



BSI Standards Publication

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

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Part 3-7: Examinations and measurements — Wavelength dependence  
of attenuation and return loss of single mode components

## National foreword

This British Standard is the UK implementation of EN IEC 61300-3-7:2021. It is identical to IEC 61300-3-7:2021. It supersedes BS EN 61300-3-7:2012, which is withdrawn.

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 3-7:  
Examinations and measurements - Wavelength dependence of  
attenuation and return loss of single mode components  
(IEC 61300-3-7:2021)

Dispositifs d'interconnexion et composants passifs à fibres  
optiques - Méthodes fondamentales d'essais et de mesures  
- Partie 3-7: Examens et mesurages - Affaiblissement et  
affaiblissement de réflexion des composants unimodaux en  
fonction de la longueur d'onde  
(IEC 61300-3-7:2021)

Lichtwellenleiter - Verbindungselemente und passive  
Bauteile - Grundlegende Prüf- und Messverfahren - Teil 3-  
7: Untersuchungen und Messungen -  
Wellenlängenabhängigkeit von Dämpfung und  
Rückflussdämpfung von Einmodenbauteilen  
(IEC 61300-3-7:2021)

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

## **European foreword**

The text of document 86B/4337/CDV, future edition 3 of IEC 61300-3-7, 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 61300-3-7:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2022-08-11 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2022-08-11 document have to be withdrawn

This document supersedes EN 61300-3-7:2012 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

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The text of the International Standard IEC 61300-3-7:2021 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 61300-3-4 NOTE Harmonized as EN 61300-3-4

IEC 61300-3-6 NOTE Harmonized as EN 61300-3-6

IEC 61300-3-29 NOTE Harmonized as EN 61300-3-29

## 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](http://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 (IEV) - Part 731: Optical fibre communication                                                                                                                                                           | -                 | -           |
| IEC 60793-2-50     | -           | Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres                                                                                                                                       | EN IEC 60793-2-50 | -           |
| IEC 61755-2-4      | -           | Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 2-4: Connection parameters of non-dispersion shifted single-mode physically contacting fibres - Non-angled for reference connection applications | EN 61755-2-4      | -           |
| IEC 61755-2-5      | -           | Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 2-5: Connection parameters of non-dispersion shifted single-mode physically contacting fibres - Angled for reference connection applications     | EN 61755-2-5      | -           |
| IEC/TR 61931       | -           | Fibre optic - Terminology                                                                                                                                                                                                                         | -                 | -           |
| IEC 62074-1        | -           | Fibre optic interconnecting devices and passive components - Fibre optic WDM devices - Part 1: Generic specification                                                                                                                              | EN 62074-1        | -           |

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES  
AND PASSIVE COMPONENTS –  
BASIC TEST AND MEASUREMENT PROCEDURES –****Part 3-7: Examinations and measurements – Wavelength dependence  
of attenuation and return loss of single mode components**

## 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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IEC 61300-3-7 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 third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

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

- a) reduction of the number of alternative methods proposed to bring in-line with industry practice;
- b) re-statement of the equations for insertion loss and return loss using logarithmic forms more common in the industry;
- c) additional recommendations with respect to the creation of fibre terminations;



- d) additional discussion on the characterization of the optical sources used in this document;
- e) simplification of bi-directional testing;
- f) removal of separate return loss only measurement procedures.

The text of this International Standard is based on the following documents:

| Draft        | Report on voting |
|--------------|------------------|
| 86B/4337/CDV | 86B/4425A/RVC    |

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

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 61300 series, published under the general title *Fibre optic interconnecting devices 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 will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

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

## **Part 3-7: Examinations and measurements – Wavelength dependence of attenuation and return loss of single mode components**

### **1 Scope**

This part of IEC 61300-3 describes methods available to measure the wavelength dependence of attenuation and return loss of two-port, single mode passive optical components. It is not, however, applicable to dense wavelength division multiplexing (DWDM) devices. Measurement methods of wavelength dependence of attenuation of DWDM devices are described in IEC 61300-3-29.

There are two measurement cases described in this document:

- a) measurement of attenuation only;
- b) measurement of attenuation and return loss at the same time.

### **2 Normative references**

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.

IEC 60050-731, *International Electrotechnical Vocabulary (IEV) – Part 731: Optical fibre communication* (available at [www.electropedia.org](http://www.electropedia.org))

IEC 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

IEC 61755-2-4, *Fibre optic interconnecting devices and passive components – Connector optical interfaces – Part 2-4: Connection parameters of non-dispersion shifted single-mode physically contacting fibres – Non-angled for reference connection applications*

IEC 61755-2-5, *Fibre optic interconnecting devices and passive components – Connector optical interfaces – Part 2-5: Connection parameters of non-dispersion shifted single-mode physically contacting fibres – Angled for reference connection applications*

IEC TR 61931, *Fibre optic – Terminology*

IEC 62074-1, *Fibre optic interconnecting devices and passive components – Fibre optic WDM devices – Part 1: Generic specification*

### **3 Terms, definitions, abbreviated terms and quantity symbols**

#### **3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in IEC 60050-731, IEC TR 61931 and IEC 62074-1 apply.