IEC 60794-1-210

Edition 1.0 2026-06

INTERNATIONAL STANDARD

Optical fibre cables -
Part 1-210: Generic specification - Basic optical cable test procedures - Environmental test methods - Underwater cable resistance to hydrostatic pressure, Method F10

ICS 33.180.10

ISBN 978-2-8327-1289-4

IEC 60794-1-210:2026-06(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2026 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD 2
INTRODUCTION 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 Object 5
4.1 General 5
4.2 F10A: radial hydrostatic pressure 5
4.3 F10B: longitudinal hydrostatic pressure 5
4.3.1 General 5
4.3.2 F10B.1 6
4.3.3 F10B.2 6
4.4 F10C: longitudinal hydrostatic pressure for cables through vessel 6
5 Sample 6
6 Apparatus 6
6.1 General 6
6.2 Pressure vessel 6
6.3 Water 6
6.4 Optical attenuation measuring apparatus 7
6.5 Detecting devices 7
7 Procedure 7
7.1 General 7
7.2 Procedure for F10A 7
7.3 Procedure for F10B 8
7.3.1 Procedure for F10B.1 8
7.3.2 Procedure for F10B.2 9
7.4 Procedure for F10C 10
8 Requirements 11
9 Details to be specified 11
10 Details to be reported 12
Bibliography 13

Figure 1 – Test set-up of F10A 8
Figure 2 – Test set-up of F10B.1 9
Figure 3 – Test set-up of F10B.2 10
Figure 4 – Test set-up of F10C 11

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

Optical fibre cables - Part 1-210: Generic specification - Basic optical cable test procedures - Environmental test methods - Underwater cable resistance to hydrostatic pressure, Method F10

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60794-1-210 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This first edition cancels and replaces Method F10 of the second edition of IEC 60794-1-22 published in 2017. This edition constitutes a technical revision.

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

a) modification of original method F10 which becomes F10A with modification of the detailed content of apparatus, procedure and details to be specified and addition of set-up;
b) addition of two test methods F10B and F10C to cover the different test object and procedure.

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

Draft	Report on voting
86A/2688/FDIS	86A/2698/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/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, or
– revised.

INTRODUCTION

This document cancels and replaces method F10 of IEC 60794-1-22:2017, which will be withdrawn. It includes an editorial revision, based on the new structure and numbering system for optical fibre cable test methods. Additionally, technical changes were implemented. The environmental tests contained in IEC 60794-1-22:2017 will be individually numbered in the IEC 60794-1-2xx series. Each test method is now considered to be an individual document rather than part of a multi-test method compendium. Full cross-reference details are given in IEC60794-1-2.

The numbering of this test method continues the F-series numbering sequence of IEC 60794-1-22:2017.

1 Scope

This part of IEC 60794-1 describes test procedures used to establish uniform requirements for optical fibre cables for the environmental property - underwater cable resistance to hydrostatic pressure.

This document applies to optical fibre cables for use with telecommunication equipment and devices employing similar techniques, and to cables having a combination of both optical fibres and electrical conductors.

See IEC 60794-1-2 for a reference guide to test methods of all types and for general requirements.

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: General*

IEC 60793-1-46, *Optical fibres - Part 1-46: Measurement methods and test procedures - Monitoring of changes in attenuation*

3 Terms and definitions

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

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

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

4 Object

4.1 General

The purpose of this test is to determine the ability of an underwater optical fibre cable to withstand hydrostatic pressure either radially or longitudinally, or both.

4.2 F10A: radial hydrostatic pressure

The method evaluates an underwater cable’s ability and structural integrity to resist radial hydrostatic pressure.

NOTE This method is similar to ITU-T G.976:2014, 8.2.1.4.

4.3 F10B: longitudinal hydrostatic pressure

4.3.1 General

The method evaluates underwater cable resistance to longitudinal hydrostatic pressure to quantify the water ingress limitation along the underwater cable in the event of a cable break.