IEC 60793-1-46

Edition 2.0 2024-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibres –
Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

Fibres optiques –
Partie 1-46: Méthodes de mesure et procédures d'essai – Contrôle des variations de l'affaiblissement

IEC 60793-1-46:2024 (en-fr)

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Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

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 60793-1-46 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This second edition cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

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

a) inclusion of class C single mode intraconnection fibre;
b) replacement of 'optical transmittance' by 'attenuation'.

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

Draft	Report on voting
86A/2442/FDIS	86A/2475/RVD

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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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*
– *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 attenuation*
– *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*

A list of all parts in the IEC 60793 series, published under the general title *Optical fibres*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

Publications in the IEC 60793-1 series concern measurement methods and test procedures as they apply to optical fibres.

Within the same series several different areas are grouped, as follows:

– IEC 60793-1-20 to IEC 60793-1-29: *Measurement methods and test procedures for dimensions*

– IEC 60793-1-30 to IEC 60793-1-39: *Measurement methods and test procedures for mechanical characteristics*

– IEC 60793-1-40 to IEC 60793-1-49: *Measurement methods and test procedures for transmission and optical characteristics*

– IEC 60793-1-50 to IEC 60793-1-59: *Measurement methods and test procedures for environmental characteristics*

– IEC 60793-1-60 to IEC 60793-1-69: *Measurement methods and test procedures for polarization-maintaining fibres*

OPTICAL FIBRES –

Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

1 Scope

This part of IEC 60793 establishes uniform requirements for the monitoring of changes in attenuation, thereby assisting in the inspection of fibres and cables for commercial purposes.

This document gives two methods for monitoring the changes in attenuation of optical fibres and cables that occur during mechanical or environmental testing, or both. It provides a monitor in the change of attenuation characteristics arising from optical discontinuity, physical defects and modifications of the attenuation slope:

– method A: change in attenuation by transmitted power;
– method B: change in attenuation by backscattering.

Methods A and B apply to the monitoring of all categories of the following fibres:

– class A: multimode fibres;
– class B: single-mode fibres;
– class C: single-mode intraconnection fibres.

Information common to both measurements is contained in Clause 1 to Clause 10, and information pertaining to each individual method appears in Annex A, and Annex B respectively.

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 60793-1-40, *Optical fibres – Part 1-40: Attenuation measurement methods*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

4 Reference test method

There are no reference test methods indicated in this document.