



SLOVENSKI STANDARD
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Optical fibre cables - Part 3-10: Outdoor cables - Family specification for duct, directly buried or lashed aerial optical telecommunication cable (IEC 60794-3-10:2009)

Optical fibre cables - Part 3-10: Outdoor cables - Family specification for duct, directly buried or lashed aerial optical telecommunication cable (IEC 60794-3-10:2009)

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Lichtwellenleiterkabel - Teil 3-10: LWL-Außenkabel - Familienspezifikation für LWL-Fernmelde-Kabel für Erd- und Röhrenverlegung sowie tragseilgebundene Luftkabel (IEC 60794-3-10:2009)

[SIST EN 60794-3-10:2009](https://standards.iteh.ai/catalog/standards/sist/72ff1d5-e44c-4f44-992d-632017316a51/en-60794-3-10-2009)

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Câbles à fibres optiques - Partie 3-10: Câbles extérieurs - Spécification de famille pour les câbles optiques de télécommunication destinés à être installés dans des conduites, directement enterrés ou attachés en aérien (CEI 60794-3-10:2009)

Ta slovenski standard je istoveten z: EN 60794-3-10:2009

ICS:

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NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60794-3-10

April 2009

ICS 33.180.10

Supersedes EN 60794-3-10:2002

English version

**Optical fibre cables -
Part 3-10: Outdoor cables -
Family specification for duct, directly buried
and lashed aerial optical telecommunication cables
(IEC 60794-3-10:2009)**

Câbles à fibres optiques -
Partie 3-10: Câbles extérieurs -
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(CEI 60794-3-10:2009)

Lichtwellenleiterkabel -
Teil 3-10: LWL-Außenkabel -
Familienspezifikation
für LWL-Fernmelde-Kabel
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(IEC 60794-3-10:2009)

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<https://standards.iteh.ai/catalog/standards/sist/72ff1d5-e44c-4f44-992d-f329037Bb44/sist-en-60794-3-10-2009>

This European Standard was approved by CENELEC on 2009-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 86A/1245/FDIS, future edition 2 of IEC 60794-3-10, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60794-3-10 on 2009-04-01.

This European Standard supersedes EN 60794-3-10:2002.

The main changes are listed below:

- the title of the specification has been updated to include lashed applications;
- the fibres specification clause (Clause 4) has been enlarged to include fibre Types B5 and B6.a;
- an annex has been added for additional requirements according to the MICE table.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2010-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-04-01

Annex ZA has been added by CENELEC.

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Endorsement notice

SIST EN 60794-3-10:2009

The text of the International Standard IEC 60794-3-10:2009 was approved by CENELEC as a European Standard without any modification. <https://standards.iteh.ai/catalog/standards/sist-en-60794-3-10-2009>

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60304	- ¹⁾	Standard colours for insulation for low-frequency cables and wires	HD 402 S2	1984 ²⁾
IEC 60654-4	- ¹⁾	Operating conditions for industrial-process measurement and control equipment - Part 4: Corrosive and erosive influences	EN 60654-4	1997 ²⁾
IEC 60721-1	- ¹⁾	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1	1995 ²⁾
IEC 60721-3-3	- ¹⁾	Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weather-protected locations	EN 60721-3-3	1995 ²⁾
IEC 60793-1-20	- ¹⁾	Optical fibres - Part 1-20: Measurement methods and test procedures - Fibre geometry	EN 60793-1-20	2002 ²⁾
IEC 60793-1-40 (mod)	- ¹⁾	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	2003 ²⁾
IEC 60793-1-44	- ¹⁾	Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	2002 ²⁾
IEC 60793-1-48	- ¹⁾	Optical fibres - Part 1-48: Measurement methods and test procedures - Polarization mode dispersion	EN 60793-1-48	2007 ²⁾
IEC 60793-2-50	- ¹⁾	Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres	EN 60793-2-50	2008 ²⁾
IEC 60794-1-1	- ¹⁾	Optical fibre cables - Part 1-1: Generic specification - General	EN 60794-1-1	2002 ²⁾
IEC 60794-1-2	- ¹⁾	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures	EN 60794-1-2	2003 ²⁾
IEC 60794-3	- ¹⁾	Optical fibre cables - Part 3: Sectional specification - Outdoor cables	EN 60794-3	2002 ²⁾

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60811-1-1	- ¹⁾	Insulating and sheathing materials of electric and optical cables - Common test methods - Part 1-1: General application - Measurement of thickness and overall dimensions - Tests for determining the mechanical properties	EN 60811-1-1	1995 ²⁾
IEC 60811-5-1 (mod)	- ¹⁾	Insulating and sheathing materials of electric and optical cables - Common test methods - Part 5-1: Methods specific to filling compounds - Drop point - Separation of oil - Lower temperature brittleness - Total acid number - Absence of corrosive components - Permittivity at 23 °C - D.C. resistivity at 23 °C and 100 °C	EN 60811-5-1	1999 ²⁾
IEC/TS 61000-2-5	- ¹⁾	Electromagnetic compatibility (EMC) - Part 2: Environment - Section 5: Classification of electromagnetic environments - Basic EMC publication	-	-
IEC 61000-6-2	- ¹⁾	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	EN 61000-6-2 + corr. September	2005 ²⁾ 2005
IEC 61326-1	- ¹⁾	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN 61326-1	2006 ²⁾
IEC 62363	- ¹⁾	Radiation protection instrumentation - Portable photon contamination meters and monitors	-	-
ISO/IEC 24702	- ¹⁾	Information technology - Generic cabling - Industrial premises	-	-

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IEC 60794-3-10

Edition 2.0 2009-01

INTERNATIONAL STANDARD

**Optical fibre cables –
Part 3-10: Outdoor cables – Family specification for duct, directly buried and
lashed aerial optical telecommunication cables**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRE CABLES –

**Part 3-10: Outdoor cables –
Family specification for duct, directly buried
and lashed aerial optical telecommunication cables**

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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International Standard IEC 60794-3-10 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2002. It constitutes a technical revision.

The main changes are listed below:

- the title of the specification has been updated to include lashed applications;
- the fibres specification clause (Clause 4) has been enlarged to include fibre Types B5 and B6.a;
- an annex has been added for additional requirements according to the MICE table.

The text of this standard is based on the following documents:

FDIS	Report on voting
86A/1245/FDIS	86A/1252/RVD

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

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

A list of all parts of 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

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OPTICAL FIBRE CABLES –

Part 3-10: Outdoor cables – Family specification for duct, directly buried and lashed aerial optical telecommunication cables

1 Scope

This part of IEC 60794 which is a family specification covers optical telecommunication cables to be used in ducts or direct buried applications. The cable may also be used for lashed aerial applications. Requirements of the sectional specification IEC 60794-3 for duct, buried and aerial cables are applicable to cables covered by this standard.

Clause A.2 contains requirements that supersede the normal requirements in case the cables are intended to be used in installation governed by the MICE table of ISO/IEC 24702.

Annex B gives information on the lashed aerial application.

The parameters specified in this standard may be affected by measurement uncertainty arising either from measurement errors or calibration errors due to lack of suitable standards. Acceptance criteria shall be interpreted with respect to this consideration (see IEC 60794-3 Clause 8).

The number of fibres tested shall be representative of the cable design and shall be agreed between the customer and the supplier.

2 Normative references

The following referenced documents are indispensable for the application 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 60304, *Standard colours for insulation for low-frequency cables and wires*

IEC 60654-4, *Operating conditions for industrial-process measurement and control equipment – Part 4: Corrosive and erosive influences*

IEC 60721-1, *Classification of environmental conditions – Part 1: Environmental parameters and their severities*

IEC 60721-3-3, *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weatherprotected locations*

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

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

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

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

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

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

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

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

IEC 60811-1-1, *Common test methods for insulating and sheathing materials of electric cables and optical cables – Part 1-1: Methods for general application – Measurement of thickness and overall dimensions – Tests for determining the mechanical properties*

IEC 60811-5-1, *Insulating and sheathing materials of electric and optic cables – Common test methods – Part 5-1: Methods specific to filling compounds – Drop-point – Separation of oil – Lower temperature brittleness – Total acid number – Absence of corrosive components – Permittivity at 23 °C – DC resistivity at 23 °C and 100 °C*

IEC 61000-2-5, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 5: Classification of electromagnetic environments. Basic EMC publication*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61326-1, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 62363, *Radiation protection instrumentation – Portable photon contamination meters and monitors*

ISO/IEC 24702, *Information technology – Generic cabling – Industrial premises*

3 Symbols

For the purposes of this standard the following symbols apply.

λ_{cc}	Cabled fibre cut-off wavelength.
d	Nominal outer diameter of the cable.
DS	Detail specification.
T_L	The acceptable amount of long term tensile load which is expected that the cable may experience during operation (i.e. after installation is completed). This load may be due to residual loading from the installation process and/or environmental effect.
T_M	The acceptable amount of short term tensile load which is expected that the cable experience during installation and/or handling .
T_{A1}	Temperature cycling test temperature limit according to IEC 60794-1-2, Method F1.
T_{A2}	Temperature cycling test temperature limit according to IEC 60794-1-2, Method F1.
T_{B1}	Temperature cycling test temperature limit according to IEC 60794-1-2, Method F1.