



**SLOVENSKI STANDARD**  
**oSIST prEN 63032:2017**  
**01-september-2017**

---

**Optični spojni elementi in pasivne komponente - Optični spojni nastavljivi pasovni filtri - Rodovna specifikacija**

Fibre optic interconnecting devices and passive components - Fibre optic tuneable bandpass filters - Generic specification

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN IEC 63032:2018

Ta slovenski standard je istoveten z: <https://standards.iteh.ai/catalog/standards/sist/bf6150f8c-2c6b-4190-a994-a54519c18d84/sist-en-iec-63032-2018> prEN 63032:2017

---

**ICS:**

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
-----------	---------------------------------------	-------------------------------------

**oSIST prEN 63032:2017**

**en**





# 86B/4080/CDV

## COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: <b>IEC 63032 ED1</b>	
DATE OF CIRCULATION: <b>2017-06-16</b>	CLOSING DATE FOR VOTING: <b>2017-09-08</b>
SUPERSEDES DOCUMENTS: <b>86B/4057/CD,86B/4079A/CC</b>	

IEC SC 86B : FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS	
SECRETARIAT: Japan	SECRETARY: Mr Shigeru Tomita
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<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

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

**Fibre optic interconnecting devices and passive components - Fibre optic tuneable bandpass filters - Generic specification**

NOTE FROM TC/SC OFFICERS:

## CONTENTS

1		
2		
3	FOREWORD.....	4
4	1 Scope.....	6
5	2 Normative references .....	6
6	3 Terms and definitions .....	7
7	wavelength and bandwidth tuneable bandpass filter .....	8
8	bandwidth tuning resolution .....	8
9	wavelength tuning resolution .....	8
10	repeatability of bandwidth tuning .....	8
11	repeatability of wavelength tuning.....	9
12	insertion loss deviation of wavelength tuning .....	9
13	X dB bandwidth deviation of wavelength tuning .....	9
14	polarization dependent loss (PDL) deviation of wavelength tuning .....	10
15	channel isolation deviation of wavelength tuning .....	10
16	wavelength channel tuning time.....	10
17	bandwidth tuning time.....	10
18	4 Requirements .....	11
19	4.1 Classification .....	11
20	4.1.1 General .....	11
21	4.1.2 Type .....	11
22	4.1.3 Style .....	11
23	4.2 Documentation.....	12
24	4.2.1 Symbols .....	12
25	4.2.2 Drawings .....	12
26	4.2.3 Test and measurements .....	12
27	4.2.4 Test report.....	12
28	4.2.5 Instructions for use .....	13
29	4.3 Standardisation system.....	13
30	4.3.1 Performance standard .....	13
31	4.3.2 Reliability standard .....	13
32	4.3.3 Interlinking.....	14
33	4.4 Design and construction.....	15
34	4.4.1 Materials .....	15
35	4.4.2 Workmanship.....	15
36	4.5 Performance requirements.....	15
37	4.6 Identification and marking .....	15
38	4.6.1 General .....	15
39	4.6.2 Component marking.....	15
40	4.6.3 Package marking .....	15
41	4.7 Packaging.....	16
42	4.8 Storage conditions .....	16
43	4.9 Safety .....	16
44	Annex A (Informative) General information of tuneable bandpass filters.....	17
45	Annex B (Informative) Examples of tuneable bandpass filter technologies .....	18
46	B.1 Tuneable filter using thermo-optic effects .....	18
47	B.2 Tuneable filter using acousto-optic effects .....	18

48	B.3 Tuneable filter using mechanical effects .....	19
49	B.4 Tuneable filter using piezoelectric effects .....	20
50	Bibliography.....	21
51		
52	Figure 1 – Illustration of wavelength tuneable bandpass filter .....	7
53	Figure 2 – Illustration of bandwidth tuneable bandpass filter .....	7
54	Figure 3 – Illustration of wavelength and bandwidth tuneable bandpass filter.....	8
55	Figure 4 – Illustration of insertion loss deviation of tuning .....	9
56		
57	Table 1 – The IEC specification structure.....	11
58	Table 2 – Standards interlink matrix.....	14
59	Table 3 – Quality assurance options .....	15
60		
61		
62		

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 63032:2018

<https://standards.iteh.ai/catalog/standards/sist/bfd50f8c-2c6b-4190-a994-a34319c18d84/sist-en-iec-63032-2018>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS  
– FIBRE OPTIC TUNEABLE BANDPASS FILTERS – GENERIC  
SPECIFICATION

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 63032 has been prepared by subcommittee SC86B: Fibre optic interconnecting devices and passive components, of IEC technical committee TC86: Fibre optics.

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

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

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

114 The committee has decided that the contents of this document will remain unchanged until the  
115 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to  
116 the specific document. At this date, the document will be

- 117 • reconfirmed,
- 118 • withdrawn,
- 119 • replaced by a revised edition, or
- 120 • amended.

121

122 The National Committees are requested to note that for this document the stability date  
123 is 2027.

124 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE  
125 DELETED AT THE PUBLICATION STAGE.

126

127

128

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN IEC 63032:2018

<https://standards.iteh.ai/catalog/standards/sist/bfd50f8c-2c6b-4190-a994-a34319c18d84/sist-en-iec-63032-2018>

129  
130 **FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS**  
131 **– FIBRE OPTIC TUNEABLE BANDPASS FILTERS – GENERIC**  
132 **SPECIFICATION**  
133  
134  
135

136 **1 Scope**

137 This International Standard IEC 63032 applies to the family of tuneable bandpass filters.  
138 These components can modify the spectral intensity distribution in order to select some  
139 wavelengths and inhibit others.

140 They can be categorized into the following:

141 - wavelength tuneable;

142 - bandwidth tuneable;

143 - wavelength and bandwidth tuneable filter.

144 This standard establishes uniform requirements for optical, mechanical and environmental  
145 properties.

146 **2 Normative references**

147 The following documents are referred to in the text in such a way that some or all of their  
148 content constitutes requirements of this document. For dated references, only the edition  
149 cited applies. For undated references, the latest edition of the referenced document (including  
150 any amendments) applies.

151 IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

152 IEC 60050 (731), *International Electrotechnical Vocabulary – Chapter 731: Optical fibre*  
153 *communication*

154 IEC 60617 (all parts), *Graphical symbols for diagrams*

155 IEC 60695-2-2, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*

156 IEC 60825-1, *Safety of laser products – Part 1: Equipment classification and requirements*

157 IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components – Basic*  
158 *test and measurement procedures*

159 IEC 61977, *Fibre optic interconnecting devices and passive components – Fibre optic filters –*  
160 *Generic specification*

161 IEC TS 62627-09, *Fibre optic interconnecting devices and passive components - Terminology*  
162 *of passive optical devices*

163 IEC TR 61930, *Fibre optic graphical symbology*

164 ISO 129, *Technical drawings – Dimensioning – General principles, definitions, methods of*  
165 *execution and special indications*

166 ISO 286-1, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations and fits*



167 ISO 1101, *Technical drawings – Geometrical tolerancing – Tolerancing of form, orientation,*  
 168 *location and run-out – Generalities, definitions, symbols, indications on drawings*

169 ISO 8601, *Data elements and interchange formats – Information interchange –*  
 170 *Representation of dates and times*

### 171 3 Terms and definitions

172 For the purposes of this document, the terms and definitions in IEC 61977, IEC TS 62627-09  
 173 and the following apply.

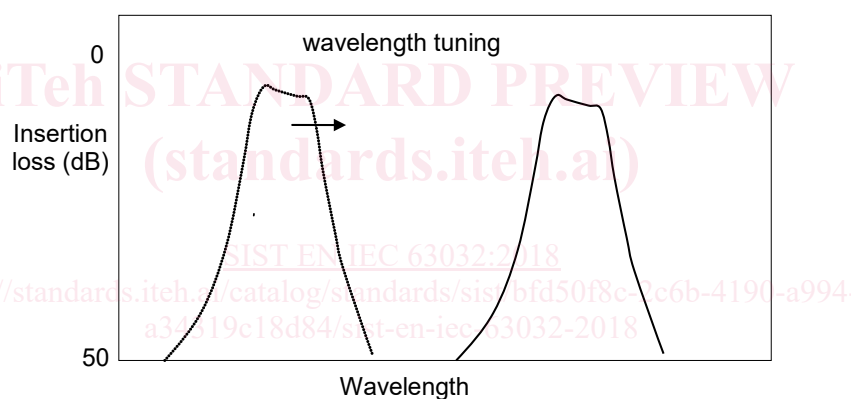
174 ISO and IEC maintain terminological databases for use in standardization at the following  
 175 addresses:

- 176 • IEC Electropedia: available at <http://www.electropedia.org/>
- 177 • ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 178 3.1

#### 179 **wavelength tuneable bandpass filter**

180 fibre optic filter in which the passband can be shifted without changing the spectral shape



181

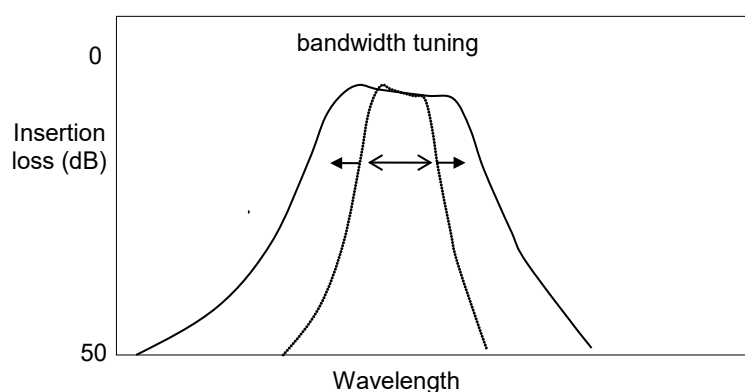
182 **Figure 1 – Illustration of wavelength tuneable bandpass filter**

183 NOTE 1 to entry: Insertion loss means insertion loss (attenuation).

#### 184 3.2

#### 185 **bandwidth tuneable bandpass filter**

186 fibre optic filter in which the passband width can be changed without shifting the centre of the  
 187 passband



188

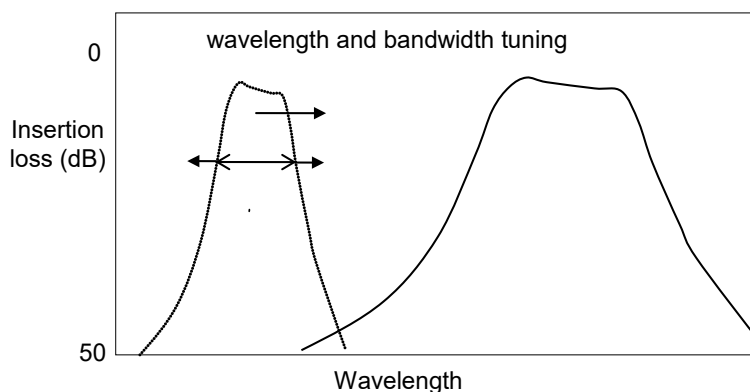
189 **Figure 2 – Illustration of bandwidth tuneable bandpass filter**

190 NOTE 1 to entry: Insertion loss means insertion loss (attenuation).

### 191 3.3

#### 192 wavelength and bandwidth tuneable bandpass filter

193 fibre optic filter in which both the centre of the passband and the passband width can be  
194 changed



195

196 **Figure 3 – Illustration of wavelength and bandwidth tuneable bandpass filter**

197 NOTE 1 to entry: Insertion loss means insertion loss (attenuation).

### 198 3.4

#### 199 bandwidth tuneable range

200 spectral interval either in frequency or wavelength over which the passband bandwidth of a  
201 tuneable optic filter can be adjusted by means of tuning control

202 NOTE 1 to entry: This term is applied for (a) bandwidth tuneable bandpass filters and (b) wavelength and  
203 bandwidth tuneable bandpass filters.

### 204 3.5

#### 205 wavelength tuneable range

206 spectral interval either in frequency or wavelength over which the operating wavelength or  
207 frequency of a tuneable optic filter can be adjusted by means of tuning control

208 NOTE 1 to entry: This term is applied for (a) wavelength tuneable bandpass filters and (b) wavelength and  
209 bandwidth tuneable bandpass filters.

### 210 3.6

#### 211 bandwidth tuning resolution

212 minimum adjustable step size of the passband bandwidth

213 NOTE 1 to entry: This term is applied for (a) bandwidth tuneable bandpass filters and (b) wavelength and  
214 bandwidth tuneable bandpass filters.

### 215 3.7

#### 216 wavelength tuning resolution

217 minimum adjustable step size of the centre wavelength

218 NOTE 1 to entry: This term is applied for (a) wavelength tuneable bandpass filters and (b) wavelength and  
219 bandwidth tuneable bandpass filters.

### 220 3.8

#### 221 repeatability of bandwidth tuning

222 maximum deviation of the passband bandwidth after multiple times of repeated tuning

223 NOTE 1 to entry: This term is applied for (a) bandwidth tuneable bandpass filters and (b) wavelength and  
224 bandwidth tuneable bandpass filters.

225 NOTE 2 to entry: The number of repeated times of tuning will be defined in the performance standard.

### 226 3.9

#### 227 repeatability of wavelength tuning

228 maximum deviation of the wavelength after multiple times of repeated tuning

229 NOTE 1 to entry: This term is applied for (a) wavelength tuneable bandpass filters and (b) wavelength and  
230 bandwidth tuneable bandpass filters.

231 NOTE 2 to entry: The number of repeated times of tuning will be defined in the performance standard.

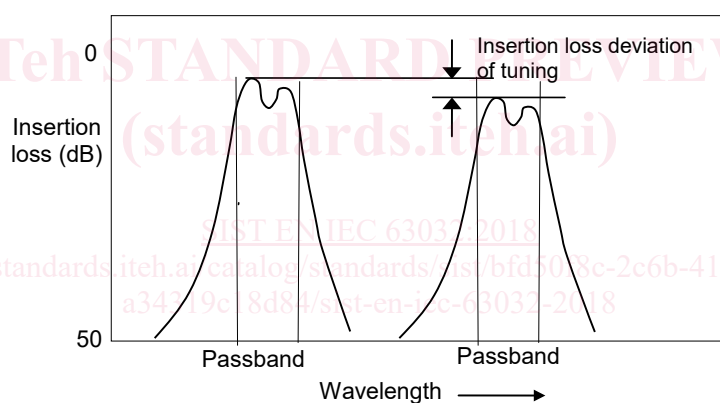
### 232 3.10

#### 233 insertion loss deviation of wavelength tuning

234 maximum attenuation (insertion loss) variation of a tuneable optic filter between wavelength  
235 channels after multiple times of repeated tuning

236 NOTE 1 to entry: This term is applied for (a) wavelength tuneable bandpass filters and (b) wavelength and  
237 bandwidth tuneable bandpass filters.

238 NOTE 2 to entry: The number of repeated times of tuning will be defined in the performance standard.



239

240 **Figure 4 – Illustration of insertion loss deviation of tuning**

241 NOTE 1 to entry: Insertion loss means insertion loss (attenuation).

### 242 3.11

#### 243 X dB bandwidth deviation of wavelength tuning

244 maximum variation of a bandwidth of the tuneable optic filter after multiple times of repeated  
245 tuning

246 NOTE 1 to entry: This term is applied for (a) wavelength tuneable bandpass filters and (b) wavelength and  
247 bandwidth tuneable bandpass filters.

248 NOTE 2 to entry: The number of repeated times of tuning will be defined in the performance standard.