



**SLOVENSKI STANDARD**  
**SIST EN 186220:1999**

**01-julij-1999**

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**Sectional Specification: Connector sets for optical fibres and cables - Type LSC**

Sectional Specification: Connector sets for optical fibres and cables - Type LSC

Rahmenspezifikation: Steckverbindersätze für Lichtwellenleiter und Lichtwellenleiterkabel - Bauart LSC

Spécification intermédiaire: Jeux de connecteurs pour fibres et câbles optiques - Type LSC

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**ICS:**

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
**EUROPÄISCHE NORM**

**EN 186 220**

December 1993

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Descriptors: Quality, electronic components, connector sets, optical fibres and cables

English Version

**Sectional Specification:**  
**Connector Sets for Optical Fibres and Cables**  
**Type LSC**

Spécification intermédiaire:

Rahmenspezifikation:

Jeux de connecteurs pour fibres et  
câbles optiques  
Type LSC

Steckverbindersätze für Lichtwellen-  
leiter und Lichtwellenleiterkabel  
Bauart LSC

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 13 February 1992. CENELEC members are bound to comply with CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the General Secretariat of the CECC or to any CENELEC member.

This European Standard exists 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 CECC General Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

**CECC**

CENELEC Electronic Components Committee  
Comité des Composants Electroniques du CENELEC  
CENELEC- Komitee für Bauelemente der Elektronik  
**General Secretariat: Gartenstr. 179, D- 60596 Frankfurt/Main**

## FOREWORD

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

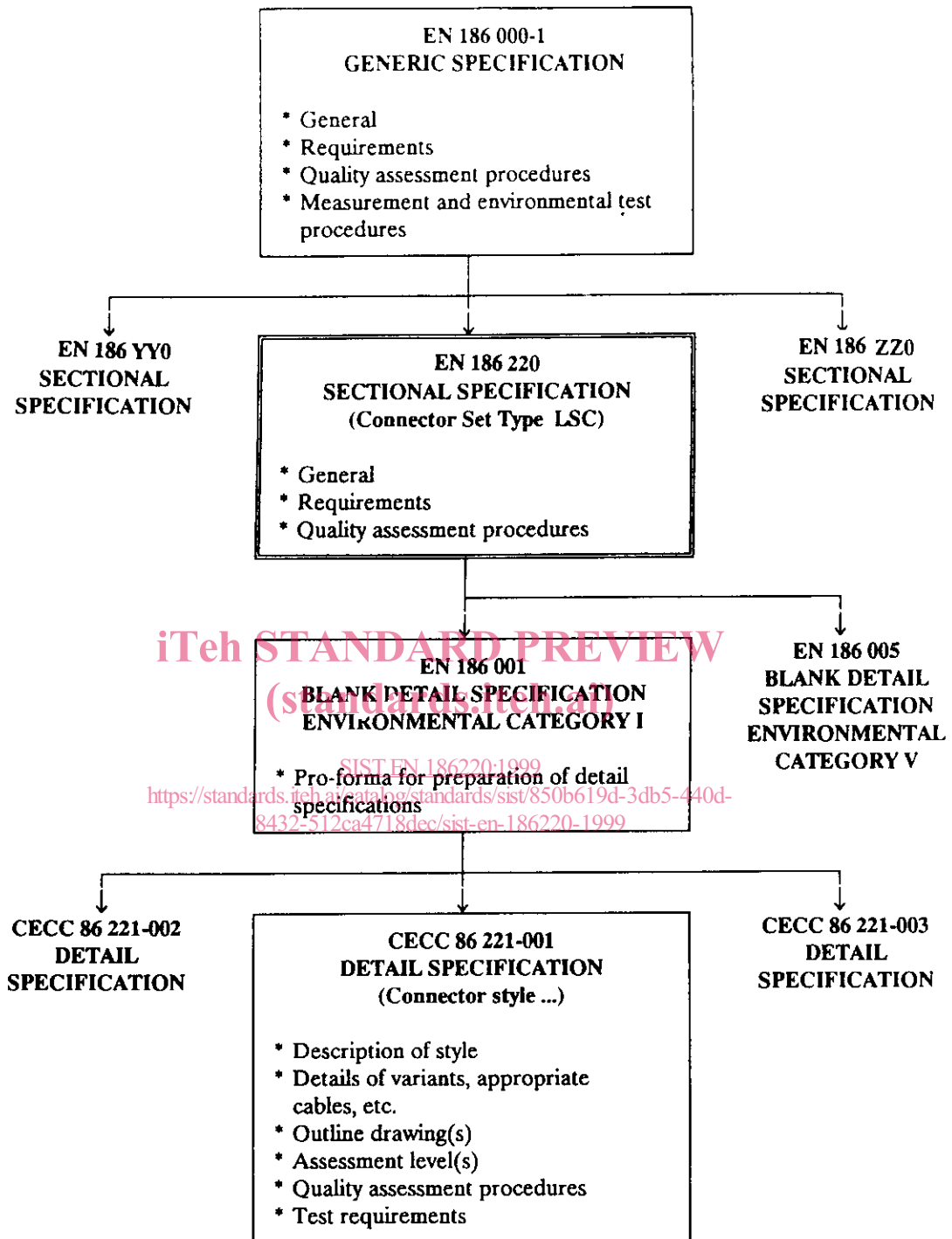
This European Standard was prepared by CECC WG 26, Fibre Optic Connectors.

The text of the draft based on document CECC(Sec)2737 was submitted to the formal vote; together with the voting report, circulated as document CECC(Sec)3012 it was approved by CECC as EN 186 220 on 13 February 1992.

The following dates were fixed:

- latest date of announcement of the (doa) 1992-12-15  
EN at national level
- latest date of publication of an (dop) 1993-06-15  
identical national standard
- latest date of declaration of (standards.iteh.ai) 1993-06-15  
national standards obsolescence
- latest date of withdrawal of (dow) 2002-12-15  
conflicting national standards

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The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of international recognized Mark, or certificate, of conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for FIBRE OPTIC CONNECTORS AND ACCESSORIES TYPE LSC. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

## PREFACE

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This specification was prepared by CECC WG 26 "Fibre Optic Connectors".

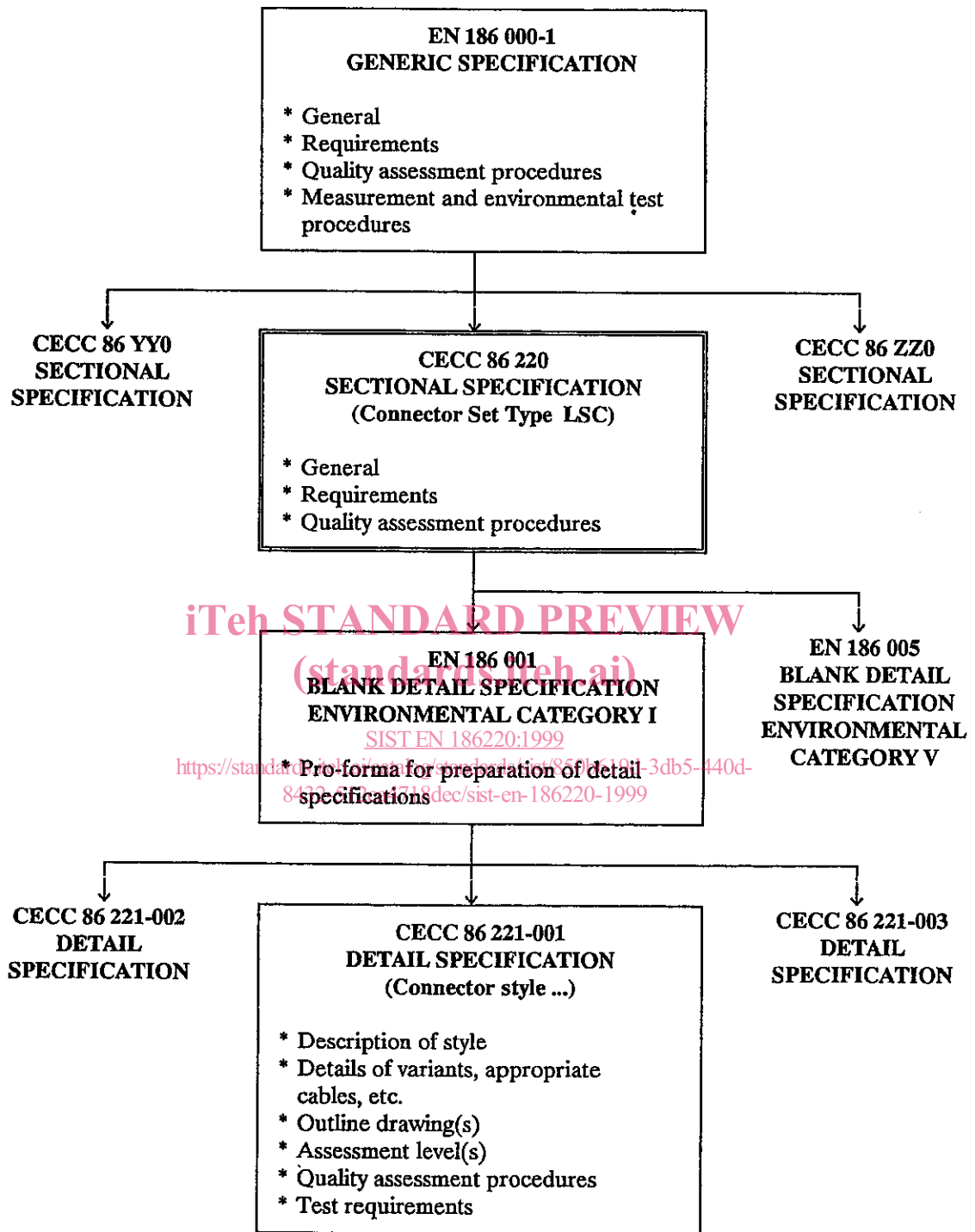
It is based, wherever possible, on the Publications of the International Electrotechnical Commission (IEC).

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The text of this specification was circulated to the CECC for voting in the document(s) indicated (listed) below and was approved for publication.

<u>Document</u>	<u>Date of Voting</u>	<u>Report on the Voting</u>
CECC(Secretariat)2737	June 1991	CECC(Secretariat)3012

Document numbering for fibre optic connector specifications follows 2.2(1) of CECC 00 700: Sect.IV, in order to permit the issue of more than nine sectional specifications (SSs). The approved numbering system applicable to fibre optic connector specifications is illustrated in the following diagram:



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## SECTION ONE - GENERAL

### 1. General

#### 1.1 Scope

This SS covers type LSC fibre optic connector sets. Type LSC defines single way connectors with a bayonet coupling mechanism and a cylindrical butting ferrule of 2,5 mm nominal diameter.

This specification contains the requirements for type LSC connector sets.

Detail specifications (DSs) shall be prepared using the following pro forma general blank detail specifications (BDS) associated with the GS:

- EN 186 001, environmental category I,

When completed, the DSs applicable to this SS shall be renumbered in accordance with CECC 00 700 (Section IV) Issue 1, clause 4.2, as follows:

CECC 86 XX1-XXX

Type LSC

Environmental Category I

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#### 1.2 Related Documents

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of CECC, IEC and ISO maintain registers of currently valid international standards.

References made to a specific clause or subclause of a standard includes all subclauses to the reference unless otherwise specified.

EN 186 000-1 :	Generic specification (GS) for connector sets for optical fibres and cables.
IEC 825 :	Radiation safety of laser products, equipment classification, requirements and user's guide.
ISO 8015 :	Technical drawings; fundamental tolerancing principle.
ISO 128:	Technical drawings - General principles of presentation.

#### 1.3 Definitions

For comparison of connectors with different accuracy grades with different mechanical and optical quality grades within the same DS the connectors are specified with a quality grade. This value gives a combination of the following three subgrades:

- \* clearance grade
- \* eccentricity grade
- \* attenuation grade.

### 1.3.1 Clearance Grade

This describes the tolerance field of the leading diameter of ferrule and sleeve. The clearance grade is given by a number, running from 0 (tightest tolerance) to 5 (see Annex 2). The allocation of clearance grade and tolerance field is described in the relevant DS.

### 1.3.2 Eccentricity Grade

This describes the tolerance field that combines the tolerance of the borehole and its concentricity to the axis of the plug. This information is only applicable for field mountable connectors. The eccentricity grade is given by a number, running from 0 (lowest tolerance) to 5. The allocation of grade and tolerance field is described in the relevant DS.

### 1.3.3 Attenuation Grade

This describes an area of a given attenuation. It is only considerable for pigtailed connector sets. The attenuation grade is given by a number, running from 0 (lowest tolerance) to 5. The allocation of the grade and tolerance field is described in the relevant DS.

### 1.3.4 Quality Grade

This gives the combination of clearance grade, eccentricity grade and attenuation grade.

The quality grade is given by the highest number of the three mentioned subgrades.

**Example:** Pigtailed connector set

	Example A	Example B	Example C
Clearance grade	0	1	3
Eccentricity grade	-	-	-
Attenuation grade	2	1	1
Quality grade	2	1	3

## 1.4 Safety

1.4.1 Optical fibre connectors, when used as part of an optical fibre system, may emit/produce potentially hazardous radiation. The manufacturers of connectors are not obliged to mark them as such, but sufficient information should be made available in the manufacturer's literature to enable the system designer to assess the degree of hazard. This information shall be given prominence in the DS.

1.4.2 The assembly instructions, included in the connector package, shall give a prominent warning to the assembler, of the necessary work practices.

1.4.3 The responsibility for the safe application of the connector lies with the system design engineer, who should refer to IEC 825. As there is no safety guide for light emitting diodes (LEDs), IEC 825 shall apply to systems using these also.

1.4.4 DSs should give the following information in a prominent position :

**WARNING**

**"Care should be taken when handling small diameter optical fibre, to prevent it puncturing the skin, especially in the eye area.**

**Direct viewing of the end of an optical fibre or a terminated optical fibre, while it is propagating energy, is not recommended unless prior assurance has been obtained as to the safe energy of the output level".**

**1.5 Marking**

See 2.6 of EN 186 000-1.

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