SLOVENSKI STANDARD
oSIST prEN IEC 61753-053-02:2022

01-februar-2022

Optični spojni elementi in pasivne komponente - Tehnični standard - 053-02. del: Električno krmiljeni spremenljivi optični slabilnik brez konektorjev za enorodovna vlakna za kategorijo C - Nadzorovana okolja

Fibre optic interconnecting devices and passive components - Performance standard - Part 053-02: Non-connectorized single-mode fibre, electrically controlled, variable optical attenuator for category C - Controlled environments

Dispositifs d'interconnexion et composants passifs à fibres optiques - Norme de performance - Partie 053-02: Affaiblisseur optique variable commandé électriquement, à fibres unimodales, non connectorisé, pour la catégorie C - Environnements contrôlés

Ta slovenski standard je istoveten z: **prEN IEC 61753-053-02:2021**

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33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices

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COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 61753-053-02 ED1**	
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IEC SC 86B : FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS

SECRETARIAT: Japan	SECRETARY: Mr Shigeru Tomita
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING ☐ NOT 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 Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

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:

Fibre optic interconnecting devices and passive components - Performance standard - Part 053-02: Non-connectorized single-mode fibre, electrically controlled, variable optical attenuator for category C - Controlled environments

PROPOSED STABILITY DATE: 2032

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 61753-053-02 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This first edition cancels and replaces the first edition of IEC 61753-053-2 published in 2014. This edition constitutes a technical revision.

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

a) Harmonization of terms and definitions with those in IEC 60869-1 and IEC TS 62627-09;

b) Harmonization of test items and their conditions with IEC 61753-1:2018, COR1:2019 and AMD1:2020.

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

FDIS	Report on voting

86B/xxxx/FDIS	86B/xxxx/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61753 series, published under the general title *Fibre optic interconnecting devices and passive components – performance standard*, 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.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – PERFORMANCE STANDARD –

Part 053-02: Non-connectorized, single-mode fibre, electrically controlled, variable optical attenuator for category C – Controlled environments

1 Scope

This part of IEC 61753 contains the minimum initial test and measurement requirements and severities which non-connectorized single-mode fibre electrically controlled variable optical attenuator needs to satisfy in order to be categorised as meeting the requirements of category C-Controlled environments, as defined in Annex A of IEC 61753-1.

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

IEC 60794-2-50, *Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies*

IEC 60869-1, *Fibre optic interconnecting devices and passive components – Fibre optic passive power control devices – Part 1: Generic specification*

IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*

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 or cable retention*

IEC 61300-2-5, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-5: Tests – Torsion*

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

IEC 61300-2-14, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-14: Tests –High optical power*

IEC 61300-2-17, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-17: Tests – Cold*

IEC 61300-2-18, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat*

IEC 61300-2-19, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)*

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

IEC 61300-2-42, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-42: Tests – Static side load for connectors*

IEC 61300-2-44, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-44: Tests – Flexing of the strain relief of fibre optic devices*

IEC 61300-3-2, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-2: Examination and measurements – Polarization dependent loss in a single-mode fibre optic device*

IEC 61300-3-7, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-7: Examinations and measurements – Wavelength dependence of attenuation and return loss of single mode components*

IEC 61300-3-14, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-14: Examinations and measurements – Error and repeatability of the attenuation settings of a variable attenuator*

IEC 61300-3-21, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-21: Examinations and measurements – Switching time*

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, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standard*

IEC TS 62627-09, *Fibre optic interconnecting devices and passive components - Terminology of passive optical devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60869-1 and IEC TS 62727-09, as well as the following, apply.

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

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

3.1
operational vibration
vibration test in which relevant parameters should be monitored during the test

3.2
operational shock
shock test in which relevant parameters should be monitored during the test

3.3
response time
elapsed time from the time the control energy (voltage or current) is applied (changed) to the time attenuation reaches between 90 % and 110 % dB of steady-state value

4 Test conditions

Unless otherwise specified, all test methods are in accordance with the IEC 61300 series. The samples shall be terminated onto single-mode fibres as per IEC 60793-2-50, category B-652.B, B-652.D or B-657 in either coated fibres (primary and secondary) or reinforced cable format as per IEC 60794-2-50. Non-connectorized single-mode fibre electrically controlled variable optical attenuators used for each test are intended to be previously unstressed new samples but may also be selected from previously used samples if desired. All measurements shall be carried out under standard atmospheric conditions, unless otherwise stated. If the device is provided with an active temperature control, this shall be set at the set-point specified by the manufacturer.

The requirements apply to every combination of input and output port.

Table 1 is intended to provide guidance on the wavelength ranges of the various spectral bands. It is not intended for specification. Values of operating wavelength used in performance verification shall be specified between the customer and supplier, or shall be as defined in the manufacturer's specification.

Table 1 – Single-mode spectral bands

Band	Descriptor	Range nm
O-band	Original	1 260 to 1 360
E-band	Extended	1 360 to 1 460
S-band	Short wavelength	1 460 to 1 530
C-band	Conventional	1 530 to 1 565
L-band	Long wavelength	1 565 to 1 625
U-band	Ultra long wavelength	1 625 to 1 675
NOTE Source: ITU-T G. Supplement 39 [1][1].		

5 Test report

Fully documented test reports and supporting evidence shall be prepared and be available for inspection as evidence that the tests have been carried out and complied with.

6 Reference components

The test for these components does not require the use of reference components.

[1] Numbers in square bracket show in Bibliography.

7 Performance requirements

7.1 Dimensions

Dimensions shall comply with those given in appropriate manufacturers' drawings.

7.2 Sample size

Sample sizes for the tests are defined in Annex A.

7.3 Test details and requirements

The test details and requirements are shown in Table 2. The requirements are given only for a pigtailed electrically controlled variable optical attenuator. A minimum length of fibre or cable of 2,0 m per port shall be included in all climatic and environmental test chambers.

Fibre for input and output ports may be connected by fusion splice as temporary joints to achieve more than or equal to 2 m during the test.