
Konektorski pribor in povezovalne komponente za uporabo v komunikacijskih sistemih s pomočjo optičnih vlaken – Specifikacije izdelka – 2-1. del: Tip FC-Pczaključen na eno-rodnem vlaknu kategorije B1 po IEC 60793-2*

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 2-1: Type FC-PC terminated on IEC 60793-2 category B1 singlemode fibre

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**Connector sets and interconnect components
to be used in optical fibre communication systems -
Product specifications
Part 2-1: Type FC-PC terminated on IEC 60793-2
category B1 singlemode fibre**

Jeux de connecteurs et composants
d'interconnexion à utiliser dans les
systèmes de communication par fibres
optiques -

Spécifications de produit
Partie 2-1: Type FC-PC câblés sur fibres
unimodales de catégorie B1 de la
CEI 60793-2

Steckverbinder zur Verwendung in
Lichtwellenleiter-Kommunikations-
systemen -
Produktnormen

Teil 2-1: Bauart FC-PC zum Anschluß von
Einmodenfasern nach IEC 60793-2,
Kategorie B1

<https://standards.iteh.ai/catalog/standards/sist/ea77b1cc-f7b-4496-8aba-dc24efeba3d6/sist-en-50377-2-1-2004>

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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: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic connectors.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 186500 on 2000-01-01. According to the new numbering scheme accepted by the 107th Technical Board of CENELEC, the standard was renamed EN 50377-2-1.

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) 2002-03-01
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2003-01-01
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**PRODUCT SPECIFICATION FOR CONNECTOR SET TO BE USED IN
SINGLE MODE OPTICAL FIBRE COMMUNICATION SYSTEMS**

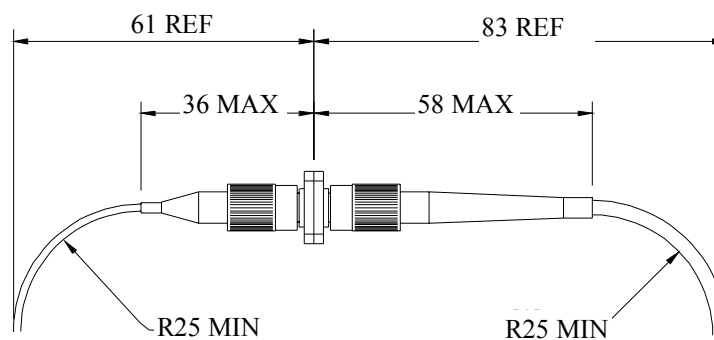
Type: **FC-PC terminated on IEC 60793-2 category B1 fibre**

Description		Performance	
Coupling mechanism:	screw	Application:	For use in IEC 61753-2-1 category U and ES 300 671 environments (see 1.3)
Configuration:	plug/adaptor/plug	Attenuation Grades: (Random Mate)	P: $\leq 0,35\text{dB}$ mean. $\leq 1,0\text{dB}$ Q: $\leq 0,30\text{dB}$ mean. $\leq 0,60\text{dB}$ for $\geq 99\%$ of measurements
Fibre Category:	IEC 60793-2 type B1	Return Loss Grades:	S: $\geq 26\text{dB}$ T: $\geq 35\text{dB}$ U: $\geq 50\text{dB}$
Cable Type	see table 3		

Related documents:

IEC 61754-13	Basic Standard for Interface Dimensions - Part 13 Type FC/PC
IEC 61753	Performance Standard - Part 1 General and Guidance
EN 186000	Generic Specification for Fibre Optic Connectors
EN 61300-	Basic Test and Measurement Procedures
IEC 60793-2	Optical Fibres – Part 2 Product Specifications
IEC 60794-2	Optical Fibre Cables - Part 2 Product Specifications
ETS 300 671	Fibre optical connectors for single-mode optical fibre communication systems.

Outline and maximum dimensions:



CONTENTS

1	Scope	5
1.1	Product definition	5
1.2	Intermateability	5
1.3	Operating environment	5
1.4	Reliability	5
1.5	Quality assurance	6
2	Related documents	6
3	Description	6
3.1	Plug	6
3.2	Adaptor	6
3.3	Materials	6
3.4	Dimensions	7
3.5	Colour and marking	7
4	Variants	7
4.1	Terminated plug	7
4.2	Adaptor	8
4.3	Identification of variants	8
5	Dimensional requirements	10
5.1	Outline dimensions	10
5.1.1	Plug variants	10
5.1.2	Adaptor variants	11
5.2	Mating face and other limit dimensions	13
5.2.1	Plug	13
5.2.2	Ferrule endtip geometry after termination	15
5.2.3	Positioning of fibre core	17
5.2.4	Control of fibre axis	18
5.2.5	Adaptor	19
5.2.6	Pin gauge for adaptor	21
6	Tests	22
6.1	Sample size	22
6.2	Test and measurement methods	22
6.3	Test sequence	22
6.4	Pass/fail criteria	22
7	Test report	22
8	Testing requirements	23
8.1	Dimensional requirements	23
8.2	Optical performance requirements	23
8.3	Mechanical performance requirements	25
8.4	Environmental performance requirements	29
	Annex A - Reference connector details	32
	Annex B - Sample size and product sourcing requirements	32

1 Scope

1.1 Product definition

This specification contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a terminated and assembled singlemode resilient alignment sleeve FC/PC connector set (plug adaptor plug) 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 specification 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.

In all cases, the intermating of plug variants having different attenuation grades will result in an uncertain level of random attenuation performance.

Similarly, when intermating plug variants having different return loss grades, the resulting level of return loss cannot be assured to be any better than the worst return loss grade.

Table 1 - Ensured level of random attenuation

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Plug variant/attenuation grade	P	Q
P	P	
Q		Q

1.3 Operating environment

The tests selected combined with the severities and durations are representative of an external weather protected environment defined by

- IEC 61753-1-2 category U: uncontrolled environment
- ES 300 671 external weather protected environment defined by ES 300 019 [8] classes 3.3, 3.4 and 3.5.

1.4 Reliability

Whilst the anticipated service life expectancy of the product in this environment is 20 years, compliance with this specification 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 specification does not guarantee the manufacturing consistency of the product. This should be maintained using a recognised quality assurance programme.

2 Related documents

IEC 61754-13	Basic Standard for interface dimensions - Part 13 Type FC/PC
IEC 61753	Performance Standard - Part 1: General and guidance
EN 186000	Generic Specification for fibre optic connectors
EN 61300-X	Basic test and measurement procedures
IEC 60793-2	Optical fibres – Part 2 Product Specifications
IEC 60794-2	Optical fibre cables - Part 2 Product Specifications
ETS 300-671	Fibre optical connectors for single-mode optical fibre communication systems

3 Description

The FC/PC connector is a single position plug connector 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 IEC Interface Standard this is clearly stated.

3.5 Colour and marking

Marking of the product shall be in accordance with 2.6.2 of EN 186000 in the following order of precedence:

- Identification of manufacturer
- Manufacturing date code : year/week
- Manufacturers part number
- Variant identification number

The following colour scheme is preferred:

Table 2 - Preferred colour scheme

Coupling nut/adaptor	Boot
Blue	Blue

4 Variants

4.1 Terminated plug

The following variants are permitted:

Table 3 - Plug variants

Variant number	Fibre/cable Ømm	Structure	Notes
P01	0,7 - 1,4	Buffered fibre	
P02	2,0 ± 0,2	Reinforced Cable	
P03	2,5 ± 0,2	Reinforced Cable	
P04	2,8 ± 0,2	Reinforced Cable	
P05	3,0 ± 0,2	Reinforced Cable	
P06	3,2 ± 0,2	Reinforced Cable	
Q01	0,7 - 1,4	Buffered fibre	
Q02	2,0 ± 0,2	Reinforced Cable	
Q03	2,5 ± 0,2	Reinforced Cable	
Q04	2,8 ± 0,2	Reinforced Cable	
Q05	3,0 ± 0,2	Reinforced Cable	
Q06	3,2 ± 0,2	Reinforced Cable	

4.2 Adaptor

The following variants are permitted:

Table 4 - Adaptor variants

Variant number	Format
A01	Square flange 4 hole
A02	Square flange 2 hole
A03	single “d-hole”
A04	double “d-hole”

4.3 Identification of variants

Table 5 - P grade plugs

Variant number	Performance grade (Return loss)	Identification number
P01	S	EN50377-2-1-P01-S
P01	T	EN50377-2-1-P01-T
P01	U	EN50377-2-1-P01-U
P02	S	EN50377-2-1-P02-S
P02	T	EN50377-2-1-P02-T
P02	U	EN50377-2-1-P02-U
P03	S	EN50377-2-1-P03-S
P03	T	EN50377-2-1-P03-T
P03	U	EN50377-2-1-P03-U
P04	S	EN50377-2-1-P04-S
P04	T	EN50377-2-1-P04-T
P04	U	EN50377-2-1-P04-U
P05	S	EN50377-2-1-P05-S
P05	T	EN50377-2-1-P05-T
P05	U	EN50377-2-1-P05-U
P06	S	EN50377-2-1-P06-S
P06	T	EN50377-2-1-P06-T
P06	U	EN50377-2-1-P06-U

Table 6 - Q grade plugs

Variant number	Performance grade (Return loss)	Identification number
Q01	S	EN50377-2-1-Q01-S
Q01	T	EN50377-2-1-Q01-T
Q01	U	EN50377-2-1-Q01-U
Q02	S	EN50377-2-1-Q02-S
Q02	T	EN50377-2-1-Q02-T
Q02	U	EN50377-2-1-Q02-U
Q03	S	EN50377-2-1-Q03-S
Q03	T	EN50377-2-1-Q03-T
Q03	U	EN50377-2-1-Q03-U
Q04	S	EN50377-2-1-Q04-S
Q04	T	EN50377-2-1-Q04-T
Q04	U	EN50377-2-1-Q04-U
Q05	S	EN50377-2-1-Q05-S
Q05	T	EN50377-2-1-Q05-T
Q05	U	EN50377-2-1-Q05-U
Q06	S	EN50377-2-1-Q06-S
Q06	T	EN50377-2-1-Q06-T
Q06	U	EN50377-2-1-Q06-U

Table 7 - Adaptor variants

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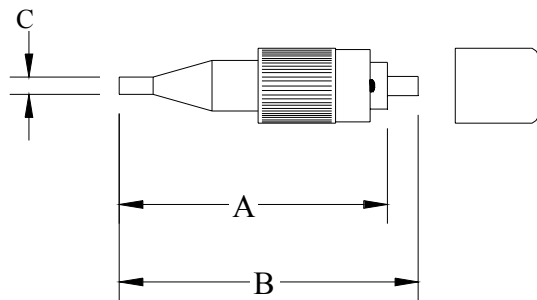
Variant Number	Performance Grade (Attenuation/Return Loss)	Identification Number
A01	SIST EN 50377-2-1:2004	EN50377-2-1-A01
A02	-	EN50377-2-1-A02
A03	-	EN50377-2-1-A03
A04	-	EN50377-2-1-A04
A05	-	EN50377-2-1-A05

5 Dimensional requirements

5.1 Outline dimensions

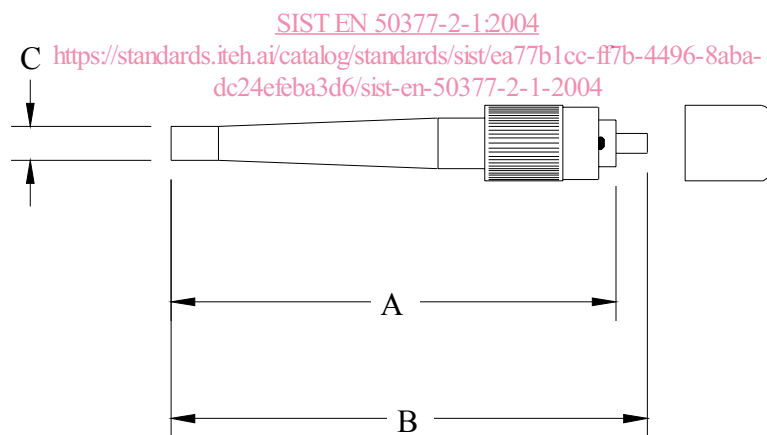
5.1.1 Plug variants

Variant No. P01/Q01



Ref.	Dimensions		Note
	Min.	Max.	
A	-	32	
B	-	36	
C	0,7	1,4	

Variant Nos. P02/P03/P04/P05/P06, Q02/Q03/Q04/Q05/Q06



Ref.	Dimensions		Note
	Min.	Max.	
A	-	54	
B	-	58	
C	1,8	3,4	

Figure 1 - Outline dimensions - Plug