BS EN IEC 60793-2-50:2019

BSI Standards Publication

Optical fibres

Part 2-50: Product specifications - Sectional specification for class B single-mode fibres

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National foreword

This British Standard is the UK implementation of EN IEC 60793-2-50:2019. It is identical to IEC 60793-2-50:2018. It supersedes BS EN 60793-2-50:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/86/1, Optical fibres and cables.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres (IEC 60793-2-50:2018)

Fibres optiques - Partie 2-50: Spécifications de produits - Spécification intermédiaire pour les fibres unimodales de classe B
(IEC 60793-2-50:2018)

Lichtwellenleiter - Teil 2-50: Produktspezifikationen - Rahmenspezifikation für Einmodenfasern der Kategorie B
(IEC 60793-2-50:2018)

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European foreword

The text of document 86A/1884/FDIS, future edition 6 of IEC 60793-2-50, prepared by SC 86A "Fibres and cables" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60793-2-50:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-10-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-01-18

This document supersedes EN 60793-2-50:2016.

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.

Endorsement notice

The text of the International Standard IEC 60793-2-50:2018 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 60793-1-1	NOTE	Harmonized as EN 60793-1-1
IEC 60794-3	NOTE	Harmonized as EN 60794-3

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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.

Publication	Year	Title	EN/HD	Year
IEC 60793-1	series	Optical fibres	EN 60793-1	series
IEC 60793-1-20	-	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry	EN 60793-1-20	-
IEC 60793-1-21	-	Optical fibres - Part 1-21: Measurement methods and test procedures - Coating geometry	EN 60793-1-21	-
IEC 60793-1-22	-	Optical fibres - Part 1-22: Measurement methods and test procedures - Length measurement	EN 60793-1-22	-
IEC 60793-1-30	-	Optical fibres - Part 1-30: Measurement methods and test procedures - Fibre proof test	EN 60793-1-30	-
IEC 60793-1-31	-	Optical fibres - Part 1-31: Measurement methods and test procedures - Tensile strength	EN 60793-1-31	-
IEC 60793-1-32	-	Optical fibres - Part 1-32: Measurement methods and test procedures - Coating strippability	EN IEC 60793-1-32	-
IEC 60793-1-33	-	Optical fibres - Part 1-33: Measurement methods and test procedures - Stress corrosion susceptibility	EN 60793-1-33	-
IEC 60793-1-34	-	Optical fibres - Part 1-34: Measurement methods and test procedures - Fibre curl	EN 60793-1-34	-
IEC 60793-1-40	-	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	-
IEC 60793-1-42	-	Optical fibres - Part 1-42: Measurement methods and test procedures - Chromatic dispersion	EN 60793-1-42	-

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IEC 60793-1-44	-	Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	-
IEC 60793-1-45	-	Optical fibres - Part 1-45: Measurement methods and test procedures - Mode field diameter	EN IEC 60793-1-45	-
IEC 60793-1-46	-	Optical fibres - Part 1-46: Measurement methods and test procedures - Monitoring of changes in optical transmittance	EN 60793-1-46	-
IEC 60793-1-47	-	Optical fibres - Part 1-47: Measurement methods and test procedures - Macrobending loss	EN IEC 60793-1-47	-
IEC 60793-1-48	-	Optical fibres - Part 1-48: Measurement methods and test procedures - Polarization mode Dispersion	EN 60793-1-48	-
IEC 60793-1-50	-	Optical fibres - Part 1-50: Measurement methods and test procedures - Damp heat (steady state) tests	EN 60793-1-50	-
IEC 60793-1-51	-	Optical fibres - Part 1-51: Measurement methods and test procedures - Dry heat (steady state) tests	EN 60793-1-51	-
IEC 60793-1-52	-	Optical fibres - Part 1-52: Measurement methods and test procedures - Change of temperature tests	EN 60793-1-52	-
IEC 60793-1-53	-	Optical fibres - Part 1-53: Measurement methods and test procedures - Water immersion tests	EN 60793-1-53	-
IEC 60793-2	-	Optical fibres - Part 2: Product specifications - General	EN 60793-2	-
IEC 60794-2	-	Optical fibre cables - Part 2: Indoor cables - Sectional specification	EN 60794-2	-

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OPTICAL FIBRES –

Part 2-50: Product specifications – Sectional specification for class B single-mode fibres

FOREWORD

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International Standard IEC 60793-2-50 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

The sixth edition cancels and replaces the fifth edition published in 2015. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

a) Introduction of a revised naming convention which better matches with those found in ITU-T Recommendations G.652, G.653, G.654, G.655, G.656, and G.657. These changes are outlined in the scope of this document along with a cross reference table for the new names. Annexes have been rearranged to improve clarity based on the new naming;
b) Further details on the requirements for 200 micron coated single-mode fibre;
c) Harmonization with the following ITU-T Recommendations published in November 2016: G.652, G.654, G.657 including revised chromatic dispersion specifications, new categories and new application spaces for these fibre categories;

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d) Descriptions of fibre types have been added to the titles of Annexes A to F.

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

FDIS	Report on voting
86A/1884/FDIS	86A/1898/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 "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.

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OPTICAL FIBRES –

Part 2-50: Product specifications – Sectional specification for class B single-mode fibres

1 Scope

This part of IEC 60793 is applicable to optical fibre categories B-652, B-653, B-654, B-655, B-656 and B-657. A map illustrating the connection of IEC designations to ITU-T designations is shown in Table 1. These fibres are used or can be incorporated in information transmission equipment and optical fibre cables.

Three types of requirements apply to these fibres:

- general requirements, as defined in IEC 60793-2;
- specific requirements common to the class B single-mode fibres covered in this document and which are given in Clause 5;
- particular requirements applicable to individual fibre categories or specific applications, which are defined in Annexes A to F.

For some fibre categories (shown in the relevant family specifications), there are sub-categories that are distinguished on the basis of difference in transmission attribute specifications. The designations for these sub-categories are documented in the individual family specifications.

Table 1 shows a map from the IEC designations to the ITU-T recommendations. The table also provides the normative annex in this document that contains the detailed specification as well as the name used to describe this fibre type in IEC 60793-2-50:2015. The ITU-T recommendations as well as the IEC categories/sub-categories within each recommendation are given. In some cases, as for Recommendation G.652, a given IEC designation maps to multiple categories in the ITU-T because the ITU-T categories are distinguished by cabled fibre attribute (PMD_Q) performance which are not distinguished in the IEC fibre specifications.

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Table 1 – Map of IEC designation to ITU-T Recommendations and IEC 60793-2-50:2015 designation

Annex	Category	Sub Category	Description	IEC 60793-2-50:2015	ITU-T Rec
	B-652		Dispersion unshifted fibre		G.652
A		B-652.B		B1.1	G.652.B
A		B-652.D		B1.3	G.652.D
	B-653		Dispersion shifted fibre		G.653
B		B-653.A		B2_a	G.653.A
B		B-653.B		B2_b	G.653.B
	B-654		Cut-off shifted fibre		G.654
C		B-654.A		B1.2_a	G.654.A
C		B-654.B		B1.2_b	G.654.B
C		B-654.C		B1.2_c	G.654.C
C		B-654.D		N/A	G.654.D
C		B-654.E		N/A	G.654.E
C	B-655		Non-zero dispersion shifted fibre	B4	G.655
D		B-655.C		B4_c	G.655.C
D		B-655.D		B4_d	G.655.D
D		B-655.E		B4_e	G.655.E
E	B-656		Wideband non-zero dispersion shifted fibre	B5	G.656
F	B-657		Bending loss insensitive fibre	B6	G.657
F		B-657.A1		B6_a1	G.657.A1
F		B-657.A2		B6_a2	G.657.A2
F		B-657.B2		B6_b2	G.657.B2
F		B-657.B3		B6_b3	G.657.B3

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 (all parts), *Optical fibres*

IEC 60793-1-20, *Optical fibres – Part 1-20: Measurement methods and test procedures – Fibre geometry*

IEC 60793-1-21, *Optical fibres – Part 1-21: Measurement methods and test procedures – Coating geometry*

IEC 60793-1-22, *Optical fibres – Part 1-22: Measurement methods and test procedures – Length measurement*

IEC 60793-1-30, *Optical fibres – Part 1-30: Measurement methods and test procedures – Fibre proof test*

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IEC 60793-1-31, *Optical fibres – Part 1-31: Measurement methods and test procedures – Tensile strength*

IEC 60793-1-32, *Optical fibres – Part 1-32: Measurement methods and test procedures – Coating strippability*

IEC 60793-1-33, *Optical fibres – Part 1-33: Measurement methods and test procedures – Stress corrosion susceptibility*

IEC 60793-1-34, *Optical fibres – Part 1-34: Measurement methods and test procedures – Fibre curl*

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

IEC 60793-1-42, *Optical fibres – Part 1-42: Measurement methods and test procedures – Chromatic dispersion*

IEC 60793-1-44, *Optical fibres – Part 1-44: Measurement methods and test procedures – Cut-off wavelength*

IEC 60793-1-45, *Optical fibres – Part 1-45: Measurement methods and test procedures – Mode field diameter*

IEC 60793-1-46, *Optical fibres – Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance*

IEC 60793-1-47, *Optical fibres – Part 1-47: Measurement methods and test procedures – Macrobending loss*

IEC 60793-1-48, *Optical fibres – Part 1-48: Measurement methods and test procedures – Polarization mode dispersion*

IEC 60793-1-50, *Optical fibres – Part 1-50: Measurement methods and test procedures – Damp heat (steady state) tests*

IEC 60793-1-51, *Optical fibres – Part 1-51: Measurement methods and test procedures – Dry heat (steady state) tests*

IEC 60793-1-52, *Optical fibres – Part 1-52: Measurement methods and test procedures – Change of temperature tests*

IEC 60793-1-53, *Optical fibres – Part 1-53: Measurement methods and test procedures – Water immersion tests*

IEC 60793-2, *Optical fibres – Part 2: Product specifications – General*

IEC 60794-2, *Optical fibre cables – Part 2: Indoor cables – Sectional specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60793-2 and the IEC 60793-1 series apply.

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