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Standards

Irish Standard
I.S. EN 60794-4-10:2014

Optical fibre cables - Part 4-10: Family specification - Optical ground wires (OPGW) along electrical power lines

I.S. EN 60794-4-10:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

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This document is based on:

EN 60794-4-10:2014

Published:

2014-12-19

*This document was published
under the authority of the NSAI
and comes into effect on:*

2015-01-21

ICS number:

33.180.10

NOTE: If blank see CEN/CENELEC cover page

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EUROPEAN STANDARD

EN 60794-4-10

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2014

ICS 33.180.10

Supersedes EN 60794-4-10:2007

English Version

**Optical fibre cables - Part 4-10: Family specification - Optical
ground wires (OPGW) along electrical power lines
(IEC 60794-4-10:2014)**

Câbles à fibres optiques - Partie 4-10: Spécification de
famille - Câbles de garde à fibres optiques (OPGW - Optical
Ground Wires) le long des lignes électriques de puissance
(CEI 60794-4-10:2014)

Lichtwellenleiterkabel - Teil 4-10: Familienspezifikation -
OPWG (Optical Ground Wires) Lichtwellenleiter-Erdseile
auf Starkstromleitungen
(IEC 60794-4-10:2014)

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 86A/1594/CDV, future edition 2 of IEC 60794-4-10, 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 60794-4-10:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2015-09-03
national level by publication of an identical national
standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2017-12-03
the document have to be withdrawn

This document supersedes EN 60794-4-10:2007.

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60794-1-20	NOTE	Harmonized as EN 60794-1-20.
IEC 60794-1-23	NOTE	Harmonized as EN 60794-1-23.
ISO 9001	NOTE	Harmonized as EN ISO 9001.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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 60104	-	Aluminium-magnesium-silicon alloy wire for overhead line conductors	-	-
IEC 60304	-	Standard colours for insulation for low-frequency cables and wires	HD 402 S2	-
IEC 60793	series	Optical fibres	EN 60793	series
IEC 60793-1-40	-	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	-
IEC 60793-1-44	-	Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength	EN 60793-1-44	-
IEC 60793-1-48	-	Optical fibres - Part 1-48: Measurement methods and test procedures - Polarization mode dispersion	EN 60793-1-48	-
IEC 60793-2-50	-	Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres	EN 60793-2-50	-
IEC 60794-1-1	-	Optical fibre cables - Part 1-1: Generic specification - General	EN 60794-1-1	-
IEC 60794-1-21	- ¹⁾	Optical fibre cables - Part 1-21: Generic specification - Basic optical cable test procedures - Mechanical tests methods	FprEN 60794-1-21	- ¹⁾
IEC 60794-1-22	2012	Optical fibre cables - Part 1-22: Generic specification - Basic optical cable test procedures - Environmental test methods	EN 60794-1-22	2012

¹⁾ At draft stage.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60794-1-24	2014	Optical fibre cables - Part 1-24: Generic specification - Basic optical cable test procedures - Electrical test methods	EN 60794-1-24	2014
IEC 60794-4	2003	Optical fibre cables - Part 4: Sectional specification - Aerial optical cables along electrical power lines	EN 60794-4	2003
IEC 60888	-	Zinc-coated steel wires for stranded conductors	-	-
IEC 60889	-	Hard-drawn aluminium wire for overhead line conductors	EN 60889	-
IEC 61089	1991	Round wire concentric lay overhead electrical stranded conductors	-	-
IEC 61232	-	Aluminium-clad steel wires for electrical purposes	EN 61232	-
IEC 61394	-	Overhead lines - Requirements for greases for aluminium, aluminium alloy and steel bare conductors	EN 61394	-
IEC 61395	-	Overhead electrical conductors - Creep test procedures for stranded conductors	EN 61395	-



IEC 60794-4-10

Edition 2.0 2014-10

INTERNATIONAL STANDARD



**Optical fibre cables –
Part 4-10: Family specification – Optical ground wires (OPGW) along electrical
power lines**



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IEC 60794-4-10

Edition 2.0 2014-10

INTERNATIONAL STANDARD



**Optical fibre cables –
Part 4-10: Family specification – Optical ground wires (OPGW) along electrical
power lines**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

R

ICS 33.180.10

ISBN 978-2-8322-1909-6

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRE CABLES –

Part 4-10: Family specification – Optical ground wires (OPGW) along electrical power lines

FOREWORD

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International Standard IEC 60794-4-10 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 2006 and constitutes a technical revision.

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

- a) galloping test (9.7) has been added to the type tests list;
- b) update of definitions clause; maximum installation tension (MIT) defined and used in the sheave test description;
- c) definition of characterization of OPGW's mechanical behaviour in order to provide information useful for electrical power transmission lines designers;

- d) improved definition of lightning test parameters and conditions to improve reproducibility among different laboratories.

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

CDV	Report on voting
86A/1594/CDV	86A/1627/RVC

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 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 publication will remain unchanged until the stability 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.

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OPTICAL FIBRE CABLES –

Part 4-10: Family specification – Optical ground wires (OPGW) along electrical power lines

1 Scope

This part of IEC 60794-4, which is a family specification, covers cable construction, test methods and optical, mechanical, environmental and electrical performance requirements for OPGW (optical ground wire) which is used for the protection of electrical power lines against atmospheric discharges or short-circuits and, at the same time, as a high bandwidth transport media for communications-and-control optical signals. The corresponding environmental declaration may be built according to IEC TR 62839-1.

The OPGW is a substitute for a conventional ground-/shield-wire containing optical fibres for control and/or telecommunication purposes. Usually the fibres are embedded loosely in protective buffer tubes. To fulfil mechanical and electrical requirements; an armouring of one or more layers with aluminium, aluminium alloy, and aluminium clad steel, galvanized steel or a mixture of them is helically stranded. If the construction contains an aluminium tube or an aluminium slotted core, this cross section is considered as a conductive part.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60104, *Aluminium-magnesium-silicon alloy wire for overhead line conductors*

IEC 60304, *Standard colours for insulation for low-frequency cables and wires*

IEC 60793 (all parts), *Optical fibres*

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

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

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