

SLOVENSKI STANDARD

oSIST prEN 50377-14-1:2009

01-januar-2009

Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications - Part 14-1: Patch cords with EN 60793-2-50 single mode category B1.1 and B1.3 fibre for category C

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Ta slovenski standard je istoveten z: prEN 50377-14-1:2008

ICS:

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ICS

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**Connector sets and interconnect components to be used in optical fibre communication systems - Product specifications -
Part 14-1: Patch cords with EN 60793-2-50 single mode category B1.1 and B1.3 fibre for category C**

To be completed

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This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2009-04-10.

It has been drawn up by CLC/TC 86BXA.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CENELEC in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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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

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Foreword

2 This draft European Standard was prepared by the Technical Committee CENELEC TC 86BXA, Fibre optic
3 interconnect, passive and connectorised components. It is submitted to the CENELEC enquiry.

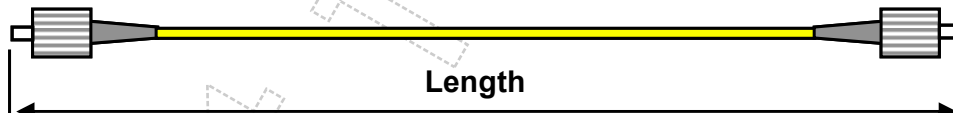
4 This document is updated to include the performance of the patch cord. It also includes latest attenuation and
5 return loss grades as specified in IEC.

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Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications			
Part 14-1: Patch cords with EN 60793-2-50 single mode category B1.1 and B1.3 fibre for category C			
Description		Performance	
Fibre category:	EN 60793-2-50 Types B1.1 and B1.3	Application:	For use in EN Category C (controlled environment)
Cable type:	EN 60794-2-50 Type simplex cables	Attenuation grades: (random mate)	B: ≤ 0,12 dB mean ≤ 0,25 dB for ≥ 97 % of measurements C: ≤ 0,25 dB mean ≤ 0,50 dB for ≥ 97 % of measurements
		Return loss grade: (random mate)	1: ≥ 60 dB 2: ≥ 45 dB
Related documents:			
EN 50377 series	Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications		
EN 60793-2-50	Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres (IEC 60793-2-50)		
EN 60794-2-50	Optical fibre cables – Part 2-50: Indoor optical fibre cables – Family specification for simplex and duplex cables for use in terminated cable assemblies (IEC 60794-2-50)		
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)		
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 and maximum dimensions:			
			

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1 Scope

1.1 Product definition

This standard contains the initial, start of life dimensional, optical, mechanical and environmental performance requirements which an assembled single-mode patch cord 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 and Clause 4.

1.2 Intermateability of the plugs

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 having different attenuation grades as specified in EN 61755-1, 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 a grade C level of random attenuation performance.

Table 1 – Ensured level of random attenuation

Plug variant / Attenuation grade		Plug 2	
Plug 1	C	C	B
	B	C	B

1.3 Operating environment

The tests selected combined with the severities and durations are representative of an EN 61753-1 Category C environment.

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.

76 2 Normative references

77 The following referenced documents are indispensable for the application of this document. For dated
78 references, only the edition cited applies. For undated references, the latest edition of the referenced
79 document (including any amendments) applies.

EN 50377 series	Connector sets and interconnect components to be used in optical fibre communication systems – Product specifications
EN 60793-2-50	Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres (IEC 60793-2-50)
EN 60794-2-50	Optical fibre cables – Part 2-50: Indoor optical fibre cables – Family specification for simplex and duplex cables for use in terminated cable assemblies (IEC 60794-2-50)
EN 61300-2-4	Part 2-4: Tests – Fibre/cable retention (IEC 61300-2-4)
EN 61300-2-22	Part 2-22: Tests – Change of temperature (IEC 61300-2-22)
EN 61300-2-42	Part 2-42: Tests – Static side load for connectors (IEC 61300-2-42)
EN 61300-2-44	Part 2-44: Tests – Flexing of the strain relief of fibre optic devices (IEC 61300-2-44)
EN 61300-3-3	Part 3-3: Examinations and measurements – Active monitoring of changes in attenuation and return loss (IEC 61300-3-3)
EN 61300-3-6:2003	Part 3-6: Examinations and measurements – Return loss (IEC 61300-3-6:2003)
EN 61300-3-22	Part 3-22: Examinations and measurements – Ferrule compression force (IEC 61300-3-22)
EN 61300-3-28	Part 3-28: Examinations and measurements – Transient loss (IEC 61300-3-28)
EN 61300-3-34:2002	Part 3-34: Examinations and measurements – Attenuation of random mated connectors (IEC 61300-3-34:2001)
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)

80 3 Description

81 For the purpose of this document a patch cord is defined as a short length of cable with connector plugs
82 assembled at both cable ends. Typical length (but not limited to) is 1 m to 10 m, measured from tip to tip at
83 the extremes. Patch cords are installed in mechanical protected locations (inside cabinets, distribution
84 frames and enclosures).

85 The document also applies to work area cords which are typically more ruggedised (larger diameter) and
86 used in mechanical less protected locations. For the purpose of this document both patch cords and work
87 area cords are called patch cords.

88 3.1 Plug

89 The plug features a cylindrical ferrule. It has a single male key which is used to limit and may be used to
90 orientate, the relative rotation between mated connectors.

91 A cover (dust cap) to protect the ferrule end faces when the connectors are in the unmated condition shall be
92 provided.

93 The plug shall meet the relevant product specification as listed in Table 2.

94 **Table 2 – Connector and Adaptor references**

Connector or adaptor	Reference
FC	EN 50377-2 series
SC	EN 50377-4 series
SC-RJ	EN 50377-6 series
LC	EN 50377-7 series
LSH	EN 50377-8-series
MU	EN 50377-10 series
LX.5	EN 50377-13 series

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96 3.2 Materials

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

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99 The plug and adapter materials shall meet the relevant requirements of the product specification listed in
100 Table 2.

101 3.3 Marking

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

- 103 a) identification of the cable assembly manufacturer;
- 104 b) manufacturing date code: year/week;
- 105 c) manufacturers part number;
- 106 d) variant identification number.

4 Variants

EN 50377 – 14 – 1 – X₁X₂X₃ – X₄X₅X₆ – XX₇ – XX₈

Variant No. X ₁ and X ₄	Connector type
S	SC
F	FC
E	LSH
M	MU
R	SC-RJ
X	LX.5
L	LC

Variant No. X ₂ and X ₅	Attenuation grade (EN 61755-1)
B	B (≤ 0,25 dB)
C	C (≤ 0,5 dB)

Variant No. X ₃ and X ₆	Return loss grade (EN 61755-1)
1	1 (≥ 60 dB mated)
2	2 (≥ 45 dB mated)
3	3 (≥ 35 dB mated)

Variant No. XX ₇	Cable length (in metre)	Remark
01 - 99	Length measured from tip to tip of connectors	Tolerances on length ± 50 mm ^a
^a For longer lengths than 10 m the tolerance shall be ± 5%.		

Variant No. XX ₈	Cable type (in mm)	Structure	Note
09	∅ 0,9 ± 0,1	Buffered fibre	1 fibre
16	∅ 1,6 ± 0,2	Reinforced cable	1 fibre
18	∅ 1,8 ± 0,2	Reinforced cable	1 fibre
20	∅ 2,0 ± 0,2	Reinforced cable	1 fibre
24	∅ 2,4 ± 0,2	Reinforced cable	1 fibre
28	∅ 2,8 ± 0,2	Reinforced cable	1 fibre
30	∅ 3,0 ± 0,2	Reinforced cable	1 fibre

114 5 Dimensional requirements

115 5.1 Outline dimensions



117 Figure 1 – Length of patch cord

118 Length shall be measured from tip to tip of connectors.

119 6 Tests

120 6.1 Sample size

121 For the purpose of this specification a sample is defined as a patch cord.

122 All samples shall be randomly selected.

123 The sample size for each test and product sourcing requirements are given in Annex B.

124 The length of the patch cord samples is 5 m.

125 6.2 Test and measurement methods

126 All tests and measurements have been selected from EN 61300 series.

127 As stated in the individual test details, all measurements shall be performed at either $(1\,310 \pm 30)$ nm,
 128 $(1\,550 \pm 30)$ nm or $(1\,625 \pm 20)$ nm

129 No deviation from the specified test method is allowed.

130 Attenuation measurement against reference (EN 61300-3-4) is intended for checking quality conformance.
 131 Random attenuation (EN 61300-3-34) is to be used during qualification only to ensure the requirements of the
 132 appropriate grade are met.

133 6.3 Test sequence

134 All products shall be subjected to Tests 1 – 2 as specified in Annex B. There is no defined sequence in which
 135 Tests 3 – 8 must be run.

136 6.4 Pass/fail criteria

137 A product will have met the requirements of this standard provided no failures occur in the sample group for
 138 any test.

139 In the event of a failure occurring, the failing test shall be re run using a sample size double that of the
 140 original.

141 7 Test report

142 A fully documented test report and supporting data shall be prepared and must be available for inspection as
 143 evidence that the tests described in Clause 8 have been carried out in accordance with this standard.