



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 61753-022-02:2025**  
**01-maj-2025**

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**Optični spojni elementi in pasivne komponente - Tehnični standard - 022-02. del:  
Konektorji za mnogorodovna optična vlakna, kot repki ali povezovalne vrvice za  
kategorijo C - Nadzorovana okolja**

Fibre optic interconnecting devices and passive components - Performance standard -  
Part 022-02: Multimode fibre optic connectors terminated as pigtails and patchcords for  
category C - Controlled environment

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Dispositifs d'interconnexion et composants passifs fibroniques - Norme de performance -  
Partie 022-02: Connecteurs à fibres optiques multimodales raccordés à des fibres  
amorces et des cordons de brassage pour la catégorie C - Environnement contrôlé

oSIST prEN IEC 61753-022-02:2025

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**ICS:**

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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SECRETARIAT: Japan	SECRETARY: Mr Ryo Koyama
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<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING  <b>Attention IEC-CENELEC parallel voting</b>  The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.  The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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TITLE:

**Fibre optic interconnecting devices and passive components - Performance standard - Part 022-02: Multimode fibre optic connectors terminated as pigtails and patchcords for category C – Controlled environment**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES  
AND PASSIVE COMPONENTS – PERFORMANCE STANDARD –****Part 022-02: Multimode fibre optic connectors terminated as pigtails and  
patchcords for category C – Controlled environment**

## FOREWORD

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IEC 61753-022-02 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This first edition cancels and replaces the second edition of IEC 61753-022-2 published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) included provisions for rectangular ferrule connectors;
- b) added terms and definitions;
- c) updated fibre naming conventions according to IEC 60793-2-10;
- d) test severities updated according to IEC 61753-1;
- e) added the torsion test;

- 87 f) reduced the duration of the fibre/cable retention test on reinforced cables from 120 s to 60 s  
88 minimum;
- 89 g) removed the static side load test;
- 90 h) reduced the number of mating durability cycles for cylindrical ferrule connectors from 500  
91 cycles to 200 cycles;
- 92 i) added mating durability for rectangular ferrule connectors with 50 cycles;
- 93 j) added Annex B for visual examination of the outer cable sheath movement of reinforced  
94 cables as an additional requirement for change of temperature, cable retention and flexing  
95 of the strain relief tests.

96 The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

97  
98 Full information on the voting for its approval can be found in the report on voting indicated in  
99 the above table.

100 The language used for the development of this International Standard is English.

101 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in  
102 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available  
103 at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are  
104 described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

105 The committee has decided that the contents of this document will remain unchanged until the  
106 stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the  
107 specific document. At this date, the document will be

- 108 • reconfirmed,
- 109 • withdrawn,
- 110 • replaced by a revised edition, or
- 111 • amended.

112

# FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – PERFORMANCE STANDARD –

## Part 022-02: Multimode fibre optic connectors terminated as pigtails and patchcords for category C – Controlled environment

### 1 Scope

This part of IEC 61753 defines the minimum initial test and measurement requirements and severities which multimode fibre optic connectors terminated as a pigtail or patchcord satisfy in order to be categorized as meeting the IEC standard category C (controlled environment), as defined in IEC 61753-1.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60793-2-10, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres*

IEC 60794-2-23 *Optical fibre cables – Part 2-23: Indoor cables – Detailed specification for multi-fibre cables for use in MPO connector terminated cable assemblies*

IEC 60794-2-50, *Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies*

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1 General and guidance*

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

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

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

IEC 61300-2-5, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-5: Tests - Torsion*

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

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

151 IEC 61300-2-18, *Fibre optic interconnecting devices and passive components – Basic test and*  
 152 *measurement procedures – Part 2-18: Tests – Dry heat*

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

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

157 IEC 61300-2-44, *Fibre optic interconnecting devices and passive components – Basic test and*  
 158 *measurement procedures – Part 2-44: Tests – Flexing of the strain relief of fibre optic devices*

159 IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and*  
 160 *measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

161 IEC 61300-3-3, *Fibre optic interconnecting devices and passive components – Basic test and*  
 162 *measurement procedures – Part 3-3: Examinations and measurements – Active monitoring of*  
 163 *changes in attenuation and in return loss*

164 IEC 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and*  
 165 *measurement procedures – Part 3-4: Examinations and measurements – Attenuation*

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

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

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

173 IEC 61300-3-45, *Fibre optic interconnecting devices and passive components – Basic test and*  
 174 *measurement procedures – Part 3-45: Examinations and measurements – Attenuation of*  
 175 *random mated multi-fibre connectors*

176 IEC 61753-1, *Fibre optic interconnecting devices and passive components – Performance*  
 177 *standard – Part 1: General and guidance*

178 IEC 61754 (all parts), *Fibre optic interconnecting devices and passive components – Fibre optic*  
 179 *connector interfaces*

180 IEC 63267 (all parts), *Fibre optic interconnecting devices and passive components – Connector*  
 181 *optical interfaces for enhanced macro bend loss multimode fibres*

182 IEC 63267-2 (all parts), *Fibre optic interconnecting devices and passive components –*  
 183 *Connector optical interfaces for enhanced macro bend loss multimode fibres – Part 2:*  
 184 *Connection of 50 µm core diameter multimode physically contacting fibres*

185 IEC 63267-3 (all parts), *Fibre optic interconnecting devices and passive components –*  
 186 *Connector optical interfaces for enhanced macro bend multimode fibres – Part 3: Connector*  
 187 *parameters of physically contacting 50 µm core diameter fibres*

### 188 **3 Terms and definitions**

189 For the purposes of this document, the following terms and definitions apply.

190 ISO and IEC maintain terminology databases for use in standardization at the following  
191 addresses:

- 192 • IEC Electropedia: available at <https://www.electropedia.org/>
- 193 • ISO Online browsing platform: available at <https://www.iso.org/obp>

### 194 3.1

#### 195 **change in attenuation**

196  $\delta$

197  $\pm$  deviation from the original value of the transmitted power at the start of the test

198 Note 1 to entry: The deviation is expressed as a unit of dB.

### 199 3.2

#### 200 **sample**

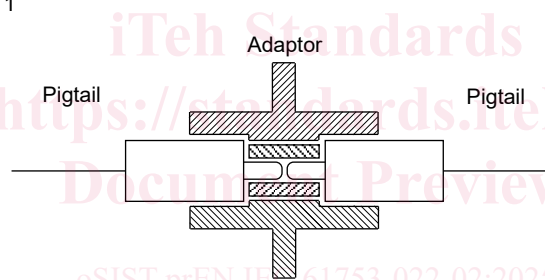
201 complete set of connector components required to provide demountable coupling between one  
202 or more pairs of optical fibres

### 203 3.3

#### 204 **pigtail test sample**

205 sample comprised of two pigtails mated with an adaptor

206 Note 1 to entry: See Figure 1



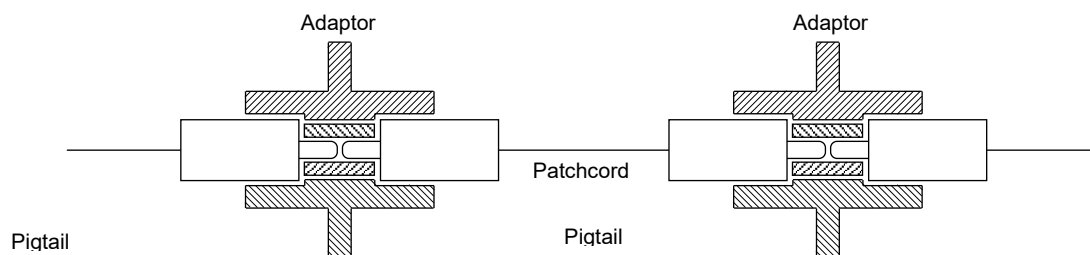
207 **Figure 1 – Pigtail test sample**

### 209 3.4

#### 210 **patchcord test sample**

211 sample comprised of patchcord mated to two pigtails using adaptors

212 Note 1 to entry: See Figure 2



213 **Figure 2 – Patchcord test samples**

214

## 215 4 Tests

216 All test and measurement methods were selected from the IEC 61300 series and the test  
217 parameters and requirements from IEC 61753-1 as defined in 7.6 and 7.7. Additional  
218 requirements to certain tests are given in Annex B.

219 The connector plugs under test shall be terminated onto multimode fibre as per type A1 of  
220 IEC 60793-2-10 fibre type A1-OM2, A1-OM3, A1-OM4 or A1-OM5 in either primary coated,  
221 buffered or reinforced cable format. The full set of tests shall be carried out for at least one fibre  
222 type. Other fibre types are qualified by similarity. The reinforced cable used for the pigtails or  
223 patchcords shall conform to the requirements of IEC 60794-2-23 or IEC 60794-2-50. Care shall  
224 be taken to respect the minimum bend radius of the cable. The connector interface standard  
225 shall meet the dimensions of the relevant part of the IEC 61754 series and the connector optical  
226 interface standard shall meet the relevant requirements of the IEC 63267 series.

## 227 5 Test report

228 Fully documented test reports and supporting evidence shall be prepared and available for  
229 inspection as evidence that the tests have been carried out and the results are satisfactory.

## 230 6 Reference components

231 No reference components are required to perform the tests in this document.

## 232 7 Performance requirements

### 233 7.1 General

234 Unless otherwise specified, all tests shall be carried out at standard atmospheric conditions as  
235 specified in IEC 61300-1. [oSIST prEN IEC 61753-022-02:2025](https://standards.iteh.ai/catalog/standards/sist/b8446a73-14bc-4f91-9ca5-fdd6f2481820/osist-pren-iec-61753-022-02-2025)

### 236 7.2 Dimensions

237 Dimensions shall comply with the appropriate IEC interface standard as defined in the IEC  
238 61754 series.

### 239 7.3 Sample size and test sequencing

240 For the purposes of this document, a sample is composed of patchcords, pigtail test samples  
241 or patchcord test samples (see Clause 3.3 and 3.4). The sample sizes to be used for the tests  
242 shall be as defined in Annex A. Samples for the first test (attenuation) are to be randomly  
243 selected and randomly mated new patchcords. Samples for the second test (return loss) are  
244 the same patchcords selected and mated for the first test. The remaining tests are not intended  
245 to be performed in any particular sequence or grouping, but rather, individually on new test  
246 samples. Test samples from the previous tests may be used if desired. If a failure occurs on a  
247 sample that was tested in a previous test, a new set of samples shall be prepared, and the  
248 failed test shall be re-done.

### 249 7.4 Endface geometry

250 The connector endface shall comply with the endface geometry requirements of the applicable  
251 IEC optical interface standard as defined in the IEC 63267-3 series. Compliance with the  
252 appropriate optical interface standard shall be confirmed on all samples before the start of  
253 testing and after each test. If testing sequentially, compliance shall be confirmed after the last  
254 test. Non-compliance with the endface geometry requirements of the applicable optical interface  
255 standard on any connector tested results in a failure of this performance standard.