
Konektorski pribor in povezovalne komponente za uporabo v komunikacijskih sistemih s pomočjo optičnih vlaken – Specifikacije izdelka – 10-1. del: Tip MU-PC zaključen 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 10-1: MU-PC terminated on IEC 60793-2 category B1 singlemode fibre

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EUROPEAN STANDARD

EN 50377-10-1

NORME EUROPÉENNE

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English version

**Connector sets and interconnect components
to be used in optical fibre communication systems -
Product specifications
Part 10-1: Type MU-PC terminated on IEC 60793-2
category B1.1 singlemode fibre**

Jeux de connecteurs et composants
d'interconnexion à utiliser
dans les systèmes de communication
par fibres optiques -
Spécifications de produit
Partie 10-1: Type MU-PC câblés
sur une fibre unimodale
de la catégorie B1.1 de la CEI 60793-2

Steckverbindersätze und
Verbindungselemente für
Lichtwellenleiter-
Datenübertragungssysteme -
Produktnormen
Teil 10-1: Bauart MU-PC zum
Anschluss von Einmodenfasern
nach IEC 60793-2, Kategorie B1.1

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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 50377-10-1 on 2002-09-01.

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) 2003-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-09-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A and B are normative.

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Connector sets and interconnected components to be used in optical fibre communication systems – Product specifications

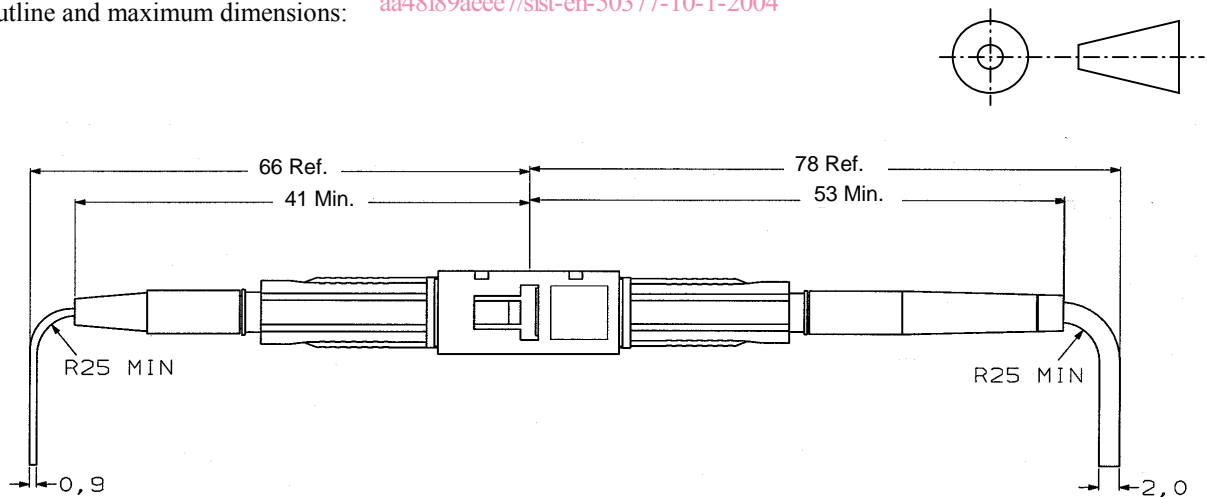
Part 10-1: Type MU-PC terminated on IEC 60793-2 category B1.1 singlemode fibre

Description		Performance	
Coupling mechanism:	push-pull	Application:	EN 61753 Category U and ES 200 671 (see 1.3)
Configuration:	plug/adaptor/plug	Attenuation grades: (Random mate)	P: < 0,35 dB mean. < 1,0 dB for > 97% of measurements Q: < 0,30 dB mean. < 0,60 dB for > 99% of measurements
Fibre Category:	IEC 60793-2 type B1.1	Return loss:	W: ≥ 45 dB
Cable Type:	see Table 3		

Related documents:

EN 60794-2	Optical fibre cables - Part 2: Indoor cables - Sectional specification
EN 61300 series	Fibre optic interconnection devices and passive components - Basic test and measurement procedures
EN 61753 series	Fibre optic connectors interconnecting devices and passive components performance standard
EN 61754-6	Fibre optic connector interfaces - Part 6: Type MU connector family
ES 200 671	Transmission and Multiplexing (TM); Passive optical components; Optical fibre connectors for single mode optical fibre communication systems; Common requirements and conformance testing
IEC 60793-2	Optical fibres - Part 2: Product specifications

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	5
2	Normative references.....	5
3	Description.....	6
	3.1 Plug	6
	3.2 Adaptor	6
	3.3 Materials	7
	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.....	9
	5.1 Outline dimensions	9
	5.1.1 Plug variants.....	9
	5.1.2 Adaptor variants.....	10
	5.2 Mating face and other limit dimensions	11
	5.2.1 Plug	11
	5.2.2 Ferrule end face geometry after termination.....	13
	5.2.3 Positioning of fibre core.....	14
	5.2.4 Control of fibre axis	15
	5.2.5 Adaptor	16
	5.2.6 Pin gauge for adaptor	18
6	Tests	18
	6.1 Sample size	18
	6.2 Test and measurement methods	18
	6.3 Test sequence.....	19
	6.4 Pass/fail criteria.....	19
7	Test report	19
8	Performance requirements.....	19
	8.1 Dimensional and marking requirements.....	19
	8.2 Optical performance requirements	20
	8.3 Mechanical performance requirements	21
	8.4 Environmental performance requirements	25
	Annex A (normative) Reference connector details	28
	Annex B (normative) Sample size and product sourcing requirements.....	28
	Bibliography	28

1 Scope

1.1 Product definition

This standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a terminated and assembled singlemode resilient alignment sleeve MU-PC simplex 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 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.

In all cases, the intermating of plug variants having different attenuation or return loss grades will result in an uncertain level of random attenuation performance. When intermating plug variants having different return loss grades, the resulting level of return loss can not be assured to be any better than the worst return loss grade

Similarly, the intermating of a grade P plug with a grade Q plug will result in an uncertain level of random attenuation performance.

Table 1 - Ensured level of random attenuation

Plug variant/Attenuation grade	P	Q
P	P	P
Q	P	Q

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1.3 Operating environment

The tests selected combined with the severities and durations are representative of an EN 61753 Category U environment and the ES 200 671 environment.

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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

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

- EN 61300 series Fibre optic interconnection devices and passive components - Basic test and measurement procedures
- EN 61300-2-1 Part 2-1: Tests - Vibration (sinusoidal)
- EN 61300-2-2 Part 2-2: Tests - Mating durability
- EN 61300-2-4 Part 2-4: Tests - Fibre/cable retention
- EN 61300-2-5 Part 2-5: Tests - Torsion/twist

EN 61300-2-6	Part 2-6: Tests - Tensile strength of coupling mechanism
EN 61300-2-7	Part 2-7: Tests - Bending Moment
EN 61300-2-12	Part 2-12: Tests - Impact
EN 61300-2-17	Part 2-17: Tests - Cold
EN 61300-2-18	Part 2-18: Tests - Dry heat - High temperature endurance
EN 61300-2-19	Part 2-19: Tests - Damp heat (steady state)
EN 61300-2-21	Part 2-21: Tests - Composite temperature-humidity cyclic test
EN 61300-2-22	Part 2-22: Tests - Change of temperature
EN 61300-2-26	Part 2-26: Tests - Salt mist
EN 61300-2-27	Part 2-27: Tests - Dust - Laminar flow
EN 61300-2-42	Part 2-42: Tests - Static side load for connectors
EN 61300-3-4	Part 3-4: Examinations and measurements - Attenuation
EN 61300-3-6	Part 3-6: Examinations and measurements - Return loss
EN 61300-3-10	Part 3-10: Tests- gauge retention force
EN 61300-3-23	Part 3-23: Examinations and measurements - Fibre position relative to ferrule endface
EN 61300-3-28	Part 3-28: Examinations and measurements - Transient loss
EN 61300-3-34	Part 3-34: Examinations and measurements - Attenuation of random mated connectors
EN 61753 series	Fibre optic connectors interconnecting devices and passive components performance standard
EN 186000-1	Generic Specification: Connector sets for optical fibres and cables - Part 1: Requirements, test methods and qualification approval procedures
ES 200 671	Transmission and Multiplexing (TM); Passive optical components; Optical fibre connectors for single mode optical fibre communication systems; Common requirements and conformance testing

3 Description

The MU-PC connector is a single position plug connector set of plug adaptor plug configuration characterised by a cylindrical, spring loaded butting ferrule of 1,25 mm nominal diameter and a push-pull coupling mechanism. The optical alignment mechanism of the connectors is of a resilient sleeve style

3.1 Plug

The plug features a cylindrical zirconia ferrule and a push-pull mechanism. It has a single male key which 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.

Alternative materials may be used for the ferrule that have directly compatible material properties to the specified materials but the endface and performance requirements must be met under all conditions

3.2 Adaptor

The adaptor has a zirconia ceramic resilient alignment sleeve. The mounting styles are duplex rectangular flange with snap-latches with a panel cut out as SC connector and simplex rectangular flange with snap-latches.

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

Alternative material may be used for the sleeve that have directly compatible material properties to zirconia but the performance requirements must be met under all conditions

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 186000-1 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

Adaptor	Delatch housing
Blue	Blue

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4 Variants

4.1 Terminated plug

The following variants are permitted: [SIST EN 50377-10-1:2004](https://standards.iteh.ai/catalog/standards/sist/58068d9e-b022-4763-ad62-aa48f89aeee7/sist-en-50377-10-1-2004)

Table 3 - Plug variants

Variant No.	Fibre/Cable mm	Structure	Note
P01	Ø 0,7 - 1,4	Buffered fibre	1 fibre
P02	Ø 1,6 ± 0,2	Reinforced cable	1 fibre
P03	Ø 2,0 ± 0,2	Reinforced cable	1 fibre
Q01	Ø 0,7 - 1,4	Buffered fibre	1 fibre
Q02	Ø 1,6 ± 0,2	Reinforced cable	1 fibre
Q03	Ø 2,0 ± 0,2	Reinforced cable	1 fibre

4.2 Adaptor

The following variants are permitted:

Table 4 - Adaptor variants

Variant No.	Format
A01	Simplex
A02	Rectangular flange - duplex

4.3 Identification of variants

Table 5 - Grade P plug variants

Variant number	Performance grade (Return loss)	Identification number
P01	U	EN 50377-10-1-P01-K
P02	U	EN 50377-10-1-P02-K
P03	U	EN 50377-10-1-P03-K

Table 6 - Grade Q plug variants

Variant number	Performance grade (Return loss)	Identification number
Q01	U	EN 50377-10-1-Q01-K
Q02	U	EN 50377-10-1-Q02-K
Q03	U	EN 50377-10-1-Q03-K

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Table 7 - Adaptor variants

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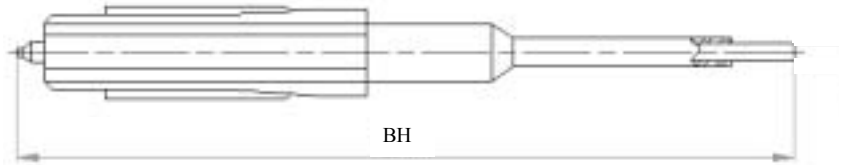
Variant number	Identification number
A01	EN 50377-10-1-A01
A02	EN 50377-10-1-A02

5 Dimensional requirements

5.1 Outline dimensions

5.1.1 Plug variants

Variant No. P01/Q01



Ref.	Dimensions mm		Note
	Min.	Max.	
BI	0,9	1,1	
BH	-	54	

Variant No. P02, P03, Q02, Q03

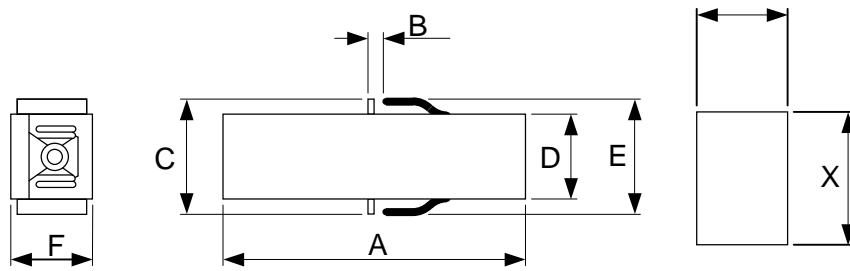


Ref.	Dimensions mm		Note
	Min.	Max.	
BG	1,6	2,2	
BF	-	54	

Figure 1 - Outline dimensions - Plug

5.1.2 Adaptor variants

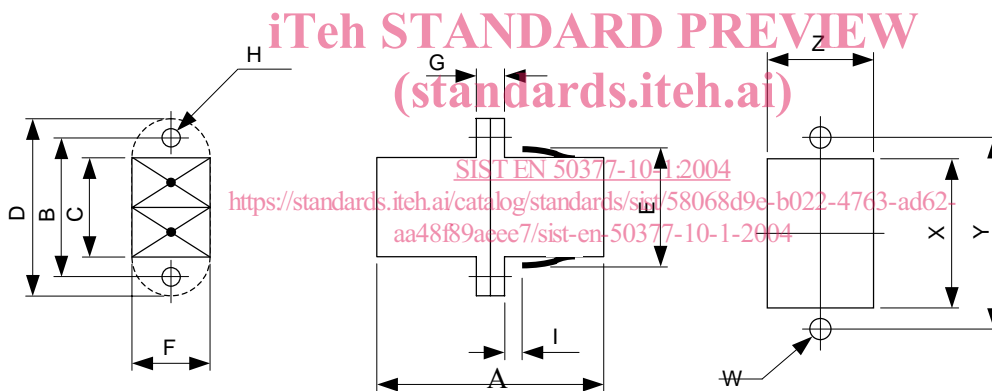
Variant No. A01



Ref.	Dimensions mm		Note
	Min.	Max.	
A	26,0	26,4	
B	1,65	1,75	
C	9,4	9,8	
D	7,0	7,2	
E	9,4	9,8	
F	10,4	10,6	
X	10,75	10,85	
Z	7,35	7,45	

NOTE Panel cut out: panel thickness should be between 1,2 mm and 1,7 mm.

Variant No. A02



Ref.	Dimensions mm		Note
	Min.	Max.	
A	27,0	27,8	
B	17,5	18,5	
C	12,5	13,0	
D	21,8	22,5	1
E	14,4	15,4	
F	9,2	9,4	1
G	2,8	3,2	
H	2,2	2,6	Diameter
I	1,7	2,0	2
W	2,4	2,6	Diameter
X	13,1	13,6	
Y	17,9	18,1	
Z	9,5	10,0	

NOTE 1 The dotted lines indicate an example of the shape of the mounting flange. The largest portion of the mounting flange shall be within these dimensions.

NOTE 2 If the adaptor is mounted using this hook, the thickness of the panel shall be 1,6 mm.

Figure 2 - Outline dimensions - Adaptor