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Fibre optic interconnecting devices and passive components — Ferrule assembly and fusion splicer interface dimensions for a fusion splice on connector

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National foreword

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Fibre optic interconnecting devices and passive components – Ferrule assembly and fusion splicer interface dimensions for a fusion splice on connector

Dispositifs d'interconnexion et composants passifs à fibres optiques – Dimensions de la férule équipée et de l'interface de l'épissureur par fusion relatives à une épissure par fusion sur connecteur

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS –

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62965, which is a Technical Specification, has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this Technical Specification is based on the following documents:

Enquiry draft	Report on voting
86B/3971/DTS	86B/3986/RVC

Full information on the voting for the approval of this technical specification 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.

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

- transformed into an International standard,
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- replaced by a revised edition, or
- amended.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS –

Ferrule assembly and fusion splicer interface dimensions for a fusion splice on connector

1 Scope

IEC TS 62965, which is a Technical Specification, specifies a minimum set of dimensional requirements for fusion splice on connectors (FSOCs) ferrule assemblies and the interface dimensions of splicing tools to ensure that a compliant ferrule assembly is compatible with a compliant fusion splicer. This fusion splicer interface also provides an example of the dimensional requirements for a universal holder, into which an FSOC can be mounted. This fusion splicer interface applies to FSOCs with a cylindrical ferrule of 2,5 mm diameter or 1,25 mm diameter.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

There are no normative references in this document.

3 Terms and definitions

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

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
ferrule assembly
component of an FSOC, which consists of a factory polished cylindrical ferrule, a flange and a pre-installed fibre fixed to the ferrule

3.2
fusion splice on connector
FSOC
optical connector which can be installed in the field by fusion splicing the pre-installed fibre of the ferrule assembly onto the fibre to be terminated

3.3
pre-installed fibre
portion of optical fibre where one end is fixed to the ferrule and factory polished with the endface of the ferrule, and the another end extends out of the flange and has a cleaved endface

4 Description

This fusion splicer interface defines the minimum dimensional limits and relative locations of an FSOC ferrule assembly within a fusion splicer to ensure that the fusion splicer is able to complete the splicing process.

This document also provides information on an example universal holder to accommodate the FSOC ferrule assembly. Other FSOC components such as connector housings, dust caps or reinforcing sleeve do not affect the compatibility, so their dimensions are not addressed in this fusion splicer interface.

It should be noted that this fusion splicer interface ensures only the compatibility between the FSOC ferrule assembly and fusion splicing tools, and does not ensure the compatibility of FSOC components of different models.

5 Interfaces

5.1 General

This document defines a minimum set of dimensional requirements for the ferrule assembly and the fusion splicer. The dimensions of the ferrule assembly are given in Figure 1 and Table 1 (for the 2,5 mm diameter type) and Table 2 (for the 1,25 mm diameter type). The interface of the fusion splicer is given in Figure 2 and Table 3.

5.2 Dimensions of the ferrule assembly

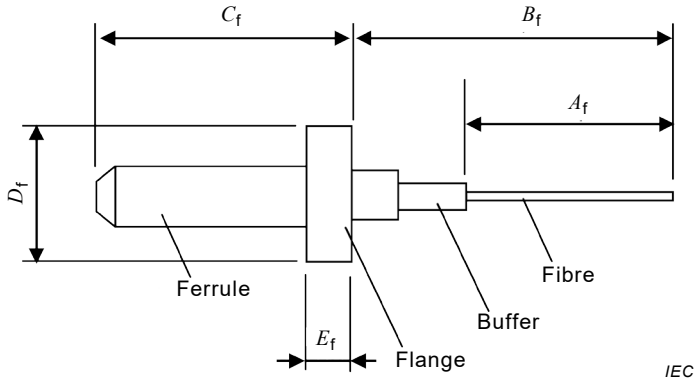

Figure 1 – Ferrule assembly dimensions

Table 1 – Dimensions for a 2,5 mm diameter cylindrical ferrule assembly

Dimensions in millimetres

Reference	Dimensions		Remarks
	Minimum	Maximum	
A_f [a]	4,7	11,75	Length of the bare fibre portion
B_f [a]	9,65	16,2	
C_f	–	11,5	The boundary between B_f and C_f is at the rear end of the largest flange
D_f	–	5,6	The overall dimension of the flange
E_f	–	3,35	
[a] A_f shall be less than B_f.			

Table 2 – Dimensions for a 1,25 mm diameter cylindrical ferrule assembly

Dimensions in millimetres

Reference	Dimensions		Remarks
	Minimum	Maximum	
A_f [a]	4,7	11,75	Length of the bare fibre portion
B_f [a]	8,3	15,2	
C_f	–	7,65	The boundary between B_f and C_f is at the rear end of the largest flange
D_f	–	5,25	The overall dimension of the flange
E_f	–	2,55	
[a] A_f shall be less than B_f			

5.3 Fusion splicer interface

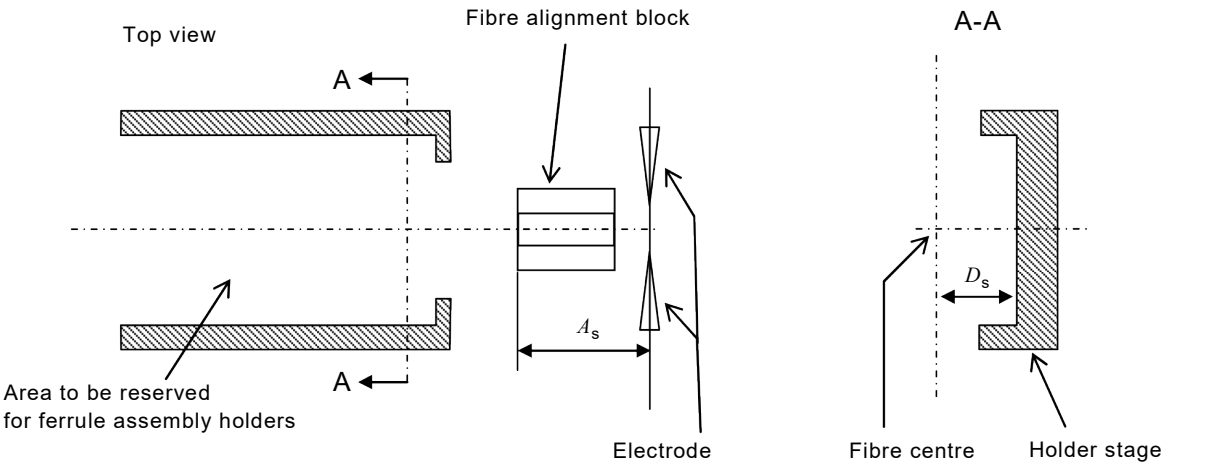

Figure 2 – Fusion splicer interface

Table 3 – Dimensions for the fusion splicer interface

Dimensions in millimetres

Reference	Dimensions		Remarks
	Minimum	Maximum	
A_s	3,5	4,6	
D_s	3,5	–	Applicable vertical position of the fibre from the top surface of the area for holders
The area to be reserved for ferrule assembly holders shall be ≥ 11,5 mm in length and ≥ 5,6 mm in width and ≥ 2,8 mm in depth (except for the structure for aligning and/or fixing the holder) to accommodate all ferrule assemblies compliant with this document.			

Annex A
(informative)

An example of a universal holder interface

Typically, each FSOC model has its original holder interface, i.e. a combination of a dedicated ferrule assembly holder design and one of its applicable fusion splicer models, so that the installation is optimised. This annex is provided as a guideline for users who plan to design/use a universal holder for various FSOC ferrule assemblies. It should be noted that the use of a universal holder may adversely affect the installation of the FSOC ferrule assembly in comparison to using the original purpose-designed ferrule holder, but not the performance of the assembled FSOC.

In conjunction with Figure A.1, examples of two universal holder interfaces are given in Table A.1 (for a 2,5 mm diameter ferrule type) and in Table A.2 (for a 1,25 mm ferrule type). These two examples are provided as sets of dimensional limits for a combination of the 2,5 mm or 1,25 mm ferrule assembly holders and the fusion splicer. Universal holders complying with these interfaces can accommodate any of the ferrule assemblies with their corresponding ferrule diameters as specified in this document.

In Figure A.1, dimension B_h varies during the fusion splicing process as the holder stage of the fusion splicer moves. In this fusion splicer interface, the B_h basic dimension is defined as the distance at the time of fusion splicing. Any value greater than B_h basic is allowed for B_h before the holder stage moves, as long as B_h can become equal to B_h basic at some point within the range of the holder stage movement.

The minimum limits for C_h and E_h have some margin against corresponding maximum limits for the ferrule assembly, C_f and E_f, respectively, shown in Figure 1. These margins allow positional adjustment of the ferrule assembly in its holder to achieve fibre end placement between the electrodes and the fibre alignment block prior to fusion splicing.

This fusion splicer inter face does not define the means to fix the ferrule assembly holder onto the fusion splicer holder stage.

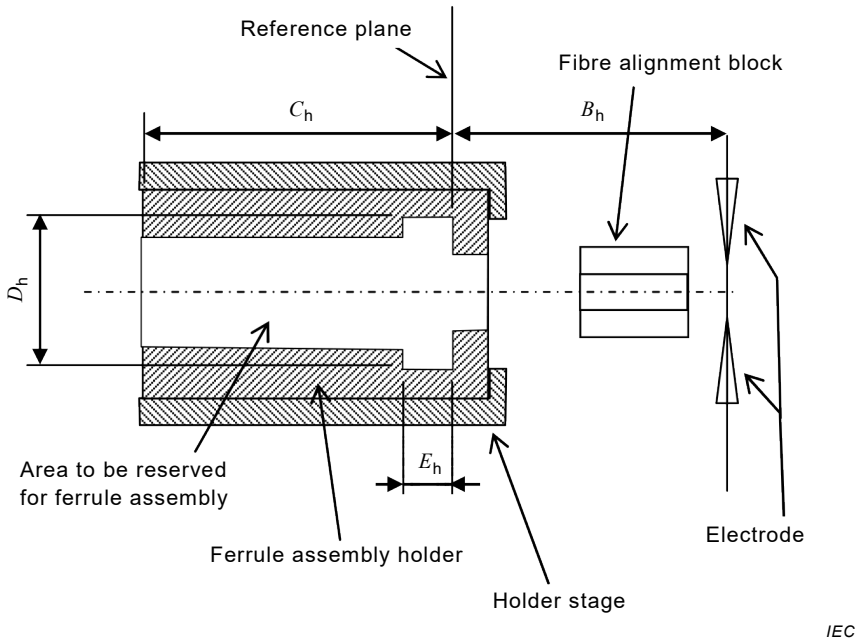

Figure A.1 – An example of a universal holder interface

Table A.1 – Dimensions for the universal holder example interface for a ferrule assembly with a 2,5 mm diameter cylindrical ferrule

Dimensions in millimetres

Reference	Dimensions			Remarks
	Minimum	Basic	Maximum	
B_h [a]		[b]		At the time of fusion splicing
C_h	18,1		50	
D_h	5,6		10	
E_h	9,9		50	

[a] The fusion splicer shall allow sufficient movement in order to be capable of aligning the cleaved fibre end with the electrode plane.

B_h is the distance between the reference plane of the ferrule assembly holder and the electrode plane at the time of fusion splicing.

B_h is variable corresponding to the ferrule assembly to be used.

[b] B_h basic is defined as the minimum B_h value the holder interface in consideration can have, and it equals to B_f minimum of the ferrule assembly the holder interface can accept.

For example, to accept all ferrule assemblies compliant with this document, B_h basic is 9,65 mm for 2,5 mm diameter cylindrical ferrule models.

Table A.2 – Dimensions for the universal holder example interface for a ferrule assembly with a 1,25 mm diameter cylindrical ferrule

Dimensions in millimetres

Reference	Dimensions			Remarks
	Minimum	Basic	Maximum	
B_h [a]		[b]		At the time of fusion splicing
C_h	14,6		50	
D_h	5,25		10	
E_h	9,5		50	

[a] The fusion splicer shall allow sufficient movement in order to be capable of aligning the cleaved fibre end with the electrode plane.

B_h is the distance between the reference plane of the ferrule assembly holder and the electrode plane at the time of fusion splice.

B_h is variable corresponding to the ferrule assembly to be used.

[b] B_h basic is defined as the minimum B_h value the holder interface in consideration can have, and it equals to B_f minimum of the ferrule assembly the holder interface can accept.

For example, to accept all ferrule assemblies compliant with this document, B_h basic is 8,3 mm for 1,25 mm diameter cylindrical ferrule models.

Bibliography

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

IEC 61073-1, *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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