

**PRE-STANDARD**

**Fibre optic connector interfaces –**

**Part 20:  
Type LC connector family**

**PUBLICLY AVAILABLE SPECIFICATION**

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

Reference number  
IEC/PAS 61754-20

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# Withdrawn

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIBRE OPTIC CONNECTOR INTERFACES –

## Part 20: Type LC connector family

## FOREWORD

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public and established in an organization operating under given procedures.

IEC-PAS 61754-20 has been processed by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
86B/1453/PAS	86B/1503/RVD

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# FIBRE OPTIC CONNECTOR INTERFACES –

## Part 20: Type LC connector family

### 1 Scope

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

### 2 Description

The parent connector for type LC connector family is a single position plug connector set of plug/adaptor configuration which is characterized by a 1.25 mm nominal diameter 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.

### 3 Interfaces

The subsequent pages define the standard interfaces for the type LC connector family. The standard interfaces contained in this document are listed in the following:

- IEC 61754-20-1: Simplex Plug Connector Interface – PC
- IEC 61754-20-2: Simplex Adaptor Connector Interface
- IEC 61754-20-3: Simplex Active Device Receptacle Interface
- IEC 61754-20-4: Duplex Plug Connector Interface – PC
- IEC 61754-20-5: Duplex Adaptor Connector Interface
- IEC 61754-20-6: Duplex Active Device Receptacle Interface
- IEC 61754-20-7: Simplex Plug Connector Interface – APC 8°
- IEC 61754-20-8: Duplex Plug Connector Interface – APC 8°

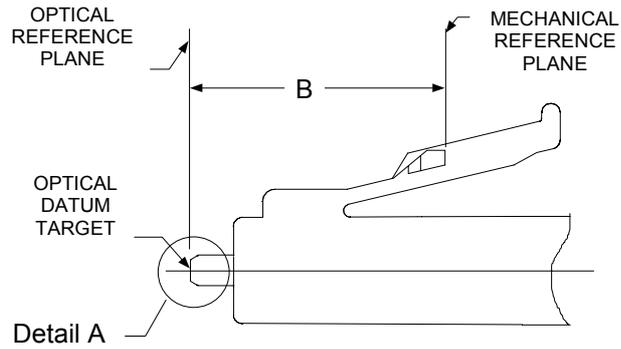
The plug of IEC 61754-20-1 and IEC 61754-20-4 has a ferrule with a spherically polished endface, and realizes physical contact (PC). The plug of IEC 61754-20-7 and IEC 61754-20-8 has a ferrule with a spherically polished angled endface which may take any of the APC forms shown in Detail A and realizes a physical contact.

The following plugs, adaptors, and receptacles are intermateable

<b>Plugs (polishing condition)</b>	<b>Adaptors/Active Device Receptacles Interfaces</b>			
	<b>61754-20-2</b>	<b>61754-20-3</b>	<b>61754-20-5</b>	<b>61754-20-6</b>
Interface 61754-20-1	mate	mate	mate	mate
Interface 61754-20-4	not mate	not mate	mate	mate
Interface 61754-20-7	mate	not mate	mate	not mate
Interface 61754-20-8	not mate	not mate	mate	not mate

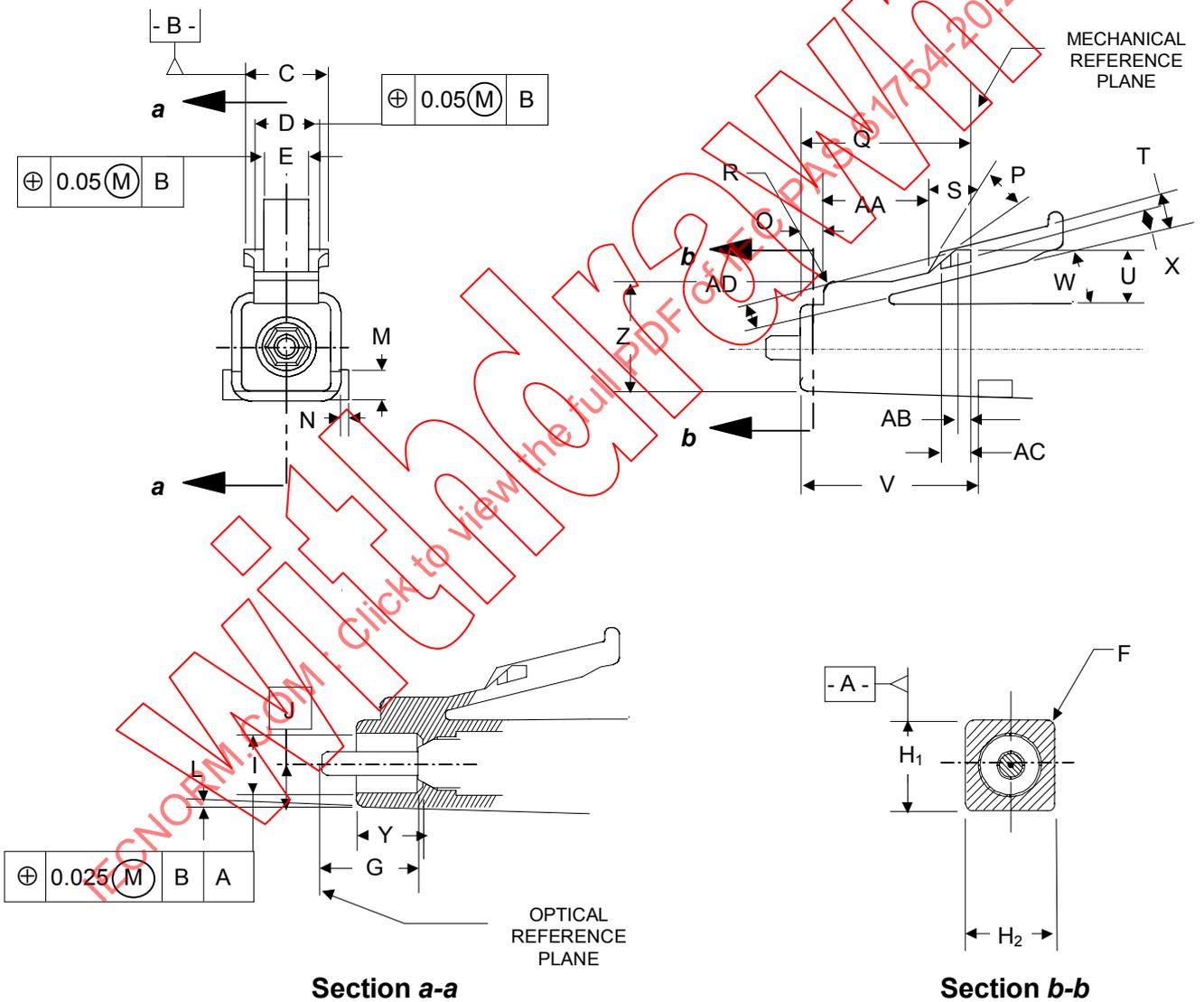
<b>Plugs (polishing condition)</b>	<b>Plug (polishing condition)</b>			
	<b>61754-20-1</b>	<b>61754-20-4</b>	<b>61754-20-7</b>	<b>61754-20-8</b>
Interface 61754-20-1	mate	mate	not mate	not mate
Interface 61754-20-4	mate	mate	not mate	not mate
Interface 61754-20-7	not mate	not mate	mate	mate
Interface 61754-20-8	not mate	not mate	mate	mate

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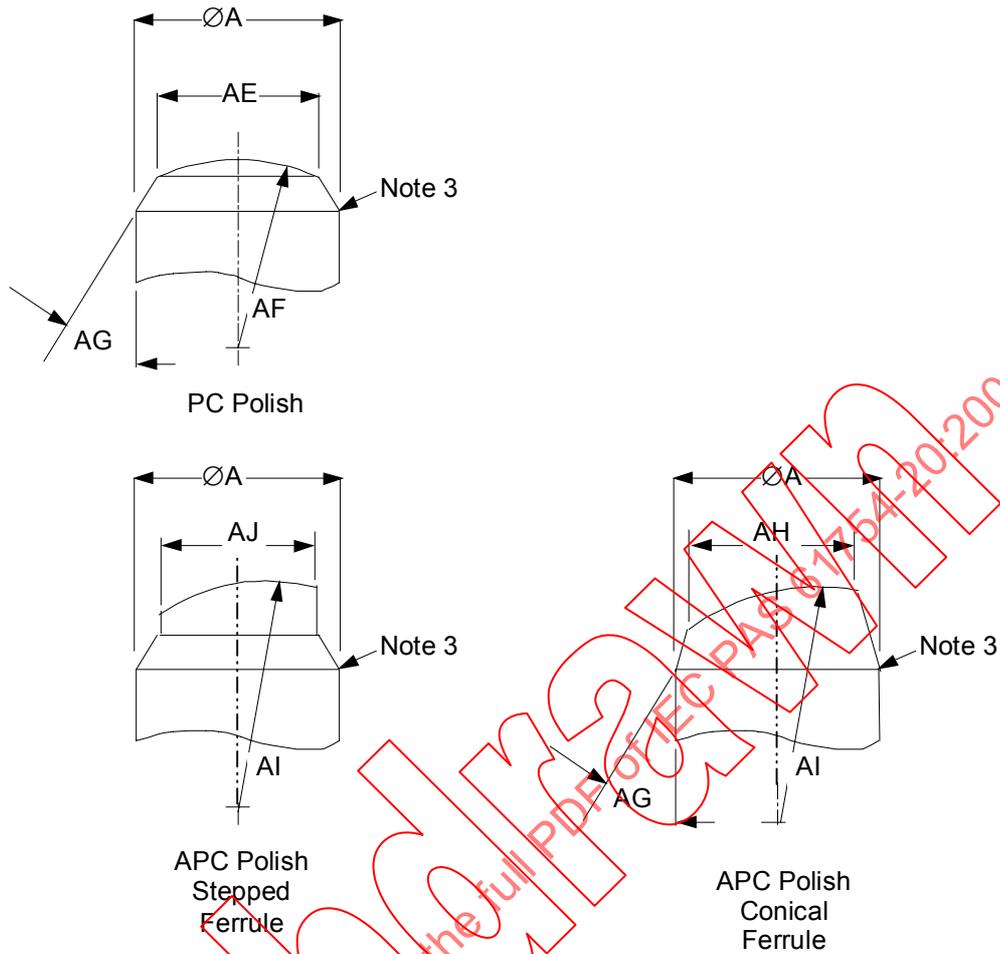
IEC 369/01

Figure 1 – Plug Connector Interface Reference Planes



IEC 370/01

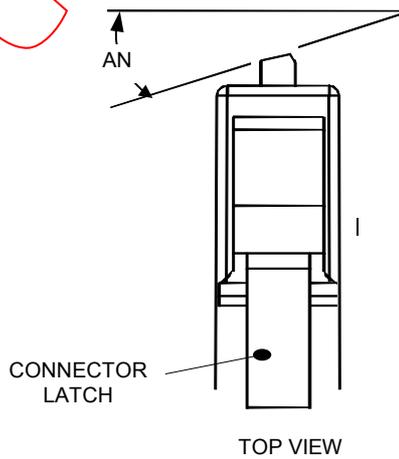
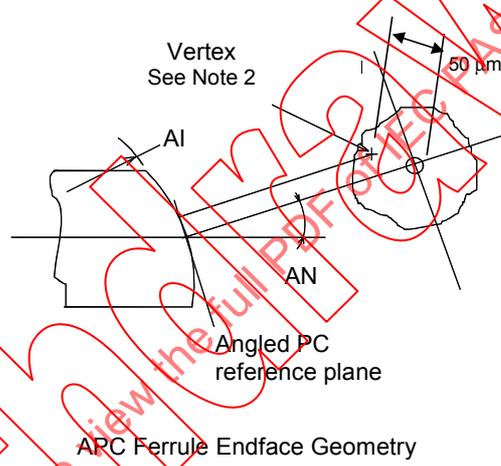
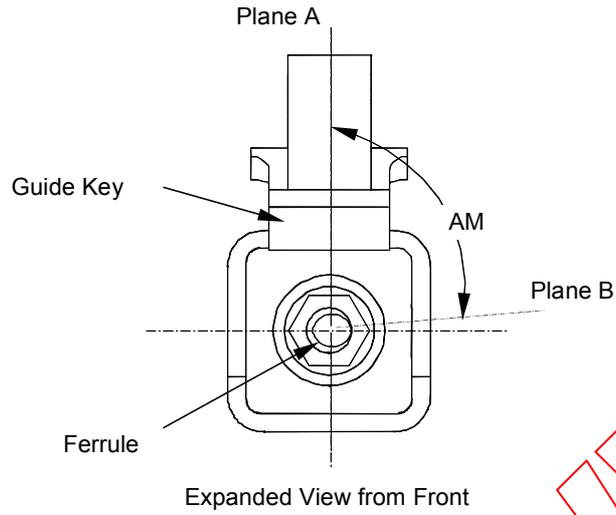
Figure 2 – Plug Connector Interface



IEC 371/01

**Detail A – Plug Connector Interface – Expanded View  
Drawings Not-to-Scale**

The plug of IEC 61754-20-1 and IEC 61754-20-4 has a ferrule with a spherically polished endface, and realizes physical contact (PC). The plug of IEC 61754-20-7 and IEC 61754-20-8 has a ferrule with a spherically polished angled endface which may take any of the APC forms shown in Detail A and realizes a physical contact.



IEC 372/01

Figure 3 – APC Plug Connector Interface

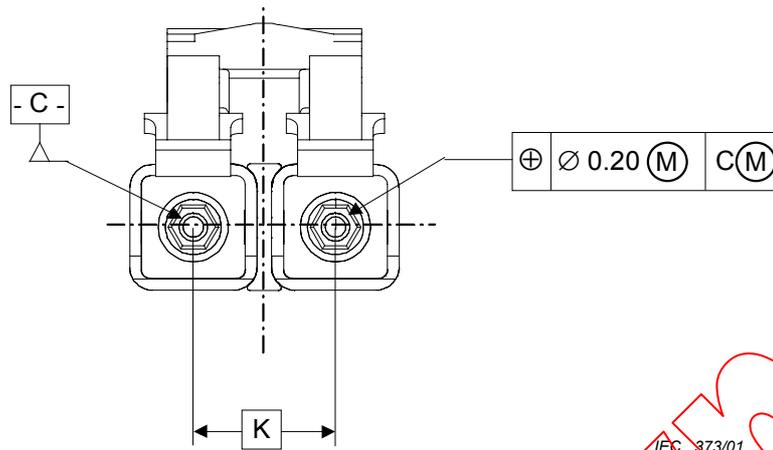


Figure 4 – Duplex Plug Interface

Table 1a – Dimensions of the Plug Connector Interface

Dim.	Min. (mm)	Max. (mm)	Notes
A			Ø, Grade Table 1b
B	10,3	10,5	1
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 <sub>1</sub>	4,42	4,52	6
H <sub>2</sub>	4,42	4,52	6
I	3,0	3,2	diameter
J	H/2	H/2	
K		6,25	basic dimension
L	0,0	0,2	degrees, 6
M	-	1,0	
N	-	0,5	
Ø	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	2,7	2,9	
V	12,2	-	
W	14	-	degrees, typical
X	0,5	0,7	
Y	3,3	3,5	
Z	5,6	5,7	
AA	5,2	5,4	
AB	0,3	0,5	
AC	1,3	1,5	

AD	1,2	1,4	
AE	0,6	0,85	pedestal diameter
AF	7	25	radius, 4
AG	32,5	37,5	degrees
AH	0,6	0,85	pedestal diameter
AI	5	12	radius, 4
AJ	0,6	0,7	
AM	90	basic dimension, degrees, 5	
AN	8	basic dimension, degrees	

NOTE 1. 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 9.6 mm to 10.2 mm.

NOTE 2. Dome eccentricity of the spherically polished endface shall be less than 50 µm.

NOTE 3. A Chamfer or Radius is allowed to a maximum depth of 0,5 mm from the ferrule endface.

NOTE 4. These dimensional requirements apply to the finished ferrule, after all polishing procedures have been completed.

NOTE 5. 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.

NOTE 6. Taper, dimension L, is applied to the surfaces associated with dimension/feature H<sub>1</sub> and H<sub>2</sub>

**Table 1b – Plug Connector Interface – Ferrule Grade**

GRADE	ØA		NOTES
	(mm)		
	MIN	MAX	
1	1,2485	1,2495	
2	1,2483	1,2495	
3	1,2467	1,2495	

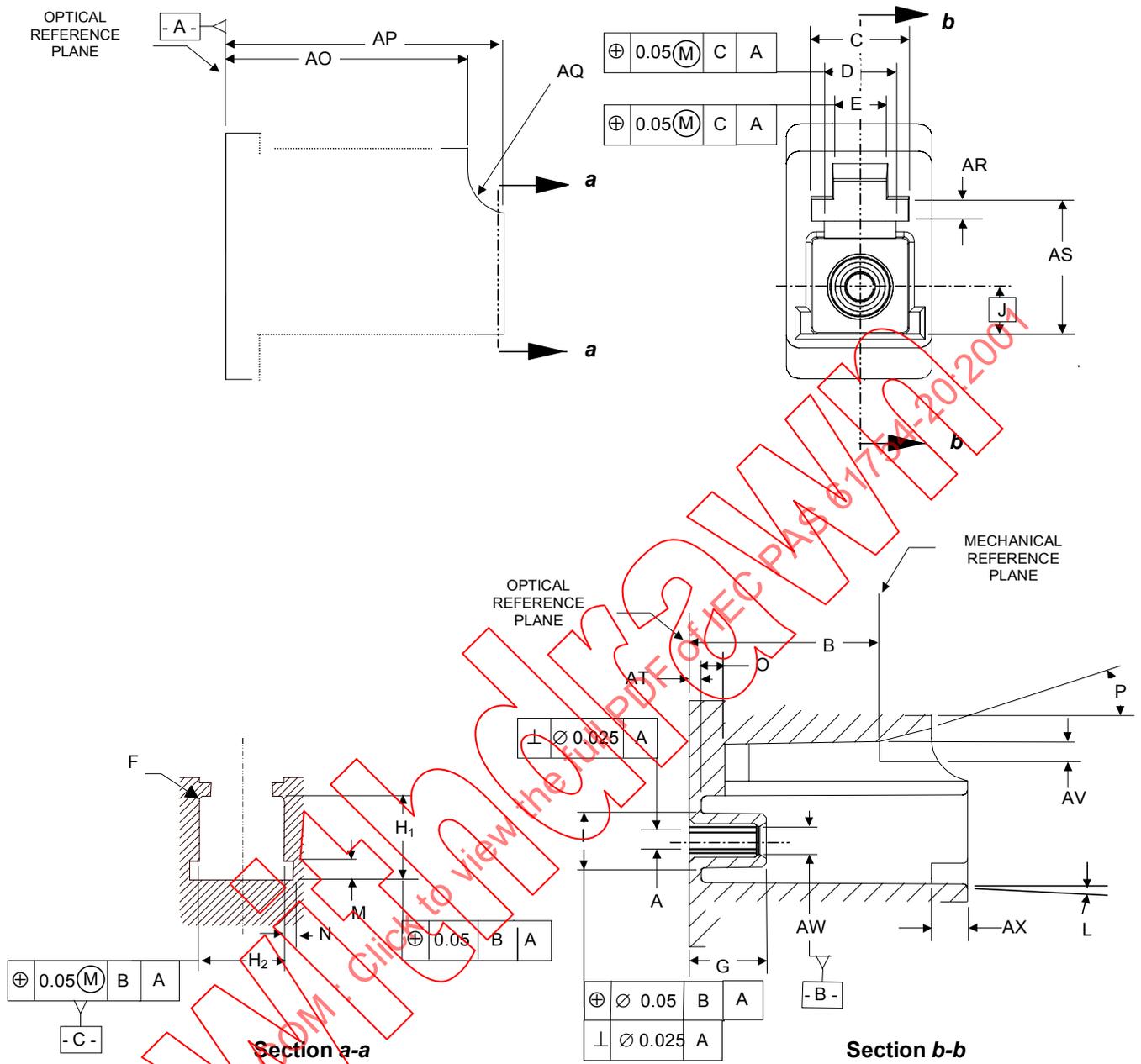


Figure 5 – Simplex Adaptor Interface

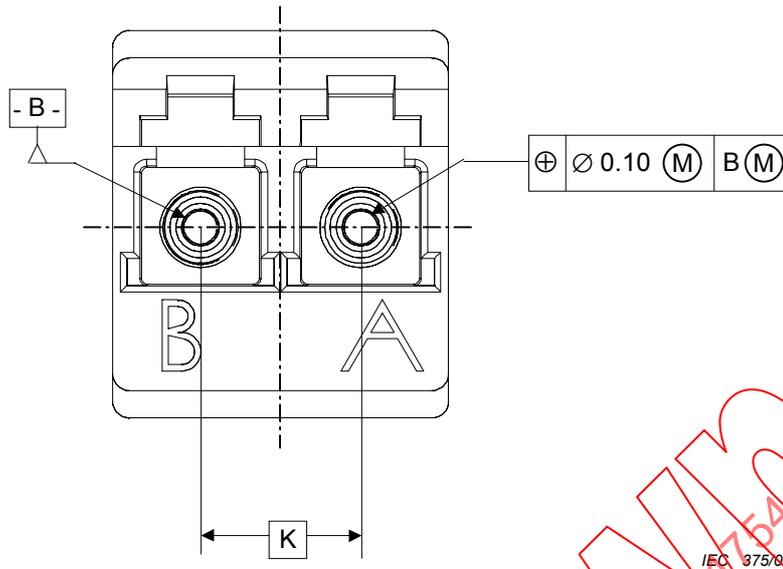


Figure 6 – Duplex Adaptor Interface

Table 2 – Dimensions of the Adaptor Interface

Dim.	Min. (mm)	Max. (mm)	Notes
A	-	-	diameter 1, 2, 3
B	9,9	10,0	
C	4,5	-	
D	3,4	3,5	
E	2,6	2,7	
F	0,2	0,3	radius
G	4,0	4,1	
H <sub>1</sub>	4,65	4,75	
H <sub>2</sub>	4,65	4,75	
I	2,87	2,97	diameter
J		2,29	basic dimension
K		6,25	basic dimension
L	0,0	0,2	degrees, 5
M	1,0	1,1	
N	0,5	0,6	
O	-	1,2	
P	15	-	degrees, typical
AO	11,1	12,8	
AP	14,5	14,7	
AQ	2,2	2,4	radius
AR	1,1	1,2	
AS	6,6	6,8	
AT	0,6	0,7	
AV	1,0	1,1	
AW	1,4	1,5	diameter
AX	1,9	-	

- NOTE 1. The connector alignment feature is a resilient (split) alignment sleeve, and the sleeve may be either fixed or floating. For a fixed sleeve the positional tolerance of dimension I applies to both A and I dimensions. For a floating sleeve, a gauge pin inserted in the sleeve must be capable to move freely into a position such that it is coincident with datum B. Dimension A defines the inner diameter of the alignment feature.
- NOTE 2. The connector alignment feature is a resilient (split) alignment sleeve. The feature must accept a pin gauge to the centre of the adaptor with a force of 1,0 N to 2,5 N under the condition that another pin gauge is inserted into the feature from the other side until both pin gauges butt against each other. The pin gauge shall be 1,2490 mm. The centre of the adaptor is defined by the left side position of dimension B.
- NOTE 3. Each of the units in the duplex adaptor shall comply with all of dimensions of Figures 5 and 6.
- NOTE 5. Taper, dimension L, is applied to the surfaces associated with dimension/feature H<sub>1</sub> and H<sub>2</sub>.

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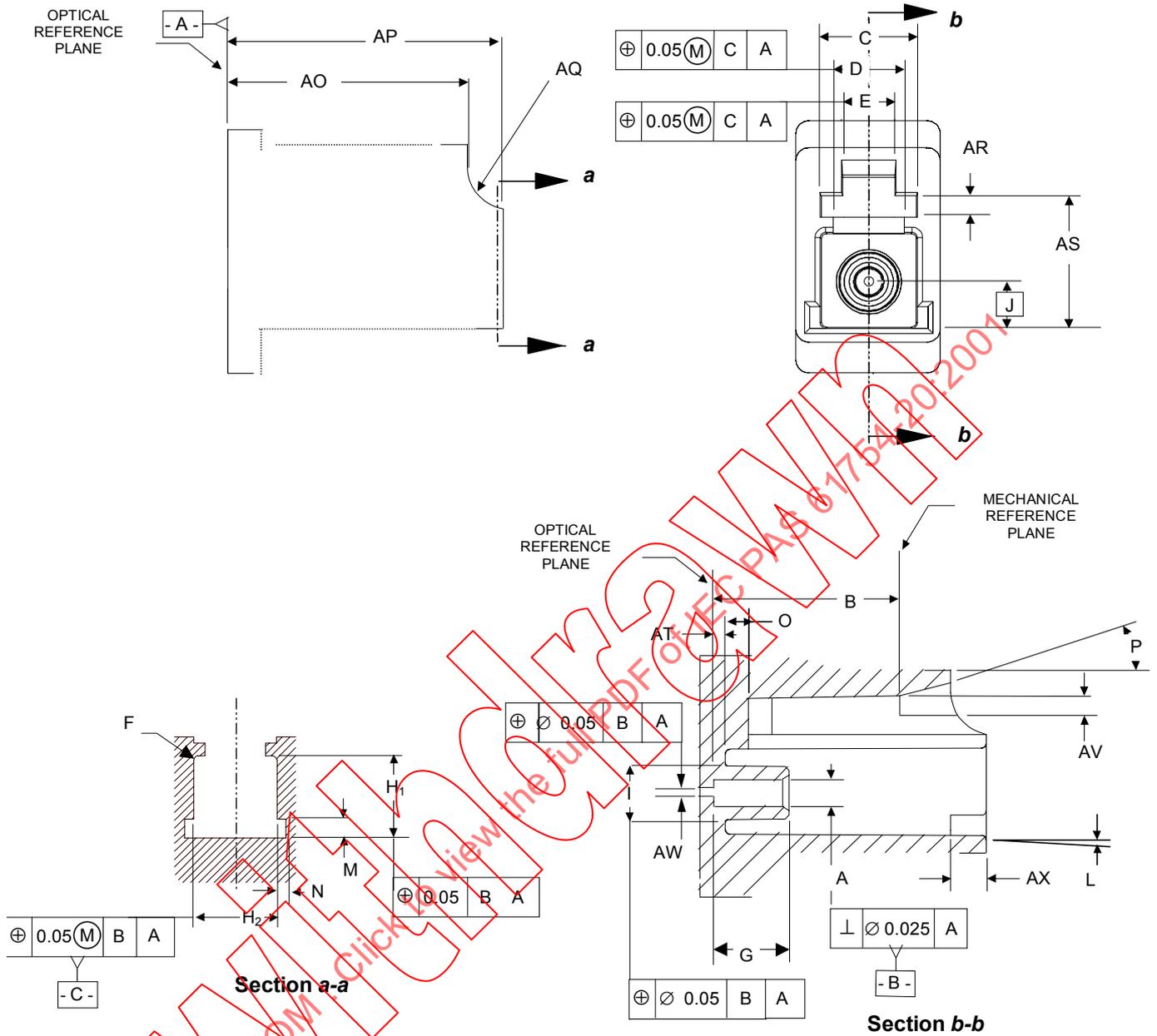


Figure 7 – Active Device Receptacle Interface

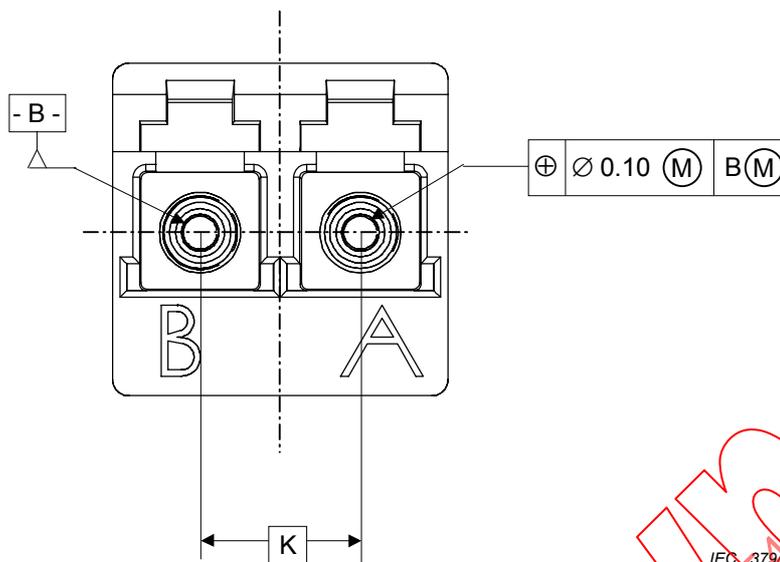


Figure 8 – Duplex Active Device Receptacle Interface

Table 3a – Dimensions of the Active Device Receptacle

Dim.	Min. (mm)	Max. (mm)	Notes
A	-	-	Grade Table 3b
B	9,9	10,0	
C	4,5	-	
D	3,4	3,5	
E	2,6	2,7	
F	0,2	0,3	radius
G	4,0	4,1	
H <sub>1</sub>	4,65	4,75	
H <sub>2</sub>	4,65	4,75	
I	2,87	2,97	diameter
J		2,29	basic dimension
K		6,25	basic dimension
L	0,2	0,0	degrees, 5
M	1,0	1,1	
N	0,5	0,6	
O	-	1,2	
P	15	-	degrees, typical
AO	12,6	12,8	
AP	14,5	14,7	
AQ	2,2	2,4	radius
AR	1,1	1,2	
AS	6,6	6,8	
AT	0,6	0,7	
AV	1,0	1,1	
AW	0,5	0,6	GradeTable 3b
AX	1,9	-	