SLOVENSKI STANDARD
SIST EN 50377-2-2:2009

01-julij-2009

Specifikacija izdelka za konektorje, adapterje in povezovalne vrvice za komunikacijske sisteme z enorodnimi optiļ nimi vlakni - 2-2. del: FC/APC 8, zaključ en na enorodnem vlaknu po IEC 60793-2-50 kategorij B1.1 in B1.3 s ļ isto cirkonijevo tulko, kategorija C

Product specification for connectors, adaptors and patchcords to be used in single mode optical fibre communication systems - Part 2-2: FC/APC 8 terminated on IEC 60793-2-50 category B1.1 and B1.3 single mode fibre, with full zirconia ferrule, category C

eux de connecteurs et composants d'interconnexion à utiliser dans les systèmes de communication par fibres optiques - Spécifications de produit -- Partie 2-2: Type FC/APC 8 connectés sur fibre unimodale de catégorie B1.1 et B1.3 de la CEI 60793-2-50, avec férule tout zircone, catégorie C

Spécification de produit pour connecteurs, raccords et cordons de brassage à utiliser dans les systèmes de communication par fibres optiques unimodales -- Partie 2-2: Type FC/APC 8° connectés sur fibre unimodale de catégorie B1.1 et B1.3 de la CEI 60793-2-50, avec férule tout zircone, catégorie C

Ta slovenski standard je istoveten z: **EN 50377-2-2:2009**

ICS:

33.180.20	Povezovalne naprave za optiļ na vlakna	Fibre optic interconnecting devices

SIST EN 50377-2-2:2009 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50377-2-2

May 2009

ICS 33.180.20

English version

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 2-2: FC/APC 8 terminated on IEC 60793-2-50 category B1.1 and B1.3 singlemode fibre, with full zirconia ferrule, category C

Jeux de connecteurs et composants d'interconnexion à utiliser dans les systèmes de communication par fibres optiques - Spécifications de produit - Partie 2-2: Type FC/APC 8 connectés sur fibre unimodale de catégorie B1.1 et B1.3 de la CEI 60793-2-50, avec férule tout zircone, catégorie C

Steckverbindersätze und Verbindungsbauelemente für Lichtwellenleiter-Datenübertragungssysteme - Produktnormen - Teil 2-2: Bauart FC/APC 8 mit Zirkoniumstift zum Anschluss an Einmodenfasern der Kategorien B1.1 und B1.3 nach IEC 60793-2-50 für Kategorie C

This European Standard was approved by CENELEC on 2008-12-01. 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

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic interconnect, passive and connectorised components.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50377-2-2 on 2008-12-01.

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)	2009-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-12-01

CONNECTOR SETS AND INTERCONNECT COMPONENTS TO BE USED IN OPTICAL FIBRE COMMUNICATION SYSTEMS – PRODUCT SPECIFICATIONS

Part 2-2: FC/APC 8 terminated on IEC 60793-2-50 category B1.1 and B1.3 singlemode fibre, with full zirconia ferrule, category C

Description		Performance	
Coupling mechanism:	screw	Application:	For use in EN category C (controlled environment)
Configuration:	plug/adaptor/plug	Attenuation grades: (random mate)	B: ≤ 0,12 dB mean ≤ 0,25 dB for > 97 % of measurements
Fibre category:	EN 60793-2-50 type B1.1 and B1.3		C: ≤ 0,25 dB mean ≤ 0,50 dB for > 97 % of measurements
Cable type:	see Table 3	Return loss grades: (random mate)	1: ≥ 60 dB (mated), > 55 dB (unmated)

Related documents:

EN 60794-2, *Optical fibre cables – Part 2: Indoor cables – Sectional specification* (IEC 60794-2)

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

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

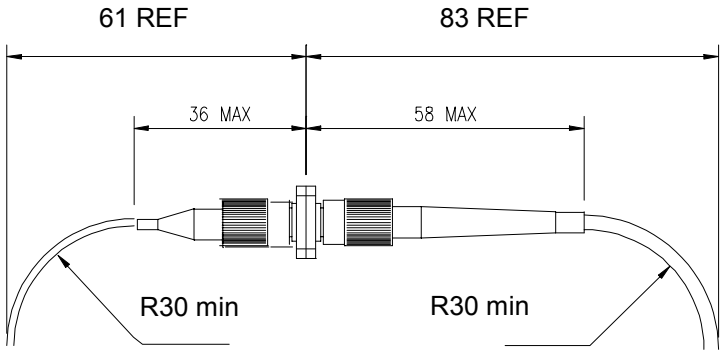
EN 61754-13, *Fibre optic connector interfaces – Part 13: Type FC-PC connector* (IEC 61754-13)

EN 61755-1, *Fibre optic connector optical interfaces – Part 1: Optical interfaces for single mode non-dispersion shifted fibres – General and guidance* (IEC 61755-1)

EN 61755-3-2, *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* (IEC 61755-3-2, mod.)

ETSI TS 100 671, *Transmission and Multiplexing (TM); Passive optical components; Optical fibre connectors for single-mode optical fibre communication systems; Common requirements and conformance testing*

Outline dimensions and maximum dimensions:



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1 Scope

1.1 Product definition

This European Standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a connector terminated with cylindrical zirconia 8 degree angled PC ferrule and assembled singlemode resilient alignment sleeve FC-APC simplex connector set (plug/adaptor/plug), adaptor and patchcord must meet in order for it to be categorised as an EN standard product.

Since different variants and grades of performance are permitted, product marking details are given in 3.5.

1.2 Intermateability

Although all products conforming to the requirements of this standard will intermate, the resulting level of random attenuation performance will only be ensured in accordance with Table 1. The intention is that this will be true irrespective of the manufacturing source(s) of the product.

When intermating plug variants have different attenuation grades, the resulting level of attenuation cannot be assured to be any better than the worst attenuation grade.

The intermating of a grade C plug with a grade B plug will result in an uncertain level of random attenuation performance.

Table 1 – Ensured level of random attenuation

Plug variant / Attenuation grade	C	B
C	C	C
B	C	B

1.3 Operating environment

The tests selected combined with the severities and durations are representative of a category C environment described in EN 61753-1.

1.4 Reliability

Whilst the anticipated service life expectancy of the product in this environment is 20 years, compliance with this standard does not guarantee the reliability of the product. This should be predicted using a recognised reliability assessment programme.

1.5 Quality assurance

Compliance with this standard does not guarantee the manufacturing consistency of the product. This should be maintained using a recognised quality assurance programme.

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.

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

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

EN 61300-2-2, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-2: Tests – Mating durability* (IEC 61300-2-2)

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

EN 61300-2-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-6: Tests – Tensile strength of coupling mechanism* (IEC 61300-2-6)

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

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

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

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

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

EN 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 61300-2-42)

EN 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 61300-2-44)

EN 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examination and measurements – Attenuation* (IEC 61300-3-4)

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

EN 61300-3-10, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-10: Examinations and measurements – Gauge retention force* (IEC 61300-3-10)

EN 61300-3-15, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-15: Examinations and measurements – Dome eccentricity of a convex polished ferrule endface* (IEC 61300-3-15)

EN 61300-3-16, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-16: Examinations and measurements – Endface radius of spherically polished ferrules* (IEC 61300-3-16)

EN 61300-3-23, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-23: Examination and measurements – Fibre position relative to ferrule endface* (IEC 61300-3-23)

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

EN 61300-3-34, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-34: Examinations and measurements – Attenuation of random mated connectors* (IEC 61300-3-34)

EN 61300-3-42, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-42: Examinations and measurements – Attenuation of single mode alignment sleeves and or adaptors with resilient alignment sleeves* (IEC 61300-3-42)

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

EN 61755-1, *Fibre optic connector optical interfaces – Part 1: Optical interfaces for single mode non-dispersion shifted fibres – General and guidance* (IEC 61755-1)

ISO 8015, *Technical drawings – Fundamental tolerancing principle*

3 Description

The FC/APC 8 connector is a single position plug connector set of plug/adaptor/plug configuration with 8° angled ferrules. A set of plug/adaptor/plug configuration characterised by a cylindrical, spring loaded butting ferrule of 2,5 mm typical diameter and a screw coupling mechanism. The optical alignment mechanism of the connector is of a resilient sleeve style.

3.1 Plug

The plug features a cylindrical zirconia ceramic ferrule and a screw thread coupling mechanism. It has a single male key that is used to limit and may be used to orientate, the relative rotation between mated connectors.

A cover (dustcap) to protect the ferrule endface when the connector is in the unmated condition shall be provided.

3.2 Adaptor

The adaptor has a zirconia ceramic resilient alignment sleeve. The mounting style can be

i. square flange – 4 hole

ii. square flange – 2 hole

iii. single “d-hole” fixing with back nut

iv. double “d-hole” fixing with back nut

Covers (dustcaps) shall be provided to protect each port of the adaptor.

3.3 Materials

Materials which are not specified or which are not specifically described are left to the discretion of the manufacturer.

3.4 Dimensions

Outline dimensions and other dimensions necessary to ensure intermateability or which affect performance are specified. All other dimensions are left to the discretion of the manufacturer. Where the mating face limit dimensions are not in agreement with an EN Interface Standard this is clearly stated.

3.5 Colour and marking

Marking of the product shall be in the following order of precedence:

a) identification of manufacturer

b) manufacturing date code: year/week

c) manufacturers part number

d) variant identification number

The following colour scheme is preferred.

Table 2 – Preferred colour scheme

Coupling nut/adaptor	Boot
-	RAL 6018 green
NOTE Adapters shall be with RAL 6018 green identification mark on both ends.	

4 Variants

4.1 Terminated plug

The defined fibre/cable variants are given in Table 3.

Table 3 – Plug variants

E	N	5	0	3	7	7	-	2	-	2	-	*	*

Variant number	Fibre/cable Ø mm	Structure	Notes
B1	0,7 - 1,4	Buffered fibre	8 degrees
B2	2,0 ± 0,2	Reinforced cable	8 degrees
B3	2,5 ± 0,2	Reinforced cable	8 degrees
B4	2,8 ± 0,2	Reinforced cable	8 degrees
B5	3,0 ± 0,2	Reinforced cable	8 degrees
B6	3,2 ± 0,2	Reinforced cable	8 degrees
C1	0,7 - 1,4	Buffered fibre	8 degrees
C2	2,0 ± 0,2	Reinforced cable	8 degrees
C3	2,5 ± 0,2	Reinforced cable	8 degrees
C4	2,8 ± 0,2	Reinforced cable	8 degrees
C5	3,0 ± 0,2	Reinforced cable	8 degrees
C6	3,2 ± 0,2	Reinforced cable	8 degrees

4.2 Adaptor

The following variants are permitted:

Table 4 – Adaptor variants

Variant number	Format	Key width	
		min.	max.
A01	Square flange 4 hole	2,03	2,08
A02	Square flange 2 hole		
A03	Single “d-hole”		
A04	Double “d-hole”		