SVENSK STANDARD

SS-EN IEC 61280-4-2, utg 3:2025

2025-03-05

REDLINE VERSION

Delsystem för fiberoptisk kommunikation – Grundläggande provningsmetoder – Del 4-2: Installationer med optokablar – Mätning av dämpning och reflexionsdämpning för installerade singelmodfibrer

Fibre-optic communication subsystem test procedures – Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurement

En så kallad ”Redline version” (RLV) innehåller både standarden som fastställts som SEK-publikation och en ändringsmarkerad IEC-standard. Alla tillägg och borttagningar sedan den tidigare utgåvan av IEC-standarden är markerade med färg. Med en RLV sparar du mycket tid när du ska identifiera och bedöma aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut RLV i de fall den finns tillgänglig från IEC.

IEC 61280-4-2

Edition 3.0 2024-05
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

Fibre- optic communication subsystem test procedures – Part 4-2: Installed ~~cable~~ cabling plant – Single-mode attenuation and optical return loss measurements

INTERNATIONAL
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FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed ~~cable~~ cabling plant – Single-mode attenuation and optical return loss measurements

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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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.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61280-4-2:2014. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61280-4-2 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2014. This edition constitutes a technical revision.

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

a) addition of the equipment cord method;

b) addition of test limit adjustment related to test cord grades;

c) refinements on measurement uncertainties.

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

Draft	Report on voting
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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 61280 series, published under the general title *Fibre optic communication subsystem test procedures*, can be found on the IEC website.

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INTRODUCTION

~~This second edition of IEC 61280-4-2 for testing single-mode cable plant follows on from the second edition of IEC 61280-4-1, dealing with multimode cable plants.~~

This document is part of a series of IEC standards for measurements of installed fibre optic cabling plants. This document is applicable for the measurement of installed single-mode fibres.

Cabling design standards such as ISO/IEC 11801-1 ~~for commercial premises, ISO/IEC 24702 for industrial premises, ISO/IEC 24764 for data centres and ISO/IEC 15018 for residential cabling contain specifications~~ provide general requirements for this type of cabling. These standards support cabling lengths of up to 2 km for commercial premises and data centres and up to 10 km for industrial premises. ISO/IEC 14763-3, which supports ~~these design standards, makes reference to the test methods of this standard~~ ISO/IEC 11801-1, normatively references IEC 61280-4-2.

Various recommendations from ITU-T have requirements for longer distance applications, including short haul (40 km), long haul (80 km), and ultra-long haul (160 km). The testing of ~~cable~~ cabling plant for these applications is covered in ITU-T Recommendation G.650.3, which refers to the test methods of this document.

FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed ~~cable~~ cabling plant – Single-mode attenuation and optical return loss measurements

1 Scope

This part of IEC 61280 is applicable to the measurements of attenuation and optical return loss of an installed optical fibre ~~cable~~ cabling plant using single-mode fibre. This ~~cable~~ cabling plant can include single-mode optical fibres, connectors, adapters, splices, and other passive devices. The cabling ~~may~~ can be installed in a variety of environments including residential, commercial, industrial and data centre premises, as well as outside plant environments.

This document ~~may be applied~~ is applicable to all single-mode fibre types including those designated by IEC 60793-2-50 as Class B fibres.

The principles of this document ~~may~~ can be applied to ~~cable~~ cabling plants containing branching devices (splitters) and at specific wavelength ranges in situations where passive wavelength selective components are deployed, such as WDM, CWDM and DWDM devices.

This document is not intended to apply to ~~cable~~ cabling plants that include active devices such as fibre amplifiers or dynamic channel equalizers.

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

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCSs)*

~~IEC 60874-14-2, *Connectors for optical fibres and cables – Part 14-2: Detail specification for fibre optic connector type SC-PC tuned terminated to single-mode fibre type B1*~~

~~IEC 61300-3-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*~~

IEC 61300-3-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-35: Examinations and measurements – ~~Fibre optic cylindrical connector endface~~ Visual inspection of fibre optic connectors and fibre-stub transceivers*

IEC 61315, *Calibration of fibre-optic power meters*

IEC 61746-1:2009, *Calibration of optical time-domain reflectometers (OTDR) – Part 1: OTDR for single-mode fibres*

IEC TR 62627-01, *Fibre optic interconnecting devices and passive components – Part 01: Fibre optic connector cleaning methods*

SVENSK STANDARD

SS-EN IEC 61280-4-2, utg 3:2025

Fastställd	Sida	Ansvarig kommitté
2025-03-05	1 (95)	SEK TK 86

Delsystem för fiberoptisk kommunikation – Grundläggande provningsmetoder – Del 4-2: Installationer med optokablar – Mätning av dämpning och reflexionsdämpning för installerade singelmodfibrer

Fibre-optic communication subsystem test procedures – Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurement

Som svensk standard gäller europastandarden EN IEC 61280-4-2:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61280-4-2:2024.

Nationellt förord

Europastandarden EN IEC 61280-4-2:2024

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61280-4-2, Third edition, 2024 - Fibre-optic communication subsystem test procedures – Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurement**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61280-4-2, utg 2:2015 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2027-06-10.

ICS 33.180.01

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61280-4-2

June 2024

ICS 33.180.01

Supersedes EN 61280-4-2:2014

English Version

Fibre-optic communication subsystem test procedures - Part 4-2: Installed cabling plant - Single-mode attenuation and optical return loss measurements (IEC 61280-4-2:2024)

Procédures d'essai des sous-systèmes de télécommunication fibroniques - Partie 4-2: Installations câblées - Mesures de l'affaiblissement de réflexion optique et de l'affaiblissement des fibres unimodales (IEC 61280-4-2:2024)

Prüfverfahren für Lichtwellenleiter-Kommunikationsuntersysteme - Teil 4-2: Installierte Kabelanlagen - Einmoden-Dämpfungs- und optische Rückflussdämpfungsmessung (IEC 61280-4-2:2024)

This European Standard was approved by CENELEC on 2024-06-10. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 61280-4-2:2024 E

European foreword

The text of document 86C/1912/FDIS, future edition 3 of IEC 61280-4-2, prepared by SC 86C "Fibre optic systems and active devices" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61280-4-2:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-03-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-06-10

This document supersedes EN 61280-4-2:2014 and all of its amendments and corrigenda (if any).

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

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Endorsement notice

The text of the International Standard IEC 61280-4-2:2024 was approved by CENELEC as a European Standard without any modification.

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

IEC 60793-1-40	NOTE	Approved as EN IEC 60793-1-40
IEC 60793-2	NOTE	Approved as EN IEC 60793-2
IEC 60793-2-50	NOTE	Approved as EN IEC 60793-2-50
IEC 61280-1-3	NOTE	Approved as EN IEC 61280-1-3
IEC 61280-4-3:2022	NOTE	Approved as EN IEC 61280-4-3:2022 (not modified)
IEC 61280-4-5	NOTE	Approved as EN IEC 61280-4-5
IEC 61300-3-4	NOTE	Approved as EN IEC 61300-3-4
IEC 61300-3-6	NOTE	Approved as EN 61300-3-6
IEC 61745	NOTE	Approved as EN 61745
IEC 61753-1	NOTE	Approved as EN IEC 61753-1
IEC 61754-19	NOTE	Approved as EN 61754-19
IEC 61755-1	NOTE	Approved as EN IEC 61755-1
IEC 61755-2-1	NOTE	Approved as EN IEC 61755-2-1
IEC 61755-2-2	NOTE	Approved as EN IEC 61755-2-2
IEC 61755-2-4	NOTE	Approved as EN 61755-2-4
IEC 61755-2-5	NOTE	Approved as EN 61755-2-5

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60825-2	-	Safety of laser products - Part 2: Safety of optical fibre communication systems (OFCSs)	-	-
IEC 61300-3-35	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-35: Examinations and measurements - Visual inspection of fibre optic connectors and fibre-stub transceivers	EN IEC 61300-3-35	-
IEC 61315	-	Calibration of fibre-optic power meters	EN IEC 61315	-
IEC 61746-1	2009	Calibration of optical time-domain reflectometers (OTDR) - Part 1: OTDR for single mode fibres	EN 61746-1	2011
-	-		+ AC	2014
IEC/TR 62627-01	-	Fibre optic interconnecting devices and passive components - Part 01: Fibre optic connector cleaning methods	-	-

IEC 61280-4-2

Edition 3.0 2024-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurements

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FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 4-2: Installed cabling plant – Single-mode attenuation and optical return loss measurements

1 Scope

This part of IEC 61280 is applicable to the measurements of attenuation and optical return loss of an installed optical fibre cabling plant using single-mode fibre. This cabling plant can include single-mode optical fibres, connectors, adapters, splices, and other passive devices. The cabling can be installed in a variety of environments including residential, commercial, industrial and data centre premises, as well as outside plant environments.

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