

Fibre optic interconnecting devices and passive components - Performance standard - Part 111-9: Sealed closures for category S - Subterranean

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61753-111-9:2010 sisaldab Euroopa standardi EN 61753-111-9:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.03.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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This standard is ratified with the order of Estonian Centre for Standardisation dated 31.03.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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**Fibre optic interconnecting devices and passive components
performance standard -
Part 111-9: Sealed closures for category S -
Subterranean
(IEC 61753-111-9:2009)**

Dispositifs d'interconnexion et composants
passifs à fibres optiques norme
de qualité de fonctionnement -
Partie 111-9: Boîtiers scellés
pour catégorie S - Souterrain
(CEI 61753-111-9:2009)

Lichtwellenleiter - Verbindungselemente
und passive Bauteile -
Betriebsverhalten -
Teil 111-9: Druckdichte Muffen
für die Kategorie S -
unterirdische Verlegung
(IEC 61753-111-9:2009)

This European Standard was approved by CENELEC on 2010-02-01. 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 Central Secretariat or to any CENELEC member.

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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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
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 86B/2906/FDIS, future edition 1 of IEC 61753-111-9, prepared by SC 86B, Fibre optic interconnecting devices and passive components, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61753-111-9 on 2010-02-01.

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

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2010-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61753-111-9:2009 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 standards indicated:

IEC 60068-1	NOTE	Harmonized as EN 60068-1.
IEC 60068-2	NOTE	Harmonized in EN 60068-2 series (not modified).
IEC 60721-3-1	NOTE	Harmonized as EN 60721-3-1.
IEC 60793-2	NOTE	Harmonized as EN 60793-2.
IEC 60794-1-2	NOTE	Harmonized as EN 60794-1-2.
IEC 60794-2	NOTE	Harmonized as EN 60794-2.
IEC 60794-3	NOTE	Harmonized as EN 60794-3.
IEC 61300	NOTE	Harmonized in EN 61300 series (not modified).
IEC 62005	NOTE	Harmonized in EN 62005 series (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-10	-	Environmental testing - Part 2-10: Tests - Test J and guidance: Mould growth	EN 60068-2-10	-
IEC 60721-3-2	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation	EN 60721-3-2	-
IEC 60793-2-50	2008	Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres	EN 60793-2-50	2008
IEC 61300-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 1: General and guidance	EN 61300-1	-
IEC 61300-2-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-1: Tests - Vibration (sinusoidal)	EN 61300-2-1	-
IEC 61300-2-4	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-4: Tests - Fibre/cable retention	EN 61300-2-4	-
IEC 61300-2-5	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-5: Tests - Torsion	EN 61300-2-5	-
IEC 61300-2-9	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-9: Tests - Shock	EN 61300-2-9	-
IEC 61300-2-10	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-10: Tests - Crush resistance	EN 61300-2-10	-
IEC 61300-2-11	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-11: Tests - Axial compression	EN 61300-2-11	-
IEC 61300-2-12	2009	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-12: Tests - Impact	EN 61300-2-12	2009

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61300-2-22	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-22: Tests - Change of temperature	EN 61300-2-22	-
IEC 61300-2-23	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-23: Tests - Sealing for non-pressurized closures of fibre optic devices	EN 61300-2-23	-
IEC 61300-2-26	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-26: Tests - Salt mist	EN 61300-2-26	-
IEC 61300-2-33	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-33: Tests - Assembly and disassembly of fibre optic closures	EN 61300-2-33	-
IEC 61300-2-34	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-34: Tests - Resistance to solvents and contaminating fluids of interconnecting components and closures	EN 61300-2-34	-
IEC 61300-2-37	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-37: Tests - Cable bending for fibre optic closures	EN 61300-2-37	-
IEC 61300-2-38	2006	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-38: Tests - Sealing for pressurized fibre optic closures	EN 61300-2-38	2006
IEC 61300-3-1	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-1: Examinations and measurements - Visual examination	EN 61300-3-1	-
IEC 61300-3-3	2009	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-3: Examinations and measurements - Active monitoring of changes in attenuation and return loss	EN 61300-3-3	2009
IEC 61300-3-28	-	Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-28: Examinations and measurements - Transient loss	EN 61300-3-28	-
IEC 61753-1	2007	Fibre optic interconnecting devices and passive components performance standard - Part 1: General and guidance for performance standards	EN 61753-1	2007

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61753-111-7	-	Fibre optic interconnecting devices and passive components - Performance standard - Part 111-7: Sealed closures for category A - Aerial	EN 61753-111-7	-
IEC 62134-1	-	Fibre optic interconnecting devices and passive components - Fibre optic closures - Part 1: Generic specification	EN 62134-1	-
ISO 1998	Series	Petroleum industry - Terminology	-	-
ISO 4892-3	2006	Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps	EN ISO 4892-3	2006

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INTRODUCTION

Performance standards for closures define the requirements for standard optical performance under a set of specified conditions. This part of IEC 61753 contains a series or a set of tests and measurements with clearly stated conditions, severities and pass/fail criteria. The set of tests are intended to be a basis to prove the product's ability to satisfy the requirements of a specific application, market sector or user group.

A product that has been shown to meet all the requirements of this performance standard may be declared as complying with this performance standard. Products having the same classification from one manufacturer that satisfy this performance standard will operate within the boundaries set by the performance standard. There is no guarantee that products from different manufacturers, having the same classification and which conform to the same performance standard, will provide an equivalent level of performance when they are used together.

Conformance with IEC environmental policy according to IEC Guide 109 and concerning the need to reduce the impact on the natural environment of fibre optic closures during all phases of their life – from acquiring materials to manufacturing, distribution, use, and end-of-life treatment (i.e. re-use, recycling (recovery and disposal)) are not part of this standard, but will be covered in the generic specification.

Conformance to a performance standard demonstrates that a product has passed a design verification test. It is not a guarantee of lifetime assured performance or reliability. Reliability testing must be the subject of a separate test schedule, where the tests and severities selected are such that they are truly representative of the requirements of this reliability test programme. Consistency of manufacture should be maintained using a recognised Quality Assurance programme whilst the reliability of product should be evaluated using the procedures recommended in IEC 62005 series.

Tests and measurements are selected from the IEC 61300 series.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS PERFORMANCE STANDARD –

Part 111-9: Sealed closures for category S – Subterranean

1 Scope

This part of IEC 61753 contains the minimum test and measurement requirements and severities which a sealed fibre optic closure must satisfy in order to be categorised as meeting the IEC standard for category S – subterranean, as defined in Annex A of IEC 61753-1. Free breathing closures are not covered in this standard.

2 Normative references

The following referenced documents are indispensable for the application 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 60068-2-10, *Environmental testing – Part 2-10: Tests – Test J and guidance: Mould growth*

IEC 60721-3-2, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 2: Transportation*

IEC 60793-2-50:2008, *Optical fibres – Part 2-50 : Product specifications – Sectional specification for class B single-mode fibres*

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-2-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-1: Tests – Vibration (sinusoidal)*

IEC 61300-2-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre/cable retention*

IEC 61300-2-5, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-5: Tests – Torsion (only available in English)*

IEC 61300-2-9, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-9: Tests – Shock*

IEC 61300-2-10, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-10: Tests – Crush resistance¹*

¹ This publication was withdrawn in 2002. A project is currently under consideration.

IEC 61300-2-11, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-11: Tests – Axial compression*²

IEC 61300-2-12:2009, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-12: Tests – Impact*

IEC 61300-2-22, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*

IEC 61300-2-23, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-23: Tests – Sealing for non-pressurized closures of fibre optic devices*

IEC 61300-2-26, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-26: Tests – Salt mist*

IEC 61300-2-33, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-33: Tests – Assembly and disassembly of fibre optic closures*

IEC 61300-2-34, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-34: Tests – Resistance to solvents and contaminating fluids of interconnecting components and closures* (only available in English)

IEC 61300-2-37, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-37: Tests – Cable bending for fibre optic closures*

IEC 61300-2-38:2006, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-38: Tests – Sealing for pressurized fibre optic closures*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

IEC 61300-3-3:2009, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-3: Examinations and measurements – Active monitoring of changes in attenuation and return loss* (only available in English)

IEC 61300-3-28, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-28: Examinations and measurements – Transient loss*

IEC 61753-1:2007, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards*

IEC 61753-111-7, *Fibre optic interconnecting devices and passive components – Performance standard – Part 111-7: Sealed closures for category A – Aerial*

IEC 62134-1, *Fibre optic interconnecting devices and passive components – Fibre optic closures – Part 1: Generic specification*

ISO 1998 (all parts), *Petroleum industry – Terminology*

² This publication was withdrawn in 2002. A project is currently under consideration.

ISO 4892-3:2006, *Plastics – Methods of exposure to laboratory light sources – Part 3:Fluorescent UV lamps*

3 Terms, definitions and abbreviations

For the purposes of this document, the terms, definitions and abbreviations given in IEC 61753-111-7 apply.

4 General requirements

4.1 Storage, transportation and packaging

The classes of environmental conditions and their severities to which closures may be exposed during transportation are defined in IEC 60721-3-2. Normal transportation time is considered to be 30 days or less.

The product, in its original packaging, shall be suitable for normal public or commercial transportation and storage in weather protected non-temperature controlled storage environments.

4.2 Marking and identification

Marking of the closure and its package shall be according to IEC 62134-1.

Product marking and identification shall survive the storage and transportation.

Each test sample should contain the following information at a minimum:

- manufacturer's identification mark or logo;
- product designation, model or type,
- one of the following: lot number, batch number, date (at least month and year) of production or serial number;
- expiry date (at least year) if the product contains components with a limited shelf life.

4.3 Materials

For all applied materials, a Material Safety Data Sheet shall be made available upon request.

The materials of the closure and fibre management system shall be compatible with the other materials or solvents that can come into contact with it, for example cable filling compounds and degreasing agents.

All materials that can come in contact with personnel shall meet appropriate health and safety regulations.

The effect of UV light on all polymeric materials that are directly exposed to the environment, shall not adversely affect the product's performance. UV test shall be according to ISO 4892-3 Mode 1 lamp type 2. The effect of UV light shall be determined by measuring a suitable property (e.g. tensile strength) both before and after exposure of the material slabs.

Polymeric materials shall not support mould growth causing mechanical degradation of the materials. Mould growth shall be tested according to IEC 60068-2-10. The effect of mould growth shall be determined by measuring a suitable property (e.g. tensile strength) both before and after exposure of the material slabs.