SLOVENSKI STANDARD

SIST EN 61755-2-1:2007

01-december-2007

Optiļ ni vmesniki konektorja optiļ nih vlaken ï 2-1. del: Standard optiļ nega vmesnika enorodnih vlaken, ki se fiziļ no stikajo pod pravim kotom (IEC 61755-2-1:2006)

Fibre optic connector optical interfaces -- Part 2-1: Optical interface standard single mode non-angled physically contacting fibres (IEC 61755-2-1:2006)

Optische Schnittstellen von Lichtwellenleiter-Steckverbindern -- Teil 2-1: Optische Schnittstelle von nicht abgeschrägten Einmodenfasern mit physikalischem Kontakt (IEC 61755-2-1:2006)

Interfaces optiques de connecteurs pour fibres optiques -- Partie 2-1: Interfaces optiques pour fibres unimodales en contact physique sans angles (IEC 61755-2-1:2006)

Ta slovenski standard je istoveten z: **EN 61755-2-1:2006**

ICS:

33.180.20	Povezovalne naprave za optiļ na vlakna	Fibre optic interconnecting devices

SIST EN 61755-2-1:2007 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61755-2-1

August 2006

ICS 33.180.20

English version

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Part 2-1: Optical interface standard single mode non-angled physically contacting fibres
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This European Standard was approved by CENELEC on 2006-08-01. 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.

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CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 86B/2305/FDIS, future edition 1 of IEC 61755-2-1, 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 61755-2-1 on 2006-08-01.

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)	2007-05-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-08-01

Endorsement notice

The text of the International Standard IEC 61755-2-1:2006 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60793-2-50 NOTE Harmonized as EN 60793-2-50:2004 (not modified).

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Interfaces optiques de connecteurs pour fibres optiques –

Partie 2-1: Interfaces optiques pour fibres unimodales en contact physique sans angles

Fibre optic connector optical interfaces –

Part 2-1: Optical interface standard single mode non-angled physically contacting fibres

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC CONNECTOR OPTICAL INTERFACES –

Part 2-1: Optical interface standard single mode non-angled physically contacting fibres

FOREWORD

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International Standard IEC 61755-2-1 has been prepared by sub-committee 86B. Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

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

FDIS	Report on voting
86B/2305/FDIS	86B/2359/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.

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

A list of all parts of the IEC 61755 series, under the general title *Fibre optic connector optical interfaces*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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 CONNECTOR OPTICAL INTERFACES –

Part 2-1: Optical interface standard single mode non-angled physically contacting fibres

1 Scope

This part of IEC 61755 defines a set of prescribed conditions that must be maintained in order to satisfy the requirements of attenuation and return loss performance in a randomly mated pair of fibres considering a beam with a Gaussian distribution of light intensity over the considered MFD. Performance grades are classified into four categories for attenuation and return loss measurements.

2 Performance grades

Proposed performance grades for PC polished connectors are given in Tables 1 and 2. The performance grades based on return loss are for non-angled connectors only. Performance grades for APC connectors are defined separately in IEC 61755-2-2.

Table1 – Single mode attenuation grades at 1 310 nm and 1 550 nm (dB)

Attenuation grade	Attenuation (≥ 97 %)[a]	Mean	
A [b]			
B	≤0,25	≤0,12	
C	≤0,50	≤0,25	
D	≤1,0	≤0,50	

[a] The probability of a random mated connector set meeting or exceeding the specified level of attenuation will be ≥ 97%.

b Reserved for future application.

Table 2 – Single mode return loss grades at 1 310 nm and 1 550nm (dB)

Return loss grade	Return loss (mated)	
1 [a]		
2	≥ 45	
3	≥ 35	
4	≥ 26	

a Not applicable to this document

3 Criteria for a fit within performance grades

Figures 1 to 3 and Tables 3 and 4 below give the criteria for meeting the performance grades listed above. The parameters chosen for the criteria definition are based on the degree of significance in affecting the performance under test. The criteria selected are based on the theoretical model presented in 3.1 and 3.2 of this document.

3.1 Attenuation grades and criteria

Considering a beam with a Gaussian distribution, the coupling efficiency, η, of two single mode fibres is given by Equation (1). The mode field diameters and the nominal index of refraction of the fibre core are given in Table 3.

Table 3 – Mode field diameter and fibre core nominal index of refraction as a function of the nominal wavelength of the light used

Fibre type	Nominal wavelength nm	MFD µm		n_0 (core)
		Min.	Max.	
Dispersion unshifted Fibre	1 310	8,8	9,6	1,452 0
	1 550	9,6	11,2	1,449 3

The attenuation (also referred to as insertion loss, IL, or coupling efficiency) of the fibres equals $\eta_{combined}$. The definition of performance grades is based on a statistical approach defining parameter values to reach the given random attenuation in 97 % of the connections. This performance is reached considering the following assumptions: normal distribution of MFD within the range defined in Table 3 at nominal value for wavelength.

Lateral and angular misalignment of the two randomly mated connectors are assumed to be statistically distributed within the specific ranges of parameter values E and F.

The design curves given in Figure 1 each represent maximum allowable combinations of a given specific lateral offset and an accordant angular misalignment to not exceed the specified attenuation of any single considered connection. The shown design curves represent the determination of the parameters under a worst case mismatch of the mode field diameter of the selected fibres as given in Table 3, i.e. 8,8/9,6 µm and a wavelength of 1 310 nm. These mode field diameter ranges are selected within the IEC 60793-2-50 family specification for single mode non-dispersion shifted fibres as given in Table 3. The equation is also applicable to 1 550 nm, using the parameters in Table 3, but the design curves are not shown in Figure 1.