

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Fibre optic
connector interfaces –
Part 20: Type LC connector family

Dispositifs d'interconnexion et composants passifs fibroniques – Interfaces de
connecteurs à fibres optiques –
Partie 20: Famille de connecteurs de type LC



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Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 20: Type LC connector family

Dispositifs d'interconnexion et composants passifs fibroniques – Interfaces de connecteurs à fibres optiques – Partie 20: Famille de connecteurs de type LC

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES
AND PASSIVE COMPONENTS –
FIBRE OPTIC CONNECTOR INTERFACES –****Part 20: Type LC connector family**

FOREWORD

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International Standard IEC 61754-20 has been prepared by subcommittee SC86B: Fibre optic interconnecting devices and passive components.

This bilingual version (2019-08) corresponds to the monolingual English version, published in 2012-04.

This second edition cancels and replaces the first edition published in 2002. It constitutes a technical revision. The changes with respect to the previous edition are to reconsider the whole document and to add Interface IEC 61754-20-9 to IEC 61754-20-16 for a plastic optical fibre (POF).

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

FDIS	Report on voting
86B/3343/FDIS	86B/3393/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.

The French version of this standard has not been voted upon.

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

The list of all parts of IEC 61754 series, published under the general title, *Fibre optic interconnecting and passive components – Fibre optic connector interfaces* can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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INTRODUCTION

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – FIBRE OPTIC CONNECTOR INTERFACES –

Part 20: Type LC connector family

1 Scope

This International Standard defines the standard interface dimensions for the type LC family of connectors.

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 61755-3 series, *Fibre optic interconnecting devices and passive components – Fibre optic connector optical interfaces*

3 Description

The parent connector for type LC connector family is a simplex plug connector set of plug/adaptor/plug configuration which is characterized by

- A 1,25 mm nominal diameter ferrule or, in the case of 1 mm OD POF, the fibre acts as the ferrule.
- The connector includes a single coupling latch and a ferrule spring loaded in the direction of the optical axis
- The plug has a single male key, which may be used to orient and limit the relative position between the connector and the component to which it is mated.
- The optical alignment mechanism of the connectors is a rigid bore sleeve or a resilient sleeve.

Drawings and dimensions provided consist of those minimum features that are functionally critical during the mating and unmating sequences of the plug with its adapter/receptacle counterpart component. The provided dimensions might cause intermateability problems with plugs not compliant to the standard.

4 Interfaces

This standard contains the following standard interfaces:

Interface 20-1: simplex plug connector interface – PC

Interface 20-2: simplex adaptor interface

Interface 20-3: simplex active device receptacle interface

Interface 20-4: duplex plug connector interface – PC

Interface 20-5: duplex adaptor interface

Interface 20-6: duplex active device receptacle interface

Interface 20-7: simplex plug connector interface – APC 8 °

Interface 20-8: duplex plug connector interface – APC 8 °

Interface 20-9: simplex plug connector interface – POF 1,25 mm jacketed OD

Interface 20-10: duplex plug connector interface – POF 1,25 mm jacketed OD

Interface 20-11: simplex plug connector interface – POF 1 mm

Interface 20-12: duplex plug connector interface – POF 1 mm

Interface 20-13: simplex adaptor interface – POF 1 mm

Interface 20-14: duplex adaptor interface – POF 1 mm

Interface 20-15: simplex active device receptacle interface – POF 1 mm

Interface 20-16: duplex active device receptacle interface – POF 1 mm

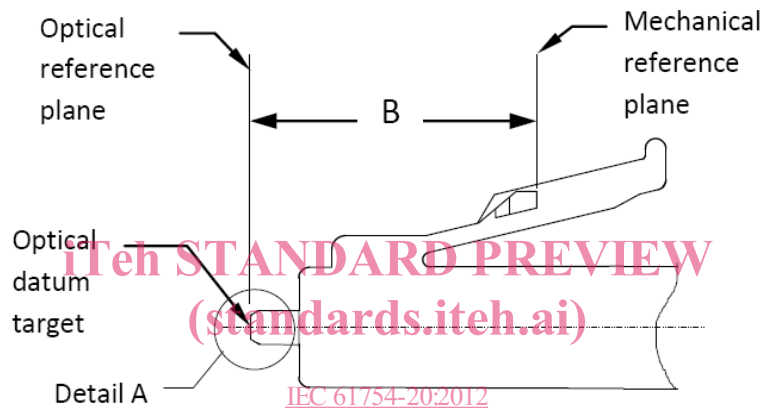
- The plug of interface IEC 61754-20-1 and interface IEC 61754-20-4 has a ferrule with a spherically polished endface (PC) shown in Figure 2a.
- The plug of interface IEC 61754-20-7 and interface IEC 61754-20-8 has a ferrule with a spherically polished angled endface (APC) shown in Figure 2c.
- The plug interfaces IEC 61754-20-9 through IEC 61754-20-12 have a flat smooth endface shown in Figure 2b (POF only).
- Plug interfaces IEC 61754-20-9 and IEC 61754-20-10 (POF 1,25 mm jacketed OD) have a POF fibre of up to 0,750 mm in a 1,25 mm OD ferrule.
- Plug interfaces IEC 61754-20-11 and IEC 61754-20-12 is the 1 mm POF without the use of a ferrule (see Table 3, Note f).
- The plug connector interfaces and associated details are given in Figures 1, 2, 3, 4, and 5 along with Tables 3 and 4.
- The adaptor interfaces and associated details are given in Figures 6, 7, and 8 along with Table 5.
- The active device receptacle interfaces and associated details are given in Figures 9, 10, and 11 along with Tables 6, 7, and 8.
- The intermateability between plugs, adaptors, and receptacles are given in Table 1.
- The intermateability between the different plug interfaces are given in Table 2.

Table 1 – Plug to Adaptor/Receptacle Intermateability

Plug Interfaces IEC 61754	Adaptor/Active Device Receptacle Interfaces IEC 61754							
	20-2	20-3	20-5	20-6	20-13	20-14	20-15	20-16
20-1	Mate	Mate	Mate	Mate	Not mate	Not mate	Not mate	Not mate
20-4	Not mate	Not mate	Mate	Mate	Not mate	Not mate	Not mate	Not mate
20-7	Mate	Not mate	Mate	Not mate	Not mate	Not mate	Not mate	Not mate
20-8	Not mate	Not mate	Mate	Not mate	Not mate	Not mate	Not mate	Not mate
20-9	Mate	Mate	Mate	Mate	Not mate	Not mate	Not mate	Not mate
20-10	Not mate	Not mate	Mate	Mate	Not mate	Not mate	Not mate	Not mate
20-11	Not mate	Not mate	Not mate	Not mate	Mate	Mate	Mate	Mate
20-12	Not mate	Not mate	Not mate	Not mate	Not mate	Mate	Not mate	Mate

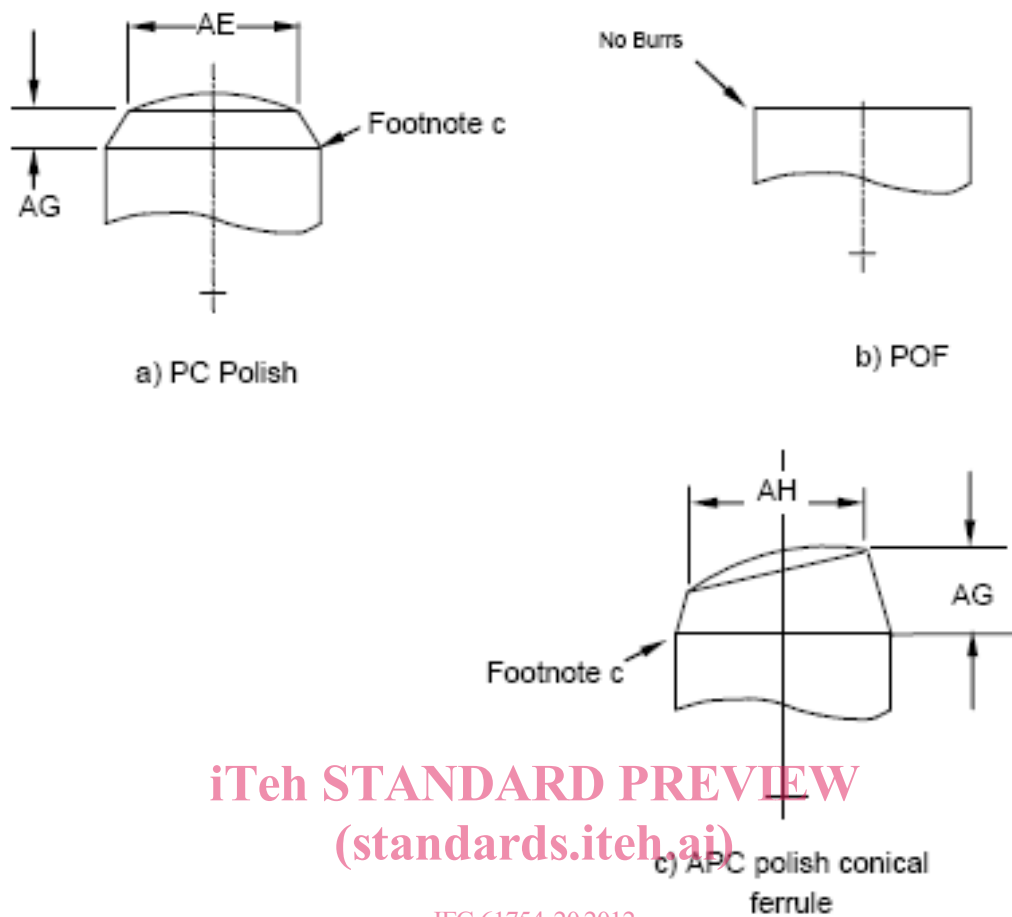
Table 2 – Plug to Plug Intermateability

Plug Interfaces IEC 61754	Plug Interface IEC 61754							
	20-1	20-4	20-7	20-8	20-9	20-10	20-11	20-12
20-1	Mate	Mate	Not mate	Not mate	Not Mate	Not Mate	Not mate	Not mate
20-4	Mate	Mate	Not mate	Not mate	Not Mate	Not Mate	Not mate	Not mate
20-7	Not mate	Not Mate	Mate	Mate	Not mate	Not mate	Not mate	Not mate
20-8	Not mate	Not mate	Mate	Mate	Not mate	Not mate	Not Mate	Not mate
20-9	Not Mate	Not Mate	Not mate	Not mate	Mate	Mate	Not mate	Not mate
20-10	Not Mate	Not Mate	Not mate	Not mate	Mate	Mate	Not mate	Not mate
20-11	Not mate	Not mate	Not mate	Not mate	Not mate	Not mate	Mate	Mate
20-12	Not mate	Not mate	Not mate	Not mate	Not mate	Not mate	Mate	Mate



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Figure 1 – Plug connector interface reference planes



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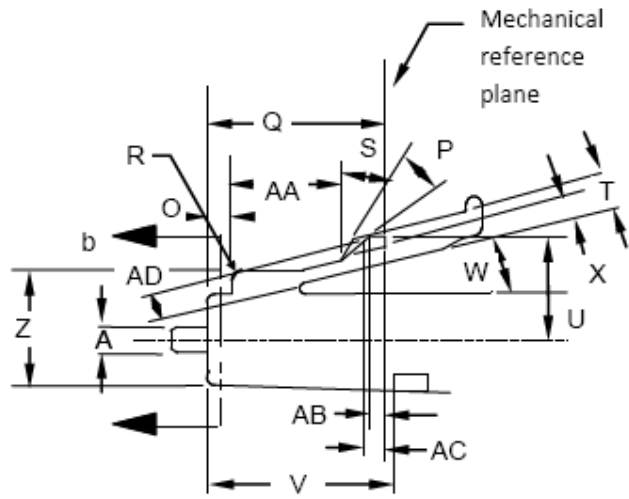
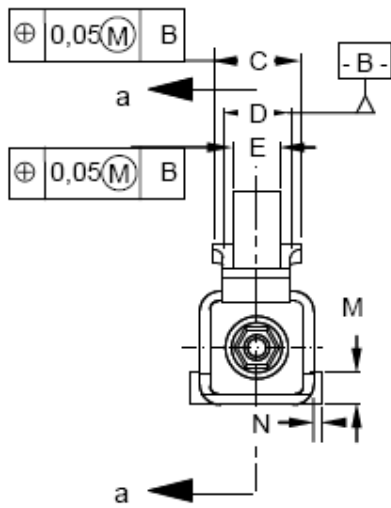
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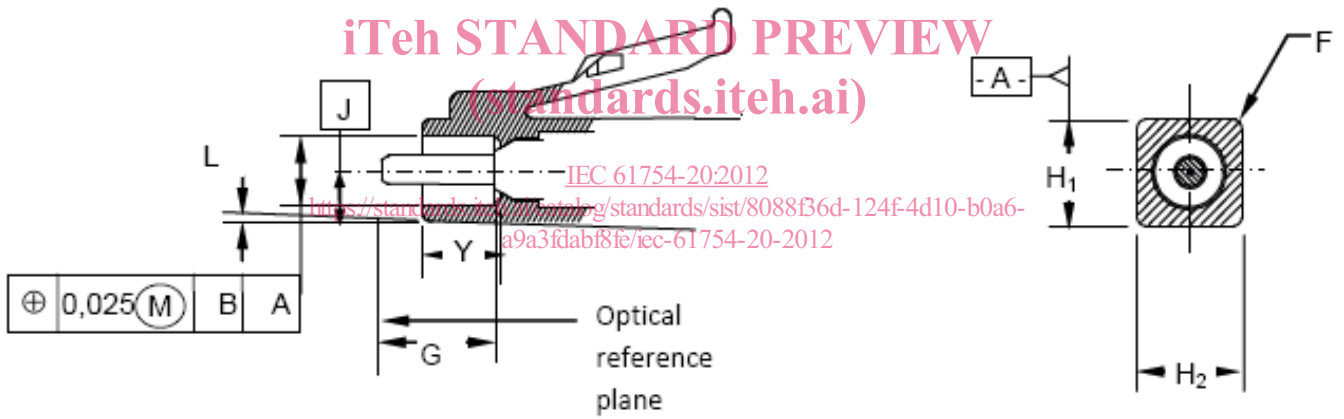
See Table 3.

Figure 2 – Detail A of Figure 1 – Plug connector interface – Expanded view drawings not-to-scale

Refer to IEC 61755-3 series documents for information on the end-face geometry requirements of PC and APC interfaces, respectively.



a) Plug connector interface



b) Section a-a

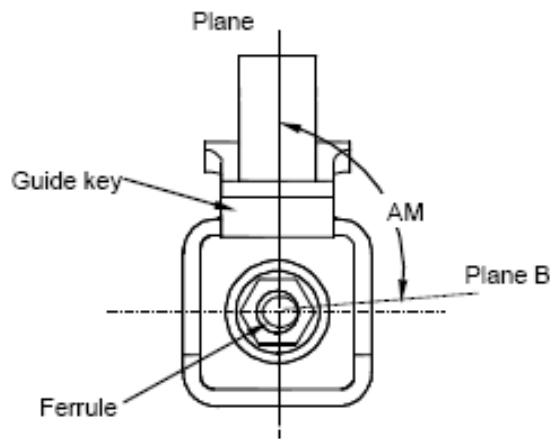
c) Section b-b

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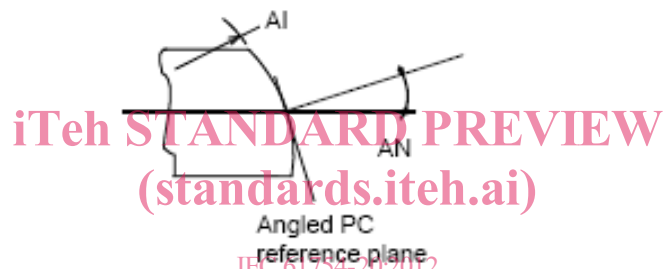
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See Table 3.

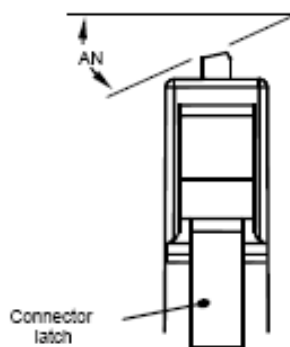
Figure 3 – Plug connector interface



a) – Expanded view from front



b) – APC ferrule endface geometry

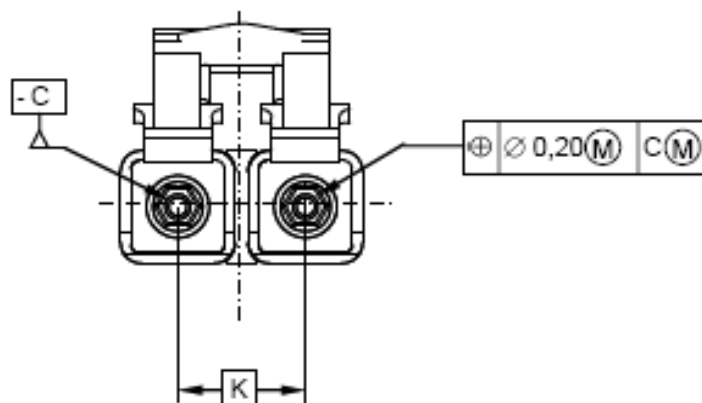


c) – Top view

IEC 288/12

Key
See Table 3.

Figure 4 – APC plug connector interface



IEC 289/12

Key

See Table 3.

Figure 5 – Duplex plug interface

Table 3 – Dimensions of the plug connector interface

Reference	Dimensions in millimeters		Remarks
	Minimum	Maximum	
A	-	-	Table 4 ^f
B ^a	10,3	10,5	
C	4,2	4,4	
D	3,2	3,35	
E	2,2	2,4	
F	0,3	0,5	Radius
G	4,88	5,00	Ferrule extension
H ₁ ^e	4,42	4,52	
H ₂ ^e	4,42	4,52	
I	3,0	3,2	Diameter
J	H/2	H/2	
K	6,25		Basic dimension
L ^e	-	0,2	Degrees
M	-	1,0	
N	-	0,5	
O	1,1	1,3	
P	21		Degrees, typical
Q	8,5	8,7	
R	0,4	0,6	Radius
S	30		Degrees, typical
T	1,4	1,6	
U	5,0	5,1	
V	12,1	-	

Table 3 – Dimensions of the plug connector interface (continued)

Reference	Dimensions in millimeters		Remarks
	Minimum	Maximum	
W	14		Degrees, typical
X	0,5	0,7	
Y	3,3	–	
Z	5,6	5,7	
AA	5,2	5,4	
AB	0,3	0,5	
AC	0,8	1,0	
AD	1,2	1,4	
AE	0,6	0,85	Pedestal diameter
AG	–	1,0	
AH	0,6	0,85	Pedestal diameter
AI ^c	5	12	Radius
AM ^d	90		Basic dimension, degrees ^d
AN	8		Basic dimension, degrees
<p>^a Dimension B is given for a plug endface when not mated. The ferrule is movable by a certain axial compression force, with direct contacting endface, and therefore dimension B is variable. Ferrule compression force shall be 5,0 N to 6,0 N when the position of the optical datum target, dimension B is moved to the range 9,8 mm to 10,0 mm. Forces are for buffered fibre only, different cord constructions can result in higher forces, see IEC 60794-2-50.</p> <p>^b A chamfer or radius is allowed to a maximum depth of 0,5 mm from the ferrule endface.</p> <p>^c These dimensional requirements apply to the finished ferrule, after all polishing procedures have been completed.</p> <p>^d Dimension AM is defined as an angle between two planes: One plane, plane A, passes through the axis of the ferrule and the axis of symmetry of the key of the angled endface connector plug. The other plane, plane B, passes through the axis of the ferrule and the plane normal to the angled PC reference plane.</p> <p>^e Taper, dimension L, is applied to the surfaces associated with dimensions/features H₁ and H₂.</p> <p>^f For 1 mm POF and 1,25 mm jacketed POF the fibre or the fibre jacket will act as the connector ferrule/alignment feature.</p> <p>^g Drawings and dimensions provided consist of those minimum features that are functionally critical during the mating and unmating sequences of the plug with its adapter/receptacle counterpart component. The provided dimensions might cause intermateability problems with plugs not compliant to the standard.</p>			

Table 4 – Plug connector interface – Ferrule grade

Grade	ØA Dimensions in millimeters		Remarks
	Minimum	Maximum	
1	1,2485	1,2495	
2	1,2483	1,2495	
3	1,2467	1,2495	
4	1,200	1,250	1,25 mm OD jacketed POF
5	0.90	1.00	1 mm OD POF