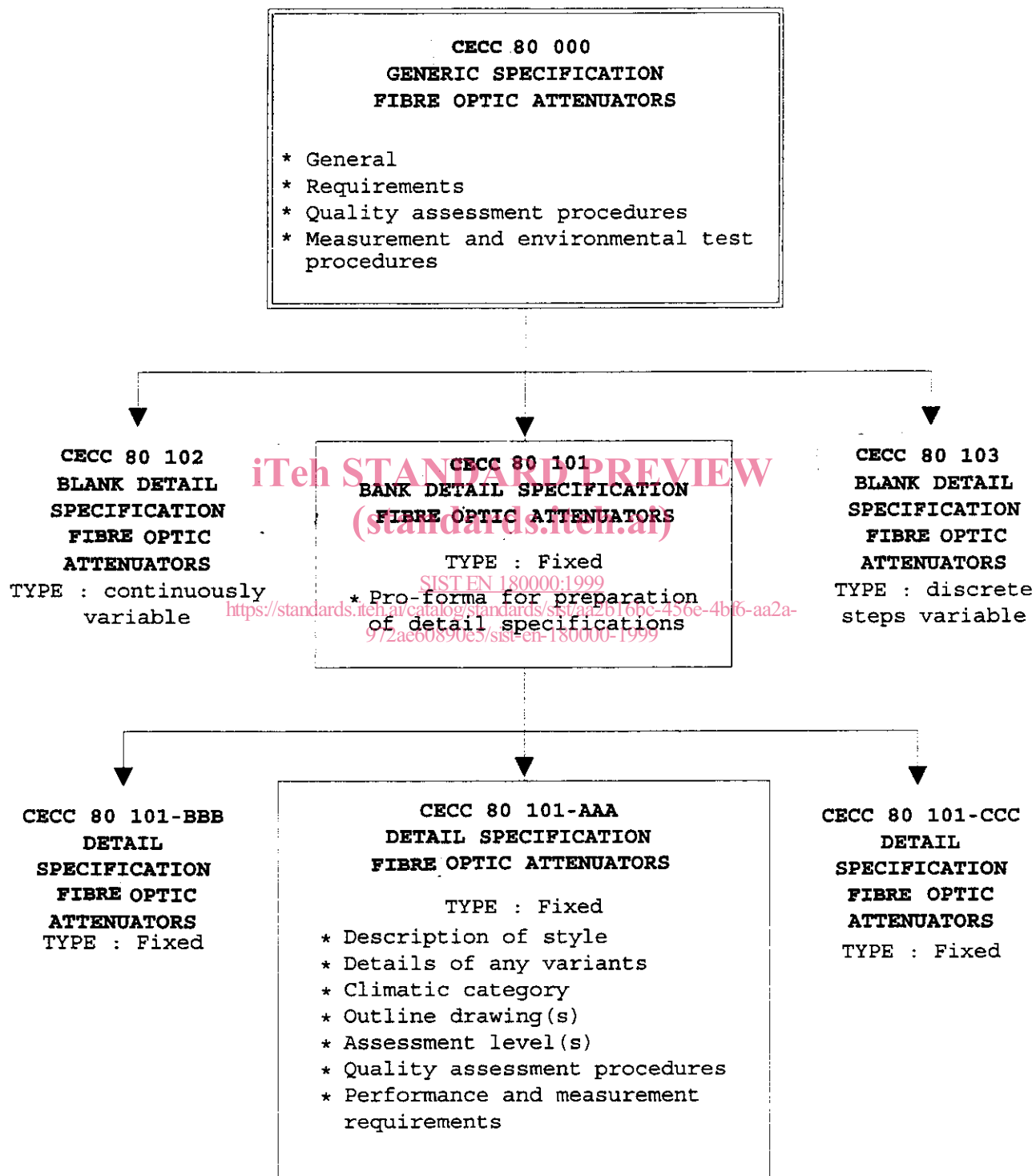
This specification was prepared by CECC WG 27.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission, and in particular on IEC 869-1.

The text of this specification was circulated to the CECC for voting in the document(s) indicated (listed) below and was ratified by the President of the CECC for printing as a CECC specification.

<u>Document</u>	<u>Date of voting</u>	<u>Report on the voting</u>
CECC(Secretariat)2551	July 1990	CECC(Secretariat)2659

CECC SPECIFICATION SYSTEM



NOTE: a detail specification is a "completed" blank detail specification.

SECTION ONE - GENERAL

1. General

1.1 Scope

This specification applies to the family of fibre optic attenuators. These have all of the following general features:

- they are passive in that they contain no optoelectronic or other transducing elements;
- they have two ports for the transmission of optical power and attenuate the transmitted power in a fixed or variable fashion;
- the ports are optical fibres or optical fibre connectors.

This document includes:

- fibre optic attenuator requirements;
- measurement and test procedures for quality assessment.

1.2 Related documents

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this specification are encouraged to apply the most recent editions of the referenced standards. Members of CECC, IEC and ISO maintain registers of currently valid International Standards.

References made to a specific clause or sub-clause of a standard includes all sub-clauses to the reference unless otherwise specified.

CECC 00 114/I : Approval of manufacturers and other organizations (1990)

CECC 00 114/II : Quality approval of electronic components (1992)

CECC 00 109 : Certified test records (1974)

IEC 27 : Letter symbols to be used in electrical technology (1971)

IEC 68-1 : Basic environmental testing procedures, Part 1 : General and guidance (1982)

- IEC 68-2-1 : Tests A : Cold (1974)
- IEC 68-2-2 : Tests B : Dry heat (1974)
- IEC 68-2-3 : Test Ca : Damp heat, steady state (1969)
- IEC 68-2-5 : Test Sa : Simulated solar radiation at ground level (1975)
- IEC 68-2-6 : Test Fc and guidance : Vibration (sinusoidal) (1982)
- IEC 68-2-7 : Test Ga and guidance : Acceleration, steady state (1983)
- IEC 68-2-9 : Guidance for solar radiation testing (1975)
- IEC 68-2-10 : Test J : Mould growth (1984)
- IEC 68-2-11 : Test Ka : Salt mist (1981)
- IEC 68-2-13 : Test M : Low air pressure (1983)
- IEC 68-2-14 : Test N : Change of temperature (1984)
- IEC 68-2-17 : Test Q : Sealing (1978)
- IEC 68-2-27 : Test Ea : Shock (1972)
- IEC 68-2-29 : Test Eb : Bump (1968)
- IEC 68-2-30 : Test Db and guidance : Damp heat, cyclic (12 + 12 hour cycle) (1980)
- IEC 410 : Sampling plans and procedures for inspection by attributes (1973)
- IEC 617 : Graphical symbols for diagrams
- IEC 695-2-2 : Fire hazard tests, Part 2 : Test methods - needle-flame test (1980)
- IEC 825 : Radiation safety of laser products, equipment, classification, requirements and user's guide (1984)
- IEC 875-1 : Fibre optic branching devices, Part 1: Generic specification (1986)
- CECC 86 000 : Generic specification for connectors for optical fibres and cables
- CECC 87 000 : Generic specification - Optical fibre cables
- CECC 88 000 : Generic specification - Optical fibres

IEC 73(central office)1270 : Optical communications (1987)

ISO 129 : Technical drawings - dimensioning - general principles, definitions, methods of execution and special indications

ISO/R 286 : ISO System of limits and fits - Part 1 : General, tolerances and deviations

ISO 370 : Toleranced dimensions - Conversion from inches into millimeters and vice versa (1975)

ISO 1101 : Technical drawings - geometrical tolerancing - tolerancing of form, orientation, location and run-out - Generalities, definitions, symbols, indications on drawings

ISO 2015 : Numbering of weeks (1976)

Directives ISO/CEI - Part 3- : Drafting and presentation of international standards (1989)

1.3 Definitions

The definitions given in IEC 73, with the following definitions, apply to this specification. They also apply to all blank detail specifications (BDSs) and detail specifications (DSs) written to this specification.

[SIST EN 18000:1999](https://standards.iteh.ai/catalog/standards/sist/aa2b16bc-456e-4bf6-aa2a-2e60890e5/sist-en-18000-1999)

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1.3.1 Optical attenuator

A passive device intended to decrease the optical power in an optical fibre transmission line.

A special bushing or spacer ring designed to create a high loss optical fibre connector does not, in itself, constitute an attenuator. However, the complete assembly, including any attached connectors, is an attenuator.

1.3.2 Port

An optical fibre or optical fibre connector attached to an attenuator for the ingress or egress of the optical power.

1.3.3 Unidirectional attenuator

An attenuator designed to transmit optical power, with the specified insertion loss performance, between its two ports in only one direction.

1.3.4 Bidirectional attenuator

An attenuator designed to transmit optical power, with the specified insertion loss performance, between its two ports in either direction.

1.3.5 Input port, output port

A port designated for the ingress or egress respectively of optical power. In bidirectional attenuators, each port may be used for either function. In unidirectional attenuators, the designation of input and output ports will be provided in the DS.

1.3.6 Attenuation value

The reduction in optical power between the input and output ports, expressed in decibels. It is defined as:

$$a = - 10 \log (P_1/P_0)$$

where P_0 is the optical power launched into the input port, and P_1 the power received from the output port.

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1.3.7 Insertion loss (standards.iteh.ai)

A term synonymous with attenuation value.

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1.3.8 Minimum attenuation

A term applicable only to variable attenuators. It is the lowest attenuation to which the device may be adjusted.

1.3.9 Incremental attenuation

A term applicable only to variable attenuators. It refers to the difference between the attenuation of the device at a given setting and the minimum attenuation.

1.3.10 Return loss

The measure of the fraction of input power that is returned along the input path of an optical component such as an attenuator. It is defined as:

$$a_r = - 10 \log (P_1/P_0)$$

where P_0 is the optical power launched into the input port, and P_1 the optical power received back from the same port.

1.3.11 Operating wavelength

A nominal wavelength λ , at which an attenuator is designed to operate, with the specified optical performances.

1.3.12 Operating wavelength range

The specified range of wavelengths from λ_i min. to λ_i max. about a nominal operating wavelength λ_i , within which an attenuator is designed to operate with the specified optical performances.

1.3.13 Temporary joint

An optically stable device, fixture or process for temporarily coupling optical power between two fibres in a reproducible, low loss manner.

1.3.14 Anti-reflection termination

A stable device, fixture or process for suppressing reflection from an optical fibre end.

1.3.15 Reference fibre (standards.iteh.ai)

A precisely made or selected fibre used for measurement purposes. <https://standards.iteh.ai/catalog/standards/sist/aa2b16bc-456e-4bf6-aa2a-972ac60890e5/sist-en-18000-1999>

1.3.16 Reference branching device

A precisely made or selected three-port directional branching device used for measurement purposes, whose transfer matrix is accurately characterized and is suitably independent of the input optical launch condition. (Refer to CECC 81 000, Generic specification for fibre optic branching devices).

1.3.17 Cladding mode stripper

A stable device, fixture or process for removing cladding mode power propagating in an optical fibre.

1.3.18 Fibre optic connector set

The total connector components required to provide demountable coupling between two or more optical fibre cables.

1.3.19 Reference connector set

A precisely made or selected connector set of a particular type used for measurement purposes. Such a connector set may be in the form of a precision jig incorporated in the test equipment. The performance or selection criterion shall be given in the relevant specification.

1.3.20 Reference connector set component

A precisely made or selected connector set component which is used for measuring purposes (e.g. plug, adapter, etc.). The component may be in the form of a precision jig incorporated in the test equipment.

1.3.21 Interchangeable attenuators

Attenuators are considered to be interchangeable when they share common installation geometry and have the same functional performance.

1.3.22 Reflection loss

A term synonymous with return loss.

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