



BSI Standards Publication

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

Part 1: General and guidance

National foreword

This British Standard is the UK implementation of EN IEC 61300-1:2022+A1:2024. It is identical to IEC 61300-1:2022, incorporating amendment 1:2024. It supersedes BS EN IEC 61300-1:2022, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted to Technical Committee GEL/86/2, Fibre optic interconnecting devices and passive components.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Fibre optic interconnecting devices and passive components -
Basic test and measurement procedures - Part 1: General and
guidance
(IEC 61300-1:2022)

Dispositifs d'interconnexion et composants passifs
fibroniques - Procédures fondamentales d'essais et de
mesures - Partie 1: Généralités et recommandations
(IEC 61300-1:2022)

Lichtwellenleiter - Verbindungselemente und passive
Bauteile - Grundlegende Prüf- und Messverfahren - Teil 1:
Allgemeines und Leitfaden
(IEC 61300-1:2022)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 86B/4582/FDIS, future edition 5 of IEC 61300-1, prepared by SC 86B "Fibre optic interconnecting devices and passive components" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61300-1:2022.

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-02-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-05-09

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IEC 61300 (series) NOTE Harmonized as EN 61300 (series)

IEC 60068-2-1 NOTE Harmonized as EN 60068-2-1

ISO 1 NOTE Harmonized as EN ISO 1

IEC 61315 NOTE Harmonized as EN IEC 61315

IEC 62614-1 NOTE Harmonized as EN IEC 62614-1

IEC 63267 (series) NOTE Harmonized as EN IEC 63267 (series)¹

IEC 60793-2-40 NOTE Harmonized as EN IEC 60793-2-40

¹ In preparation.

European foreword to Amendment 1

The text of document 86B/4865/FDIS, future IEC 61300-1/AMD1, prepared by SC 86B "Fibre optic interconnecting devices and passive components" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61300-1:2022/A1:2024.

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IEC 61753 series	NOTE	Approved as EN IEC 61753 series
IEC 61753-111 series	NOTE	Approved as EN IEC 61753-111 series
IEC 62005 series	NOTE	Approved as EN IEC 62005 series

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-731	-	International Electrotechnical Vocabulary - Chapter 731: Optical fibre communication	-	-
IEC 60617	-	Graphical symbols for diagrams	-	-
IEC 60793-2-10	-	Optical fibres - Part 2-10: Product specifications - Sectional specification for category A1 multimode fibres	EN IEC 60793-2-10	-
IEC 60793-2-30	-	Optical fibres - Part 2-30: Product specifications - Sectional specification for category A3 multimode fibres	EN 60793-2-30	-
IEC 60825-1	-	Safety of laser products - Part 1: Equipment classification and requirements	EN 60825-1	-
IEC 60825-2	-	Safety of laser products - Part 2: Safety of optical fibre communication systems (OFCSS)	-	-
IEC 61280-1-4	-	Fibre optic communication subsystem test procedures - Part 1-4: General communication subsystems - Light source encircled flux measurement method	EN 61280-1-4	-
IEC 61280-4-1	-	Fibre-optic communication subsystem test procedures - Part 4-1: Installed cabling plant - Multimode attenuation measurement	EN IEC 61280-4-1	-
IEC 61300-2	series	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2: Tests	EN 61300-2	series
IEC 61300-3	series	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3: Examinations and measurements	EN 61300-3	series

IEC 61300-3-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-1: Examinations and measurements - Visual examination	EN 61300-3-1	-
IEC 61300-3-35	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-35: Examinations and measurements - Visual inspection of fibre optic connectors and fibre-stub transceivers	EN 61300-3-35	-

CONTENTS

FOREWORD.....5

INTRODUCTION.....7

1 Scope.....8

2 Normative references8

3 Terms, definitions and abbreviated terms9

 3.1 Terms and definitions.....9

 3.2 Abbreviated terms.....12

4 Requirements for IEC 61300-2 (all parts) and IEC 61300-3 (all parts).....12

 4.1 Requirements for IEC 61300-2 (all parts) (tests)12

 4.2 Requirements for IEC 61300-3 (all parts) (examinations and measurement procedures)12

 4.2.1 General requirements12

 4.2.2 Requirements for attenuation variation12

 4.2.3 Requirements for test sample configuration in environmental test chamber13

5 Standard atmospheric conditions13

6 Significance of the numerical value of a quantity13

 6.1 General.....13

 6.2 Quantity expressed as nominal value with tolerance13

 6.3 Quantity expressed as a range of values.....14

7 Graphical symbols and terminology15

8 Safety.....15

9 Calibration.....15

 9.1 General.....15

 9.2 Round robin calibration procedure15

10 Launch conditions.....15

 10.1 General.....15

 10.2 Multimode launch conditions for A1 fibres16

 10.3 Multimode launch conditions for A3e fibre16

 10.4 Multimode launch conditions for the other multimode fibres17

 10.5 Single-mode launch conditions.....17

 10.6 Multimode planar waveguide launch conditions.....17

Annex A (normative) Multimode launch condition requirement for measuring attenuation of components terminated on IEC 60793-2-10 type A1 fibres.....18

 A.1 General.....18

 A.2 Technical background18

 A.3 EF template18

 A.3.1 Applicable types of optical fibres18

 A.3.2 Encircled flux.....18

 A.3.3 EF template example18

 A.4 Target launch and upper and lower tolerance bands for attenuation measurements of A1-OM2 to A1-OM5 and A1-OM1 optical fibre connections.....19

 A.4.1 General19

 A.4.2 Limits on EF19

Annex B (normative) Multimode launch condition requirement for measuring attenuation of components terminated on IEC 60793-2-30 type A3e fibres.....21

B.1	EAF template	21	
B.1.1	Applicable types of optical fibres	21	
B.1.2	Encircled angular flux	21	
B.1.3	EAF template example.....	21	
B.2	Target launch and upper and lower tolerance bands for attenuation measurements of A3e optical fibre connections.....	21	
B.2.1	General	21	
B.2.2	Limits on EAF	22	
A1	Annex C (normative) Test sample configuration in environmental test chamber	23	
C.1	General.....	23	
C.2	Pigtail test sample	24	
C.3	Hardened connector pigtail test sample	24	
C.4	Patchcord test sample	25	
C.5	Non-connectorized passive component test sample	26	
C.6	Connectorized passive component test sample	28	
C.7	Plug-receptacle style passive component test sample	28	
C.8	Fibre management system test sample	29	
C.9	Protective housing test sample without looped cable.....	30	
C.10	Protective housing test sample with looped cable	30	
C.11	Combined protective housing test sample with looped cable	32	
C.12	Mechanical splice or fusion splice test sample	33	A1
	Bibliography.....	35	
	Figure A.1 – Encircled flux template example.....	19	
	Figure B.1 – Encircled angular flux template example	21	
A1	Figure C.1 – Example configuration of a pigtail test sample	24	
	Figure C.2 – Example configuration of a hardened connector pigtail test sample	25	
	Figure C.3 – Example configuration of a patchcord test sample	26	
	Figure C.4 – Example configuration of a non-connectorized passive component test sample.....	27	
	Figure C.5 – Example configuration of a connectorized passive component test sample.....	28	
	Figure C.6 – Example configuration of a plug-receptacle style passive component test sample.....	29	
	Figure C.7 – Example configuration of a fibre management system test sample.....	29	
	Figure C.8 – Example configuration of a protective housing test sample without looped cable.....	30	
	Figure C.9 – Example configuration I of a protective housing test sample with looped cable.....	31	
	Figure C.10 – Example configuration II of a protective housing test sample with looped cable.....	32	
	Figure C.11 – Example configuration of a combined distribution and track or spur protective housing test sample with looped cable.....	33	
	Figure C.12 – Example configuration of a mechanical splice or fusion splice test sample.....	34	A1
	Table 1 – Standard atmospheric conditions.....	13	

Table 2 – Expected variation of attenuation due to mode variation of single connections for A1-OM2, A1-OM3, A1-OM4 and A1-OM5 fibres	16
Table 3 – Expected variation of attenuation due to mode variation of single connections for A3e fibre	17
Table A.1 – EF requirements for 50 µm core fibre at 850 nm	19
Table A.2 – EF requirements for 50 µm core fibre at 1 300 nm.....	20
Table A.3 – EF requirements for 62,5 µm fibre at 850 nm	20
Table A.4 – EF requirements for 62,5 µm fibre at 1 300 nm	20
Table B.1 – EAF requirements for NA of 0,37 and 200 µm core fibre at 850 nm	22

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1: General and guidance

FOREWORD

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IEC 61300-1 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This fifth edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) addition of the information of measurement uncertainties in 4.2.1;
- b) change of the requirements for attenuation variation in 4.2.2;
- c) addition of the multimode launch conditions of other fibres than A1-OM2, A1-OM3, A1-OM4, A1-OM5 and A3e in 10.4;
- d) addition of the multimode launch conditions of the planar waveguide in 10.6;
- e) splitting Annex A for EF and Annex B for EAF;
- f) correction of errors in the definitions of encircled flux and encircled angular flux.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 61300 series, published under the general title, *Fibre optic interconnecting and passive components – Basic test and measurement procedures*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

The publications in IEC 61300 series [1]¹ contain information on mechanical and environmental testing procedures and measurement procedures relating to fibre optic interconnecting devices and passive components. They are intended to be used to achieve uniformity and reproducibility in environmental testing procedures and measurement procedures.

The term "test procedure" refers to procedures commonly known as mechanical and environmental tests. The expressions "environmental conditioning" and "environmental testing" refer to the environments to which components or equipment may be exposed so that an assessment may be made of their performance under the conditions of use, transport and storage.

The term "measurement procedure" refers to those measurements which are necessary to assess the physical and optical characteristics of a component and may also be used before, during or after a test procedure to measure the effects of environmental conditioning or testing. The return loss and attenuation tests are examples of measurement procedures.

The requirements for the performance of components or equipment subjected to the test and measurement procedures described in this document are not included. The relevant specification for the device under test defines the allowed performance limits.

When drafting a specification or purchase contract, only those tests which are necessary for the relevant components or equipment taking into account the technical and economic aspects should be specified.

The mechanical and environmental test procedures are contained in IEC 61300-2 (all parts) and the measurement procedures in IEC 61300-3 (all parts). Each test or measurement procedure is published as a stand-alone publication so that it may be modified, expanded or cancelled without having an effect on any other test or measurement procedure. However, it should be noted that, where practical, reference is made to other standards as opposed to repeating all or part of already existing standards. As an example, the cold test for fibre optic apparatus refers to IEC 60068-2-1 [2], but it also provides other needed information such as purpose, recommended severities and a list of items to be specified.

Multiple methods may be contained in a test or measurement procedure. As an example, several methods of measuring attenuation are contained in the attenuation measurement procedure.

If more than one method is contained in a test or measurement procedure, the reference method may be identified.

The tests in this document permit the performance of components or equipment to be compared. To assess the overall quality of a production lot, the test procedures should be applied in accordance with a suitable sampling plan and may be supplemented by appropriate additional tests, if necessary.

To provide tests appropriate to the different intensities of an environmental condition, some of the test procedures have a number of degrees of severity. These different degrees of severity are obtained by varying the time, temperature or some other determining factor separately or in combination.

¹ Numbers in square bracket refer to the Bibliography.