SLOVENSKI STANDARD
SIST EN 50377-15-1:2011

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Konektorski sestavi in povezovalne komponente za uporabo v optičnih komunikacijskih sistemih - Specifikacije izdelka - 15-1. del: Tip MPO s tulkami PPS, zaključenimi na večrodovnem vlaknu kategorije A1a po IEC 60793-2 za večrodovno vlakno velikosti 50/125 mikrometrov

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 15-1: Type MPO with PPS ferrules terminated on IEC 60793-2 category A1a multimode fibre for 50/125 micron multimode fibre

Steckverbindersätze und Verbindungsbauelemente für Lichtwellenleiter-Datenübertragungssysteme - Produktnormen - Teil 15-1: Bauart MPO mit 12-Faser PPS-Ferrulen zum Anschluss an Mehrmodenfasern der Kategorie A1a nach IEC 60793-2 für 50/125-µm-Mehrmodenfasern

Jeux de connecteurs et composants d'interconnexion à utiliser dans les systèmes de communication par fibres optiques - Spécifications de produits - Partie 15-1: Type MPO équipé de férules PPS 12 fibres, raccordé sur fibres multimodales de catégorie A1a de la CEI 60793-2 pour fibres multimodales de 50/125 microns

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EUROPEAN STANDARD

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English version

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 15-1: Type MPO with 12-fibre PPS ferrules terminated on IEC 60793-2 category A1a multimode fibre for 50/125 micron multimode fibre

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Steckverbindersätze und Verbindungsbauelemente für Lichtwellenleiter-Datenübertragungssysteme – Produktnormen – Teil 15 1: Bauart MPO mit PPS-Ferrulen mit 12 Fasern zum Anschluss an Mehrmodenfasern der Kategorie A1a nach IEC 60793 2 für 50/125 µm-Mehrmodenfasern

This European Standard was approved by CENELEC on 2011-01-03. 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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 50377-15-1:2011 E

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 accepted by CENELEC as EN 50377-15-1 on 2011-01-03.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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)	2012-01-03
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2014-01-03

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

Part 15-1: Type MPO with 12 fibre PPS ferrules terminated on IEC 60793-2 category A1a multimode fibre for 50/125 micron multimode fibre

Description		Performance	
Coupling mechanism:	push-pull	Application:	Indoor applications (test severities derived from IEC category C)
Configuration:	plug/adaptor/plug	Attenuation grades: (random mated)	Max. ≤ 0,75 dB 95 % < 0,5 dB Mean ≤ 0,35 dB
Fibre category:	EN 60793-2, type A1a		
Cable type:	see Table 2	Return loss grades:	R: ≥ 20 dB

Related documents:

EN 50173 series, *Information technology – Generic cabling systems*

EN 60793-2, *Optical fibres – Part 2: Product specifications – General* (IEC 60793-2)

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

EN 60794-2-30, *Optical fibre cables – Part 2-30: Indoor cables – Family specification for ribbon cables* (IEC 60794-2-30)

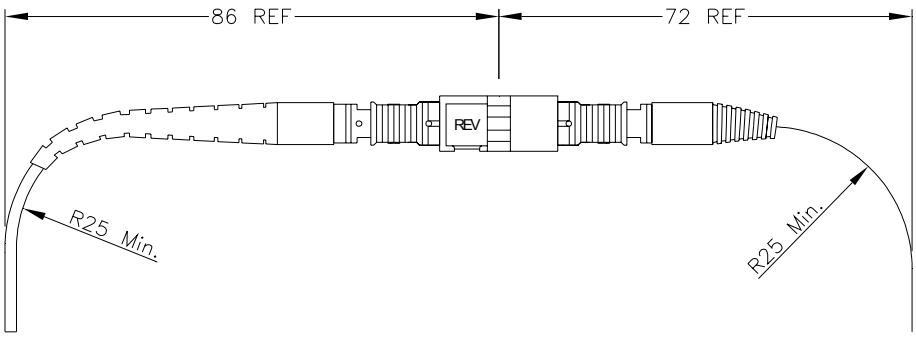
EN 61300 series, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures* (IEC 61300 series)

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

EN 61754-7, *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7: Type MPO connector family* (IEC 61754-7)

ISO/IEC 11801, *Information technology – Generic cabling for customer premises*

Maximum outline dimensions:



Contents

Figures

Tables

1 Scope

1.1 Product definition

This European Standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which a terminated and assembled 12 fibre multimode MPO connector set (plug adapter plug) must meet in order for it to be categorised as an EN standard product.

Since different variants are permitted, product marking details are given in 3.5.

1.2 Intermateability

All products conforming to the requirements of this standard will intermate and give the specified level of random attenuation and random return loss performance provided the same core size is used. The intention is that this will be true irrespective of the manufacturing source(s) of the product.

1.3 Operating environment

The tests selected combined with the severity and duration are representative of a backplane/back panel indoor application derived from customer premise protected environment as defined in EN 50173 series and ISO/IEC 11801 and as specified in category C per EN 61753-1:2007.

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 186000-1:1993 [1)], *Generic Specification: Connector sets for optical fibres and cables – Part 1: Requirements, test methods and qualification approval procedures*

EN 50173 series, *Information technology – Generic cabling systems*

EN 60793-2, *Optical fibres – Part 2: Product specifications – General* (IEC 60793-2)

EN 61280-1-4, *Fibre optic communication subsystem test procedures – Part 1-4: General communication subsystems – Light source encircled flux measurement method* (IEC 61280-1-4)

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

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1) EN 186000-1:1993 was withdrawn on 2008-06-01 and replaced by EN 60874-1:2007, *Connectors for optical fibres and cables – Part 1: Generic specification*.

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 61300-2-12:2009, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-12: Tests – Impact* (IEC 61300-2-12:2009)

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 61300-3-6, *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 61300-3-28, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-28: Examinations and measurements – Transient loss* (IEC 61300-3-28)

EN 61300-3-30, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-30: Examinations and measurements – Polish angle and fibre position on single ferrule multifibre connectors* (IEC 61300-3-30)

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 61753-1:2007, *Fibre optic interconnecting devices and passive components performance standard – Part 1: General and guidance for performance standards* (IEC 61753-1:2007)

EN 61754-7, *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7: Type MPO connector family* (IEC 61754-7)

EN 61754-10:2005, *Fibre optic connector interfaces – Part 10: Type Mini-MPO connector family* (IEC 61754-10:2005)

EN 61754-18, *Fibre optic connector interfaces – Part 18: Type MT-RJ connector family* (IEC 61754-18)

3 Introduction

3.1 Description

The MPO connector is a single position plug connector set of plug adapter plug configuration characterised by a spring loaded butting rectangular ferrule with twelve optical fibres and a push-pull coupling mechanism. The optical alignment mechanism of the connectors is of precision pin and hole type.

3.2 Plug

The plug features a rectangular thermo plastic composite ferrule and a push-pull coupling mechanism.

A cover (dust cap) to protect the ferrule end face when the connector is in the unmated condition shall be provided.

3.3 Adapter

The adapter has no role in the final alignment mechanism. The mounting style is:

– rectangular flange − 2 holes.

Covers (dust caps) may be provided to protect each port of the adapter.

3.4 Materials

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

The material for the ferrule is Polyphenylene Sulphide (PPS) material with a Young's modulus of 20 GPa nominal and guide pins are of stainless steel. Alternative materials, which have compatible material properties, may be used as long as end face and performance requirements are met under all conditions as specified in this document.

3.5 Dimensions

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

3.6 Colour and marking

Marking of the product shall be in accordance with 2.6.2 of EN 186000-1:1993 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 1 – Preferred colour scheme

Adaptor	Plug
Beige	Beige

4 Variants

4.1 Terminated plug

The following variants are permitted:

C01 and C02 variants are for A1a fibre (50 µ) reinforced cable and C03 variant is for A1a fibre (50 µ) fibre ribbon.

Table 2 – Plug variants

Variant No.	Fibre/Cable mm	Structure	Note
C01F	4,4 × 2,2	Reinforced cable	Without pins
C01M	4,4 × 2,2	Reinforced cable	With pins
C02F	∅ 3,5	Reinforced cable	Without pins
C02M	∅ 3,5	Reinforced cable	With pins
C03F	3,0 × 0,25	Ribbon fibre	Without pins
C03M	3,0 × 0,25	Ribbon fibre	With pins

4.2 Adapter

The following variant is permitted:

Table 3 – Adapter variants

Variant No.	Format
D01	Rectangular flange 2 hole

4.3 Identification of variants

Table 4 – Identification of plug variants

Variant No.	Performance grade (Attenuation/return loss)	Identification number
C01F	MR	EN 50377-15-1-C01F-MR
C01M	MR	EN 50377-15-1-C01M-MR
C02M	MR	EN 50377-15-1-C02F-MR
C02F	MR	EN 50377-15-1-C02M-MR
C03M	MR	EN 50377-15-1-C03F-MR
C03F	MR	EN 50377-15-1-C03M-MR

Table 5 – Identification of adapter variants

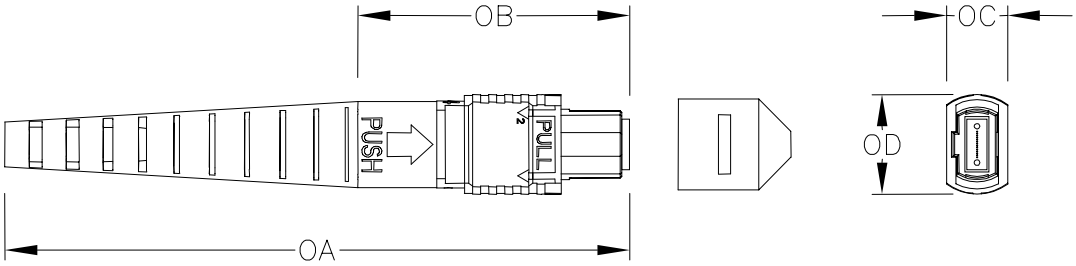
Variant No.	Performance grade (Attenuation/return loss)	Identification number
D01	-	EN 50377-15-1-D01

NOTE The adapter plays no role in the final alignment of this connector style.

5 Dimensional requirements

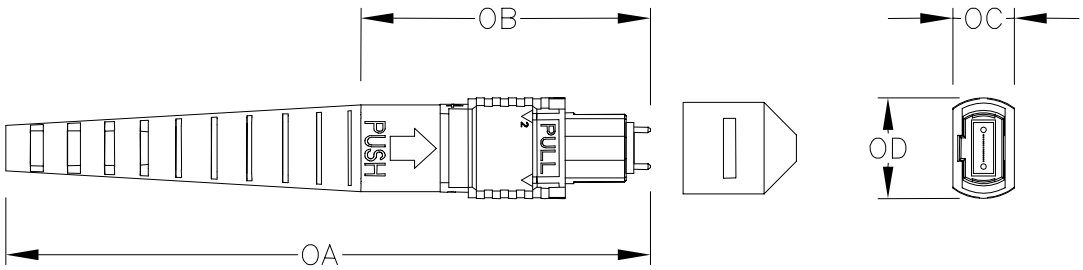
5.1 Outline dimensions

5.1.1 Plug variants



Ref.	Dimensions			Note
	min.	mm	max.	
OA	-		76,7	
OB	-		36,6	
OC	-		7,6	
OD	-		12,6	

Figure 1 – Outline dimensions – Plug C01F / C02F



Ref.	Dimensions			Note
	min.	mm	max.	
OA	-		78,7	
OB	-		38,6	
OC	-		7,6	
OD	-		12,6	

Figure 2 – Outline dimensions – Plug C01M / C02M