SLOVENSKI PREDSTANDARD

oSIST prEN 61755-3-2:2006

januar 2006

Optični vmesniki konektorja optičnih vlaken – 3-2. del: Optični vmesnik s cilindrično cirkonsko spojko za kote 8 stopinj-PC, enorodna vlakna

(istoveten prEN 61755-3-2:2005)

Fibre optic connector optical interfaces – Part 3-2: Optical interface cylindrical zirconia ferrule for 8 degrees angled-PC, single mode fibres

ICS 33.180.20

Referenčna številka
oSIST prEN 61755-3-2:2006(en)

86B/2102/CDV

COMMITTEE DRAFT FOR VOTE (CDV)
PROJET DE COMITÉ POUR VOTE (CDV)

	Project number Numéro de projet IEC 61755-3-2 Ed. 1.0	
IEC/TC or SC: **SC86B** CEI/CE ou SC:	Date of circulation Date de diffusion **2005-02-04**	Closing date for voting (Voting mandatory for P-members) Date de clôture du vote (Vote obligatoire pour les membres (P)) **2005-07-08**
Titre du CE/SC: Dispositifs d'interconnexion et composant passifs à fibres optiques	TC/SC Title: Fibre optic interconnecting devices and passive components	
Secretary: Etsuji SUGITA Secrétaire:		
Also of interest to the following committees Intéresse également les comités suivants	Supersedes document Remplace le document 86B/1945/CD and 86B/2007A/CC	
Functions concerned Fonctions concernées ☐ Safety / Sécurité ☐ EMC / CEM ☐ Environment / Environnement ☐ Quality assurance / Assurance qualité		

Titre :

Title : IEC 61755-3-2 Ed. 1.0: Fibre optic connector optical interfaces - Part 3-2: Optical interface cylindrical zirconia ferrules for 8 degrees angled-PC, single mode fibres

Note d'introduction

Introductory note

This CDV has been prepared in accordance with the decisions taken during last WG6 meeting. This document is based on 86B/1945/CD.

ATTENTION	ATTENTION
CDV soumis en parallèle au vote (CEI) et à l'enquête (CENELEC)	**Parallel IEC CDV/CENELEC Enquiry**

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS FIBRE OPTIC CONNECTOR OPTICAL INTERFACES

Part 3-2: Optical interface, 2,5 mm and 1,25 mm diameter cylindrical full zirconia ferrules for 8 degrees angled-PC single mode fibres

1 Scope

IEC 61755 Part 3-2 defines certain dimensional limits of a 2,5 mm and a 1.25mm diameter cylindrical zirconia (ZrO_2) 8 degrees angled-PC (APC) ferrule optical interface to meet specific requirements for connecting fibre to fibre interconnection. Ferrules made from the material specified in this document are suitable for use in categories C, U, E and O as defined in IEC 61753-1.

2 Description

The performance of an angled-PC polished cylindrical ferrule optical interface is determined by the accuracy with which the optical datum targets of two mating ferrules are aligned with each other. There are three conditions affecting the alignment of two optical datum targets, lateral offset, angular offset and longitudinal offset.

Parameters influencing the lateral and angular offset of the optical fibre axes.

- Ferrule outside diameter
- Fibre hole concentricity relative to the ferrule outside diameter
- Fibre hole angle relative to outside diameter axis
- Fibre cladding diameter to fibre hole clearance
- Alignment sleeve inside diameter
- Fibre core concentricity relative to the cladding diameter
- Fibre core orientation relative to keying
- Ferrule grasping force of the alignment sleeve
- The amount of angled PC polishing after tuning of the connector at PC condition.

Parameters influencing the axial alignment of the optical fibre axes.

- End-face spherical radius
- End-face spherical radius apex offset of ferrule or angle relative to angle-PC reference plane
- Fibre undercut
- Ferrule rotational clearance relative to the keying
- Axial force on ferrule end-face
- Ferrule and fibre material physical constants
- Alignment sleeve frictional force
- Keying accuracy

3 Interface Parameters

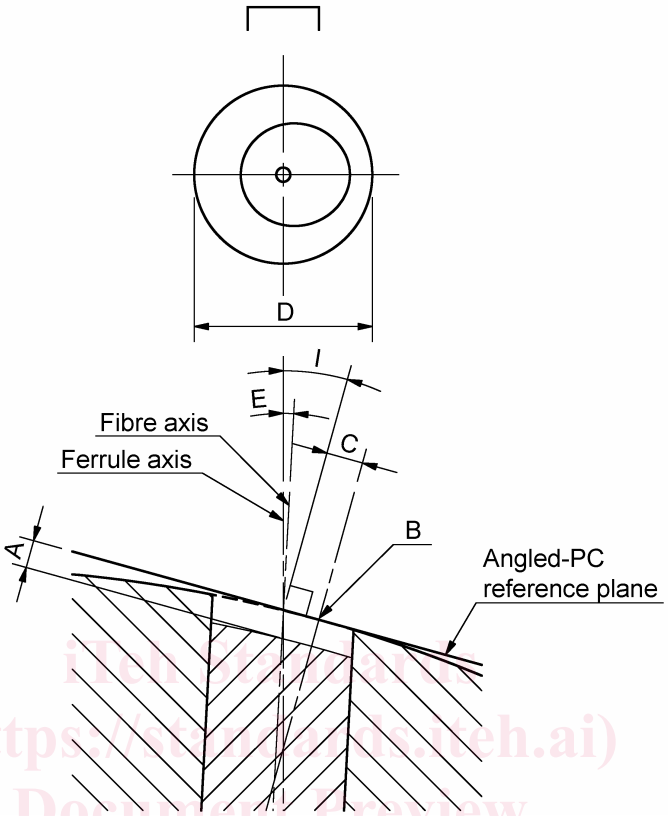
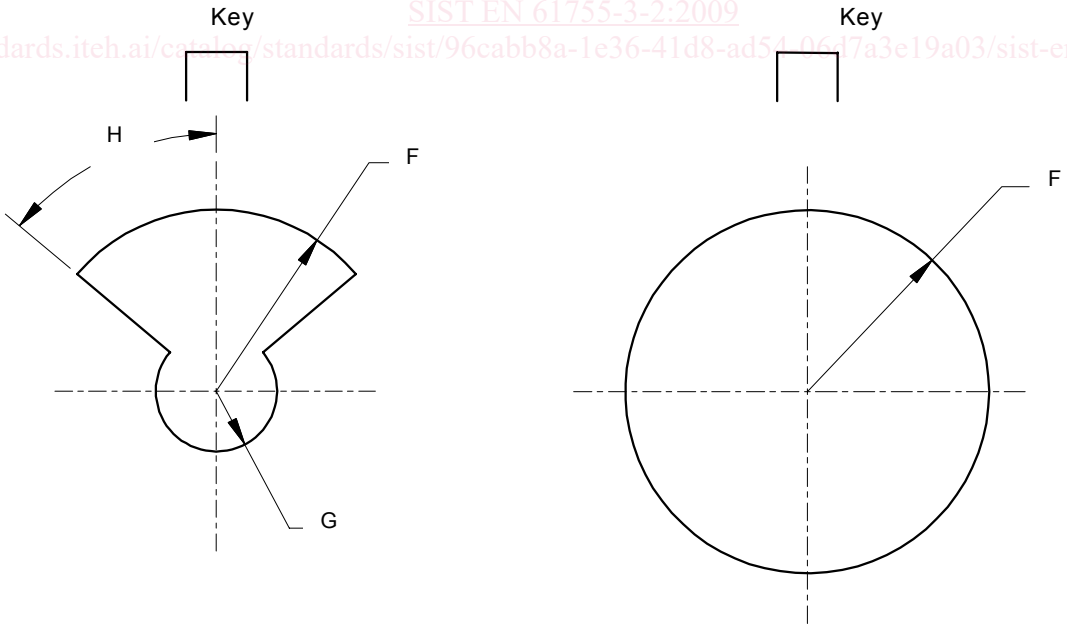


Figure 1 – Interface dimensions



Grades B and C **Grade D**

Figure 2 - Fibre core location

F, G and H define the radial and angular polar coordinate limits of the optical fibre core relative to the optical datum of the ferrule.

Table 1 - Optical interface parameter values for 2,5 mm diameter ferrule

Ref.	Parameter Values								Notes
	Grade A		Grade B		Grade C		Grade D		
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	
A			-100	Note 1	-100	Note 1	-100	Note 1	Note 2, nm
B			5	12	5	12	5	12	Radius, mm
C			0	70	0	70	0	70	µm
D			2,4985	2,4995	2,4985	2,4995	2,4985	2,4995	Diameter, mm
E			0	0,2	0	0,3	0	0,6	Degrees
F			0	0,0010	0	0,0014	0	0,0015	Radius, mm
G			0	0,0003	0	0,0003	N/A	N/A	Radius, mm
H			0	50	0	50	N/A	N/A	Degrees
I			8		8		8		Degrees

Notes

1. Contact force 4.9 N minimum. Ferrule material: 3mol% yttria stabilised zirconia, ZrO_2. Nominal material physical constant values: Young's Modulus, E = 206 GPa, Poisson's Ratio, *v* = 0,31.

$$A_{Maximum} = 1988 \cdot B^{(-0.795)} - B \cdot 10^6 + \left(\sqrt{B^2 \cdot 10^6 - C^2}\right) \cdot 10^3 - 60$$

2. A negative value indicates fibre protrusion.

Table 2 - Optical interface parameter values for 1,25 mm diameter ferrule

Ref.	Parameter Values								Notes
	Grade A		Grade B		Grade C		Grade D		
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	
A			-100	Note 1	-100	Note 1	-100	Note 1	Note 2, nm
B			5	12	5	12	5	12	Radius, mm
C			0	70	0	70	0	70	µm
D			1,2485	1,2495	1,2485	1,2495	1,2485	1,2495	Diameter, mm
E			0	0,2	0	0,3	0	0,6	Degrees
F			0	0,0010	0	0,0014	0	0,0015	Radius, mm
G			0	0,0003	0	0,0003	N/A	N/A	Radius, mm
H			0	50	0	50	N/A	N/A	Degrees
I			8		8		8		Degrees

Notes

1. Contact force 2.9 N minimum. Ferrule material: 3mol% yttria stabilised zirconia, ZrO_2. Nominal material physical constant values: Young's Modulus, E = 206 GPa, Poisson's Ratio, *v* = 0,31.

$$A_{Maximum} = 1798 \cdot B^{(-0.795)} - B \cdot 10^6 + \left(\sqrt{B^2 \cdot 10^6 - C^2}\right) \cdot 10^3 - 60$$

2. A negative value indicates fibre protrusion.