



BSI Standards Publication

Optical fibre cables

Part 3-40: Outdoor cables — Family specification
for cables for storm and sanitary sewers

National foreword

This British Standard is the UK implementation of EN IEC 60794-3-40:2022. It is identical to IEC 60794-3-40:2022. It supersedes BS EN 60794-3-40:2008 which is withdrawn.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 fibre cables - Part 3-40: Outdoor cables - Family
specification for cables for storm and sanitary sewers
(IEC 60794-3-40:2022)

Câbles à fibres optiques - Partie 3-40: Câbles extérieurs -
Spécification de famille pour les câbles destinés aux
évacuations d'eaux sanitaires et pluviales
(IEC 60794-3-40:2022)

Lichtwellenleiterkabel - Teil 3-40: Außenkabel -
Familienspezifikation für Kabel in Regen- und
Abwasserkanälen
(IEC 60794-3-40:2022)

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European Committee for Electrotechnical Standardization
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 86A/2189/FDIS, future edition 2 of IEC 60794-3-40, 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 60794-3-40:2022.

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) 2023-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-06-01

This document supersedes EN 60794-3-40:2008 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 60794-3-40:2022 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 60794-3-10	NOTE	Harmonized as EN 60794-3-10
IEC 60794-3-20	NOTE	Harmonized as EN 60794-3-20
IEC 60794-4	NOTE	Harmonized as EN IEC 60794-4
IEC 62305-1	NOTE	Harmonized as EN 62305-1

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 60793-2	-	Optical fibres - Part 2: Product specifications	-	-
IEC 60794-1-1	-	Optical fibre cables - Part 1-1: Generic specification - General	EN 60794-1-1	-
IEC 60794-1-2	-	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures - General guidance	EN IEC 60794-1-2	-
IEC 60794-1-21	-	Optical fibre cables - Part 1-21: Generic specification - Basic optical cable test procedures - Mechanical tests methods	EN 60794-1-21	-
IEC 60794-1-22	-	Optical fibre cables - Part 1-22: Generic specification - Basic optical cable test procedures - Environmental test methods	EN IEC 60794-1-22	-
IEC 60794-1-23	-	Optical fibre cables - Part 1-23: Generic specification - Basic optical cable test procedures - Cable element test methods	EN IEC 60794-1-23	-
IEC 60794-1-215	-	Optical fibre cables - Part 1-215: Generic specification - Basic optical cable test procedures - Environmental test methods - Cable external freezing test, Method F15	EN IEC 60794-1-215	-
IEC 60794-3	2014	Optical fibre cables - Part 3: Outdoor cables - Sectional specification	EN 60794-3	2015
IEC 60794-5	-	Optical fibre cables - Part 5: Sectional specification - Microduct cabling for installation by blowing	EN 60794-5	-
IEC 60794-5-10	-	Optical fibre cables - Part 5-10: Family specification - Outdoor microduct optical fibre cables, microducts and protected microducts for installation by blowing	EN 60794-5-10	-

EN IEC 60794-3-40:2022 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60811-501	-	Electric and optical fibre cables - Test methods for non-metallic materials - Part 501: Mechanical tests - Tests for determining the mechanical properties of insulating and sheathing compounds	EN 60811-501	-
IEC/TR 62362	2020	Selection of optical fibre cable specifications relative to mechanical, ingress, climatic or electromagnetic characteristics - Guidance	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRE CABLES –

**Part 3-40: Outdoor cables –
Family specification for cables for storm and sanitary sewers**

FOREWORD

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IEC 60794-3-40 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 2008. This edition constitutes a technical revision.

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

- a) this document follows the new structure for family specifications: symbols and abbreviations were included in Clause 3, and Clause 4 became the General requirements with 4.1 Optical fibres, 4.2 Cable element and 4.3 Optical fibre cable construction;
- b) Annex D has been removed as it is part of IEC TR 62691;
- c) this document has been streamlined by cross-referencing IEC 60794-1-1, IEC 60793-2, IEC 60794-3 and the IEC 60794-1-2x series;
- d) the fibre strain allowance for tensile tests was updated;

e) characteristics Table 5, Table 6, Table 7 were moved to the Annex A (informative).

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

Draft	Report on voting
86A/2189/FDIS	86A/2191/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/standardsdev/publications.

A list of all parts in the IEC 60794 series, published under the general title *Optical fibre cables*, 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,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

OPTICAL FIBRE CABLES –

Part 3-40: Outdoor cables – Family specification for cables for storm and sanitary sewers

1 Scope

This part of IEC 60794 is a family specification that covers sewer cables and conduits for installation by blowing and/or pulling in man accessible and non-man accessible storm and sanitary sewers. Systems built with components covered by this document are subject to the requirements of sectional specification IEC 60794-3.

Sewer cable and conduit constructions need to meet the different requirements of the sewer operating companies and/or associations regarding chemical, environmental, operational, cleaning and in general maintenance conditions.

Preferential applications, describing sewer cable characteristics versus methods of installation is reported in Annex A and Annex B for non-man accessible sewers.

Clause 5 describes characteristics of sewer cables and conduits for installation by blowing, pulling or other means in storm and sanitary sewers.

Detail specifications can be prepared on the basis of this family specification.

It is important that acceptance criteria are interpreted with respect to this consideration. The number of fibres tested is representative of the sewer cable and is agreed between the customer and the supplier.

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

IEC 60794-1-1, *Optical fibre cables – Part 1-1: Generic specification – General*

IEC 60794-1-2, *Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures – General guidance*

IEC 60794-1-21, *Optical fibre cables – Part 1-21: Generic specification – Basic optical cable test procedures – Mechanical tests methods*

IEC 60794-1-22, *Optical fibre cables – Part 1-22: Generic specification – Basic optical cable test procedures – Environmental tests methods*

IEC 60794-1-23, *Optical fibre cables – Part 1-23: Generic specification – Basic optical cable test procedures – Cable element test methods*

IEC 60794-1-215, *Optical fibre cables – Part 1-215: Generic specification – Basic optical cable test procedures – Environmental test methods – Cable external freezing test, Method 1-215*

IEC 60794-3:2014, *Optical fibre cables – Part 3: Outdoor cables – Sectional specification*

IEC 60794-5, *Optical fibre cables – Part 5: Sectional specification – Microduct cabling for installation by blowing*

IEC 60794-5-10, *Optical fibre cables – Part 5-10: Family specification – Outdoor microduct optical fibre cables, microducts and protected microducts for installation by blowing*

IEC 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds*

IEC TR 62362:2020, *Selection of optical fibre cable specifications relative to mechanical, ingress, climatic or electromagnetic characteristics – Guidance*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in IEC 60794-1-1 apply.

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

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

4 General requirements

4.1 Optical fibres

The optical fibre shall conform to the requirements of IEC 60793-2. The fibre type shall be agreed between the customer and supplier. The cabled fibre shall conform to IEC 60794-3.

4.2 Cable element

The cable elements shall conform to IEC 60794-3.

4.3 Optical fibre cable and conduit construction

4.3.1 General

In addition to the constructional requirements of sectional specification IEC 60794-3, the following considerations apply to the sewer cables and/or conduits.

The tests of this specification are intended to assess the performance of cables and conduits, as manufactured and under agreed ageing and performance-limit tests. These tests are not intended to define end-of-life performance. See IEC 60794-3:2014, 6.1.

The materials in the cable or conduit shall not present a health hazard within its intended use.

The clamping systems and accessories associated with cables and conduits of this document are not specified herein. Such parts shall be agreed between the customer and the installer depending on the installation technique.

Annex C shows examples of conduits and sewer cables.