



BSI Standards Publication

Optical fibres

Part 2-40: Product specifications — Sectional
specification for category A4 multimode fibres

National foreword

This British Standard is the UK implementation of EN IEC 60793-2-40:2021. It is identical to IEC 60793-2-40:2021. It supersedes BS EN 60793-2-40:2016, which is withdrawn.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 committee manager.

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English Version

Optical fibres - Part 2-40: Product specifications - Sectional
specification for category A4 multimode fibres
(IEC 60793-2-40:2021)

Fibres optiques - Partie 2-40: Spécifications de produits -
Spécification intermédiaire pour les fibres multimodales de
catégorie A4
(IEC 60793-2-40:2021)

Lichtwellenleiter - Teil 2-40: Produktspezifikationen -
Rahmenspezifikation für Mehrmodenfasern der Kategorie
A4
(IEC 60793-2-40:2021)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 86A/1943/CDV, future edition 5 of IEC 60793-2-40, 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 60793-2-40:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2022-01-01 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2024-04-01 document have to be withdrawn

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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 60793-2	NOTE	Harmonized as EN IEC 60793-2

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 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60793-1-20	-	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry	EN 60793-1-20	-
IEC 60793-1-22	-	Optical fibres - Part 1-22: Measurement methods and test procedures - Length measurement	EN 60793-1-22	-
IEC 60793-1-40	2019	Optical fibres - Part 1-40: Attenuation measurement methods	EN IEC 60793-1-40	2019
IEC 60793-1-41	-	Optical fibres - Part 1-41: Measurement methods and test procedures - Bandwidth	EN 60793-1-41	-
IEC 60793-1-42	-	Optical fibres - Part 1-42: Measurement methods and test procedures - Chromatic dispersion	EN 60793-1-42	-
IEC 60793-1-43	-	Optical fibres - Part 1-43: Measurement methods and test procedures - Numerical aperture measurement	EN 60793-1-43	-
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 60793-1-50	-	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	-

EN IEC 60793-2-40:2021 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-1-52	-	Optical fibres - Part 1-52: Measurement methods and test procedures - Change of temperature tests	EN 60793-1-52	-

CONTENTS

FOREWORD	5
1 Scope	7
2 Normative references	8
3 Terms and definitions	8
4 Specifications	9
4.1 Dimensional requirements	9
4.2 Mechanical requirements	10
4.2.1 General	10
4.2.2 Tensile load test	10
4.3 Transmission requirements	11
4.4 Environmental requirements	12
4.4.1 General	12
4.4.2 Mechanical environmental requirements	13
4.4.3 Transmission environmental requirements	13
Annex A (normative) Family specifications for subcategory A4a multimode fibres	15
A.1 General	15
A.2 Dimensional requirements	15
A.3 Mechanical requirements	15
A.4 Transmission requirements	15
A.5 Environmental requirements	16
Annex B (normative) Family specifications for subcategory A4b multimode fibres	17
B.1 General	17
B.2 Dimensional requirements	17
B.3 Mechanical requirements	17
B.4 Transmission requirements	17
B.5 Environmental requirements	18
Annex C (normative) Family specifications for subcategory A4c multimode fibres	19
C.1 General	19
C.2 Dimensional requirements	19
C.3 Mechanical requirements	19
C.4 Transmission requirements	19
C.5 Environmental requirements	20
Annex D (normative) Family specifications for subcategory A4d multimode fibres	21
D.1 General	21
D.2 Dimensional requirements	21
D.3 Mechanical requirements	21
D.4 Transmission requirements	21
D.5 Environmental requirements	22
Annex E (normative) Family specifications for subcategory A4e multimode fibres	23
E.1 General	23
E.2 Dimensional requirements	23
E.3 Mechanical requirements	23
E.4 Transmission requirements	23
E.5 Environmental requirements	24
Annex F (normative) Family specifications for subcategory A4f multimode fibres	25

Annex G (normative) Family specifications for subcategory A4g multimode fibres	26
G.1 General.....	26
G.2 Dimensional requirements.....	26
G.3 Mechanical requirements	26
G.4 Transmission requirements	26
G.5 Environmental requirements	27
Annex H (normative) Family specifications for subcategory A4h multimode fibres	28
H.1 General.....	28
H.2 Dimensional requirements.....	28
H.3 Mechanical requirements	28
H.4 Transmission requirements	28
H.5 Environmental requirements	29
Annex I (normative) Family specifications for subcategory A4i multimode fibres	30
I.1 General.....	30
I.2 Dimensional requirements.....	30
I.3 Mechanical requirements	30
I.4 Transmission requirements	30
I.5 Environmental requirements	31
Annex J (normative) Mode scramblers for subcategory A4a to A4c fibres.....	32
J.1 General.....	32
J.2 Specification for mode scramblers	32
Annex K (informative) Additional transmission requirements for subcategory A4a multimode fibres for wavelengths below 650 nm	33
K.1 General.....	33
K.2 Transmission requirements	33
Bibliography.....	34
Figure 1 – Tensile load versus elongation for a plastic optical fibre	11
Figure J.1 – Mode scrambler for category A4 fibre	32
Table 1 – Characteristics and applications of category A4 fibres	7
Table 2 – Dimensional attributes and measurement methods.....	9
Table 3 – Requirements common to all category A4 fibres	9
Table 4 – Additional attributes required in A4g through A4i family specifications.....	9
Table 5 – Mechanical attributes and test methods.....	10
Table 6 – Requirements common to category A4 fibres.....	10
Table 7 – Additional attributes required in family specification for sub-category A4g through A4i fibres	10
Table 8 – Transmission attributes and measurement methods	12
Table 9 – Attributes required in family specifications.....	12
Table 10 – Environmental exposure tests.....	13
Table 11 – Attributes measured	13
Table 12 – Requirement for tensile strength.....	13
Table 13 – Requirement for change in attenuation for A4a through A4e fibre	14
Table 14 – Requirement for change in attenuation for A4g through A4i fibre	14
Table A.1 – Dimensional requirements specific to A4a fibres	

Table A.2 – Mechanical requirements specific to A4a fibres	15
Table A.3 – Transmission requirements specific to A4a fibres	16
Table B.1 – Dimensional requirements specific to A4b fibres	17
Table B.2 – Mechanical requirements specific to A4b fibres	17
Table B.3 – Transmission requirements specific to A4b fibres	18
Table C.1 – Dimensional requirements specific to A4c fibres	19
Table C.2 – Mechanical requirements specific to A4c fibres	19
Table C.3 – Transmission requirements specific to A4c fibres	20
Table D.1 – Dimensional requirements specific to A4d fibres	21
Table D.2 – Mechanical requirements specific to A4d fibres	21
Table D.3 – Transmission requirements specific to A4d fibres	22
Table E.1 – Dimensional requirements specific to A4e fibres	23
Table E.2 – Mechanical requirements specific to A4e fibres	23
Table E.3 – Transmission requirements specific to A4e fibres	24
Table G.1 – Dimensional requirements specific to A4g fibres	26
Table G.2 – Mechanical requirements specific to A4g fibres	26
Table G.3 – Transmission requirements specific to A4g fibres	27
Table H.1 – Dimensional requirements specific to A4h fibres	28
Table H.2 – Mechanical requirements specific to A4h fibres	28
Table H.3 – Transmission requirements specific to A4h fibres	29
Table I.1 – Dimensional requirements specific to A4i fibres	30
Table I.2 – Mechanical requirements specific to A4i fibres	30
Table I.3 – Transmission requirements specific to A4i fibres	31
Table J.1 – Mode Scrambler parameters	32
Table K.1 – Transmission requirements specific to A4a.2 fibre	33

INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES –

**Part 2-40: Product specifications –
Sectional specification for category A4 multimode fibres**

FOREWORD

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International Standard IEC 60793-2-40 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This fifth edition cancels and replaces the fourth 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) revision of NA range of A4a.2;
- b) addition of a new subcategory A4i;
- c) deletion of the subcategory A4f and of Annex F.

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

CDV	Report on voting
86A/1943/CDV	86A/1981/RVC

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.

OPTICAL FIBRES –

Part 2-40: Product specifications – Sectional specification for category A4 multimode fibres

1 Scope

This part of IEC 60793 is applicable to category A4 optical multimode fibres and the related subcategories A4a, A4b, A4c, A4d, A4e, A4g, A4h and A4i. These fibres have a plastic core and plastic cladding and may have step-index, multi-step index or graded-index profiles. The fibres are used in information transmission equipment and other applications employing similar light transmitting techniques, and in fibre optic cables. Table 1 summarizes some of the salient characteristics and applications of these fibres.

Table 1 – Characteristics and applications of category A4 fibres

Sub-category	A4a		A4b	A4c	A4d	A4e	A4f	A4g	A4h	A4i
	A4a.1	A4a.2								
Core diameter (µm)	a		a	a	a	≥ 500	c	120	62,5	55
Cladding diameter (µm)	1 000		750	500	1 000	750	c	490	245 ^d	490
Numerical aperture Na _{ff} e	0,50	0,53	0,50	0,50	0,30	0,25	c	0,190	0,190	0,24
Operating wave-length(s) (nm)	650 ^b		650	650	650	650	c	650 850 1 300	850 1 300	850
Applications	Digital audio interface, automobile, industrial, sensor and data transmission		Industrial and sensor	Sensor	Digital audio-visual interface and data transmission	Digital audio-visual interface and data transmission	c	Data transmission	Data transmission; primarily used in ribbon structures	Industrial data transmission

^a Typically 15 µm to 35 µm smaller than the cladding diameter.

^b Other potential wavelengths for A4a fibre are described in Annex K.

^c This sub-category is outdated and therefore no more specified.

^d Cladding diameters of 490 µm and 750 µm are also possible.

^e Na_{ff} is numerical aperture measured by far field pattern method.

In addition to the applications shown in Table 1, other applications for A4 fibres include, but are not restricted to, the following: support for short reach, high bit-rate systems in telephony, distribution and local networks, carrying data, voice and/or video services and on-premises intrabuilding and interbuilding fibre installations, including local area networks (LANs), private branch exchanges (PBXs), video, various multiplexing uses and miscellaneous related uses, such as consumer electronics and industrial and mobile networks.

Three types of requirements apply to A4 fibres:

- general requirements, as defined in IEC 60793-2;
- specific requirements common to category A4 multimode fibres covered in this document and which are given in Clause 4;