SLOVENSKI STANDARD
oSIST prEN IEC 60794-2-22:2022

01-oktober-2022

Optični kabli - 2-22. del: Notranji kabli - Podrobna specifikacija večsimpleksnih odporno oplaščenih optičnih kablov za uporabo v zaključenih odporno oplaščenih kabelskih sestavih

Optical fibre cables - Part 2-22: Indoor cables - Detail specification for multi-simplex breakout optical cables for use in terminated breakout cable assemblies

Lichtwellenleiterkabel - Teil 2-22: LWL-Innenkabel - Bauartspezifikation für mit Steckverbinder abzuschließende Simplex-Breakout-Kabel

Câbles à fibres optiques - Partie 2-22: Câbles intérieurs - Spécification particulière pour câbles optiques épanouis simplex multiples munis de connecteurs

Ta slovenski standard je istoveten z: prEN IEC 60794-2-22:2022

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COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 60794-2-22 ED2**	
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SUPERSEDES DOCUMENTS: **86A/2178/CD, 86A/2197/CC**	

IEC SC 86A : FIBRES AND CABLES

SECRETARIAT: France	SECRETARY: Mr Laurent Gasca
OF INTEREST TO THE FOLLOWING COMMITTEES: SC 86B	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
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TITLE:

Optical fibre cables - Part 2-22: Indoor cables - Detail specification for multi-simplex breakout optical cables for use in terminated breakout cable assemblies

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

Please note the change in title. Original title: Optical fibre cables - Part 2-22: Indoor cables - Detail specification for multi-simplex breakout optical cables to be terminated with connectors

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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OPTICAL FIBRE CABLES –

Part 2-22: Indoor cables – Detail specification for multi-simplex breakout optical cables for use in terminated breakout cable assemblies

FOREWORD

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International Standard IEC 60794-2-22 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 2016. This edition constitutes a technical revision.

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

a) changed partly the wording in the title and the scope to align with IEC 60794-2-50, IEC 60794-2-23 and IEC 60794-2-24;
b) added IEC 60793-1-40, IEC 60793-1-46 and IEC 60794-1-2 to the normative references;
c) deleted reference to IEC 60794-2-51;
d) added the definition of terminated breakout cable assembly;
e) changed the number of bend cycles from 10 to 3 to harmonise with IEC 60794-2-50;

f) changed test parameters for temperature cycling to harmonise with IEC 60794-2-50;

g) added maximum attenuation requirements after temperature cycling;

h) replaced the text for the fire performance with an improved description.

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

FDIS	Report on voting
86A/1765/FDIS	86A/1773/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 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 "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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication 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 2-22: Indoor cables – Detail specification for multi-simplex breakout optical cables for use in terminated breakout cable assemblies

1 Scope

This part of IEC 60794 is a detail specification and specifies breakout optical cables with multiple simplex optical fibre cables for use in terminated breakout cable assemblies.

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 60793-1-20, *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 60793-1-40, *Optical fibres – Part 1-40: Attenuation measurement methods*

IEC 60793-1-46, *Optical fibres – Part 1-46: Monitoring of changes in optical transmittance*

IEC 60793-2-10, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres*

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

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 test methods*

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

IEC 60794-2-20, *Optical fibre cables – Part 2-20: Indoor cables – Family specification for multi-fibre optical cables*

IEC 60794-2-50, *Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies*

IEC 60811-202, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 202: General tests – Measurement of thickness of non-metallic sheath*

IEC 60811-203, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 203: General tests – Measurement of overall dimensions*

3 Terms and definitions

3.1 Generality

For the purposes of this document, the terms and definitions given in IEC 60794-1-1 and the following 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

3.2
multi-simplex breakout cable
cable consisting of multiple simplex optical fibre cables, stranded together under a common sheath, which may be stranded in one layer or multi-layers or bundled to subunits around a central member as necessary

3.3
simplex optical fibre cable
cable including a primary or secondary coated fibre that is surrounded with either metallic or non-metallic strength members within a sheath of suitable material

3.4
terminated breakout cable assembly
a breakout cable terminated with connectors

4 General

The requirements of the sectional specification IEC 60794-2 are applicable to cables covered by this document.

The requirements of the family specification IEC 60794-2-20 are applicable to breakout cables to be installed without terminated connectors.

Fan-out kits used for cable systems are not covered by this document.

5 Construction

5.1 General

In addition to the constructional requirements in IEC 60794-2 and IEC 60794-2-20, the considerations in clause 5 apply to multi-simplex breakout cables for use in terminated breakout cable assemblies.

It is not the intention of this document to specify the finished terminated breakout cable assembly complete with terminations.

There shall be no fibre splice in any delivery length. It shall be possible to identify each individual fibre throughout the length of the cable.

5.2 Optical fibres

Multimode or single-mode optical fibres shall meet the requirements of IEC 60793-2-10 sub-categories A1-OM1 or A1-OM2 to A1-OM5 or IEC 60793-2-50 class B.

5.3 Simplex optical fibre cables

The simplex optical fibre cables shall meet the requirements of the family specification IEC 60794-2-50. The buffer type, the buffer diameter and simplex optical fibre cable diameter shall be according to the relevant specification or agreed between customer and supplier.

5.4 Strength and anti-buckling members

The cable shall be designed with sufficient strength members to meet the requirements of this document.

The strength and/or anti-buckling members may be either metallic or non-metallic and may be located in the cable core and/or under the sheath and/or in the sheath.

5.5 Ripcord

If required, a ripcord may be provided beneath the cable sheath. The functionality of the ripcord shall be tested according to IEC 60794-1-21, Method E25.

5.6 Cable sheath

The cable shall have an overall protective sheath. The cable diameter shall be agreed between customer and supplier.

5.7 Sheath marking

If required, the cable shall be marked as agreed upon between the customer and the supplier.

5.8 Examples of cable constructions

Examples of typical cable constructions are shown in Annex B. Other configurations (e.g. multi-layer constructions) are not precluded if they meet the mechanical, environmental and transmission requirements given in this document.

6 Tests

6.1 General

Compliance with the specification requirements shall be verified by carrying out tests selected from clause 6. It is not intended that all tests be carried out in all cases. The tests to be applied and the frequency of testing need to be agreed upon between the customer and the supplier.

As a general requirement for the tests specified in this document, the spirit is to keep "no change in attenuation" criteria at the end of each evaluation, although the parameters specified in this document may be affected by measurement uncertainty arising either from measurement errors or calibration errors. The optical total uncertainty of measurement for this document shall be ± 0,05 dB for single-mode fibres and ± 0,2 dB for multimode fibres. Any measured value within this range shall be considered as "no change in attenuation".

Single-mode cables shall be measured at 1 550 nm and multimode cables at 1 300 nm. Measurement at other wavelengths may be agreed between the customer and the supplier. Measurements of attenuation shall be carried out according to IEC 60793-1-40. Change in attenuation measurements shall be carried out according to IEC 60793-1-46. The maximum change in attenuation refers to the ± deviation from the original value at ambient temperature before the test.

NOTE The optimized wavelength for multimode fibres A1-OM3 and A1-OM4 is 850 nm and for A1-OM5 fibre, the targeted operational wavelength range is in the vicinity of 850 nm to 950 nm.

If cable loops are used within a test to fix the ends of a cable, the loop diameter shall be equal or greater than the specified minimum cable bend diameter to avoid cable damage and excessive mode filtering in multimode fibre.

Unless otherwise specified, all tests shall be carried out at expanded test conditions as specified in IEC 60794-1-2.

6.2 Dimensions

The fibre dimensions and tolerances shall be verified in accordance with IEC 60793-1-20 or IEC 60793-1-21. The diameter of the buffer, simplex optical fibre cable and of the cable, as well as the thickness of the sheath, shall be measured in accordance with the methods of IEC 60811-202 and IEC 60811-203.

6.3 Mechanical requirements

6.3.1 General

The cable shall fulfil the mechanical requirements of tensile, crush, impact and repeated bending according to IEC 60794-2-20. The specific requirements for this cable type are defined in clause 6.3.

6.3.2 Bend

Method:	IEC 60794-1-21, E11A
Mandrel diameter:	20 times cable diameter
Number of turns:	6
Number of cycles:	3
Cable sample:	See Annex A for details
Prior to bending:	At both ends of the sample, all the components of each simplex optical fibre cable shall be fixed together e.g. with clamps or glue. The simplex optical fibre cables shall not be fixed to the cable sheath and to each other. See Annex A.
Bend location:	The section in the middle of the breakout cable length shall be bent.
Requirements for cabled single-mode fibres:	Maximum attenuation change of 0,20 dB during the test. No change in attenuation after the test.
Requirements for cabled multimode fibres:	Maximum attenuation change of 0,4 dB during the test. No change in attenuation after the test.

6.4 Environmental requirements – Temperature cycling

Method:	IEC 60794-1-22, F12
Cable sample:	The cable sample shall be prepared as shown in Annex A.