Optical fibre cables –
Part 3-70: Outdoor cables – Family specification for outdoor optical fibre cables for rapid/multiple deployment
FINAL DRAFT INTERNATIONAL STANDARD (FDIS)

PROJECT NUMBER:
IEC 60794-3-70 ED2

DATE OF CIRCULATION: 2021-02-05
CLOSING DATE FOR VOTING: 2021-03-19

SUPERSEDES DOCUMENTS:
86A/2018/CDV, 86A/2077/RVC

IEC SC 86A : FIBRES AND CABLES
SECRETARIAT: France
SECRETARY: Mr Laurent Gasca

OF INTEREST TO THE FOLLOWING COMMITTEES:
☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting
The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Final Draft International Standard (FDIS) is submitted for parallel voting.
The CENELEC members are invited to vote through the CENELEC online voting system.

NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is a draft distributed for approval. It may not be referred to as an International Standard until published as such.
In addition to their evaluation as being acceptable for industrial, technological, commercial and user purposes, Final Draft International Standards may on occasion have to be considered in the light of their potential to become standards to which reference may be made in national regulations.
Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:
Optical fibre cables - Part 3-70: Outdoor cables - Family specification for outdoor optical fibre cables for rapid/multiple deployment

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

Copyright © 2021 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.
CONTENTS

FOREWORD ........................................................................................................................... 3

1 Scope .............................................................................................................................. 5

2 Normative references ...................................................................................................... 5

3 Terms and definitions ...................................................................................................... 5

4 General requirements ...................................................................................................... 6

5 Specification for outdoor optical fibre cables for rapid/multiple deployment ...................... 6

  5.1 Construction ........................................................................................................... 6

   5.1.1 General ........................................................................................................... 6

   5.1.2 Rapid/multiple deployment optical fibre cables ................................................. 6

  5.2 Optical fibres .......................................................................................................... 7

  5.3 Secondary coating .................................................................................................. 7

  5.4 Outer sheath ........................................................................................................... 7

  5.5 Mechanical and environmental tests ....................................................................... 7

6 Testing of rapid/multiple deployment optical fibre cables ............................................... 7

  6.1 General ................................................................................................................... 7

  6.2 Applicable tests ...................................................................................................... 7

  6.3 Tensile performance ............................................................................................... 9

  6.4 Abrasion ................................................................................................................. 9

  6.5 Crush ...................................................................................................................... 9

  6.6 Impact ..................................................................................................................... 9

  6.7 Ribbon strippability ............................................................................................... 10

  6.8 Repeated bending .................................................................................................. 10

  6.9 Torsion .................................................................................................................. 10

  6.10 Flexing .................................................................................................................. 10

  6.11 Kink ...................................................................................................................... 11

  6.12 Bend ..................................................................................................................... 11

  6.13 Bending under tension ......................................................................................... 11

  6.14 Multiple cable coiling and uncoiling performance ................................................... 11

  6.15 Temperature cycling ............................................................................................ 12

  6.16 Water penetration ................................................................................................ 12

  6.17 Ageing .................................................................................................................. 12

  6.18 UV resistance ...................................................................................................... 12

  6.19 External freezing .................................................................................................. 13

  6.20 Fibre ribbon separability ...................................................................................... 13

  6.21 Tube kinking ......................................................................................................... 13

Annex A (normative) Blank detail specification and minimum requirements ................................ 14

Bibliography .......................................................................................................................... 15

Table 1 – Tests applicable for mechanical and environmental performance of a rapid/multiple deployment optical fibre cable ........................................................................... 8

Table A.1 – Cable description ............................................................................................... 14
INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRE CABLES –

Part 3-70: Outdoor cables – Family specification for outdoor optical fibre cables for rapid/multiple deployment

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.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60794-3-70 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 2016. It constitutes a technical revision.

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

a) incorporation of the new classification system for optical fibre categories, sub-categories in IEC 60793-2-10;
b) incorporation of the new classification system for optical fibre categories, sub-categories and models in IEC 60793-2-50;
c) updating of cabled fibre performance categories in alignment with ISO/IEC 11801-1;
d) updating of bibliographical references.
The text of this International Standard is based on the following documents:

<table>
<thead>
<tr>
<th>FDIS</th>
<th>Report on voting</th>
</tr>
</thead>
<tbody>
<tr>
<td>86A/XX/FDIS</td>
<td>86A/XX/RVD</td>
</tr>
</tbody>
</table>

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.

This International Standard is to be used in conjunction with IEC 60794-1-1, IEC 60794-1-2 and IEC 60794-3.

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.
1 Scope

This part of IEC 60794 is a family specification that covers outdoor optical fibre cables intended for rugged terrestrial rapid/multiple deployment. These cables, with enhanced mechanical, environmental and ingress performance can be used wherever a rapid or multiple deployment is relevant (e.g. mobile broadcast units, emergency rescue services, tactical ground-forces, outdoor motion-robotics, mining machinery, temporary repair cables for damaged links, etc.).

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 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 60794-1-21:2015/AMD1:2020


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

ISO 4892-2, Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps