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INTERNATIONAL STANDARD

Fibre optic interconnecting devices and passive components – Mechanical splices and fusion splice protectors for optical fibres and cables – Part 1: Generic specification

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CONTENTS

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – MECHANICAL SPLICES AND FUSION SPLICE PROTECTORS FOR OPTICAL FIBRES AND CABLES –

Part 1: Generic specification

FOREWORD

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International Standard IEC 61073-1 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This fourth edition cancels and replaces the third edition published in 1999. This edition constitutes a technical revision. The main changes with respect to the previous edition are as follows:

- terms and definitions have been reconsidered;
- style has been added in classification of requirement;
- environmental category has been deleted from classification of requirement;
- standardisation structure and standards interlink have been reconsidered.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/2773/FDIS	86B/2805/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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A bilingual version of this publication may be issued at a later date.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – MECHANICAL SPLICES AND FUSION SPLICE PROTECTORS FOR OPTICAL FIBRES AND CABLES –

Part 1: Generic specification

1 Scope

This part of IEC 61073 applies to fibre optic splice hardware (mechanical splices and fusion splice protections) for optical fibres and cables.

It includes:

– fibre optic splice hardware requirements;

– quality assessment procedures.

This standard does not cover test and measurement procedures, which are described in IEC 61300-1, IEC 61300-2 series and IEC 61300-3 series.

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.

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

IEC QC 001002-3, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of Procedure – Part 3: Approval procedures*

IEC Guide 102, *Electronic components – Specification structures for quality assessment (Qualification approval and capability approval)*

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

IEC 60050-731, *International Electrotechnical Vocabulary – Chapter 731: Optical fibre communication*

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

IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

IEC 60793-1 (all parts), *Optical fibres – Measurement methods and test procedures*

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

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

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

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

IEC 61930: *Fibre optic graphical symbology*

IEC 61931, *Fibre optic – Terminology*

ISO 129-1, *Technical drawings – Indication of dimensions and tolerances – Part 1: General principles*

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

ISO 1101, *Geometrical Product Specifications (GPS) – Geometrical tolerancing – Tolerances of form, orientation, location and run-out*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions contained in IEC 60050-731, IEC 61931, and IEC 60874-1 as well as the following definitions apply.

3.1
cable joint
protective joint of two or more optical fibre cables. It may consist of fibre splices, organizers and closures

3.2
capillary mechanical splice
mechanical splice where the fibres are aligned by inserting them in a precision capillary tube

3.3
fibre splice
permanent or separable splice (see **separable splice**)

3.4
fusion splice
splice in which fibre ends are joined in a permanent manner by means of fusion

3.5
hybrid splice
cable splice with fibre splice(s) and electrical conductor splice(s)

3.6
interchangeable splice sets
splice sets are considered to be interchangeable when they both have the same installation geometry and functional performance

3.7
mechanical splice
splice in which the fibre ends are joined either permanently or separably by any mechanical means as long as the fibre ends are not fused together

3.8
permanent splice
splice which cannot be separated

3.9
precision rods mechanical splice
mechanical splice where the fibres are aligned using two or more precision rods

3.10
separable splice
splice which can be disassembled and reassembled but is intended for permanent use

3.11
shape memory alloy splice
mechanical splice where the fibres are aligned by using special materials which have the property to regain their original macroscopic shape when they are heated up (shape memory effect) or after an applied load is released, at higher temperature (superelasticity)

3.12
splice protector
protection of bare fibre after the primary coating has been stripped off for the splice procedure

NOTE Additionally, the splice protector reinforces the splice area and provides a possibility to mount this in a holder.

3.13
splice sub-family
range of fibre optic splice technologies as defined in the relevant specification

3.14
V- groove mechanical splice
mechanical splice where the fibres are aligned by using a precision V-groove

4 Requirements

The requirements for fibre optic splice hardware and accessories covered by this specification are specified in this clause and in the relevant specification.

4.1 Classification

Fibre optic splice hardware and accessories are classified, either totally or in part, by the following categories (see Table 1):

– type;
– arrangement ;
– style;
– variant;
– assessment level;
– normative reference extensions.

See Table 1 for an example of a complete fibre optic splice hardware classification.

Table 1 – Example of a typical mechanical splice and fusion splice protection hardware

Type	Name: V-groove mechanical splice Type of splice: mechanical splice Configuration: separable splice	Name: fusion splice protection Type of splice: fusion splice hardware Configuration: permanent splice
Arrangement	Kit arrangement with assembling tool	Splice protection kit
Style	Splice method: V-groove Alignment method: cladding (outside surface, axis) Number of simultaneously spliced fibres: one or more Index matching: gel Fibre coating removal: required, mechanical Splice protection hardware: sandwich or others	Fibre category: B1, A1 Single fibre protection Splice protection: shrinkable tubing
Variants	.....	.....

4.1.1 Type

Mechanical splices and fibre optic splice hardware shall be defined by the following items.

– Type name
  Example: “brand name” mechanical splice
  “brand name” splice protector
– Type of splice
  Examples: mechanical splice
  fusion splice hardware
– Configuration
  Examples: permanent splice
  separable splice

4.1.2 Arrangement

The fibre optic splice hardware arrangement shall define the delivered form of the item and the assembling tool, if needed.

Examples: kit arrangement
splice hardware arrangement

4.1.3 Style

Fibre optic splice style shall be defined by the following items, which may differ depending on the type of splice hardware.

4.1.3.1 Mechanical splice

Fibre category (according to the series IEC 60793-1)

– Splice method
  Examples: V-groove