INTERNATIONAL STANDARD

IEC 60874-14-5

QC 910004XX0005

First edition
1997-06

Connectors for optical fibres and cables –

Part 14-5:
Detail specification for fibre optic connector type SC-PC untuned terminated to single-mode fibre type B1

Reference number
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CONNECTORS FOR OPTICAL FIBRES AND CABLES –

Part 14-5: Detail specification for fibre optic connector type SC-PC untuned terminated to single-mode fibre type B1

FOREWORD

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International Standard IEC 60874-14-5 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

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

FDIS	Report on voting
86B/875/FDIS	86B/1004/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 QC number that appears on the front cover of this publication is the specification number in the IEC Quality Assessment System for Electronic Components (IECQ).

The references to clauses or subclauses of IEC 60874-1 indicated in this part apply to the third edition of IEC 60874-1.

CONNECTORS FOR OPTICAL FIBRES AND CABLES

Part 14-5: Detail specification for fibre optic connector type SC-PC untuned terminated to single-mode fibre type B1

NATIONAL STANDARDS ORGANIZATION:	..... Date: .....

DETAIL SPECIFICATION IEC QC 910004XX0005.

FIBRE OPTIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH

- GENERIC SPECIFICATION: QC 910000 (IEC 60874-1)
- BLANK DETAIL SPECIFICATION: QC 910001 (IEC 60874-1-1)

CONNECTOR SET FOR OPTICAL FIBRES AND CABLES

CLASSIFICATION:

Type: Name: SC

For use in datacom applications as specified in ISO/IEC International Standard 11801: "Generic cabling for customer premises"

Configuration: plug-adaptor-plug
Coupling: push-pull
Control dimensions:

– Plug: see figures 1, 2 and 3
– Adaptor: see IEC 60874-14-3

Arrangement: patchcord arrangement

Style: Fibre retention: as required
Cable retention: as required
Optical coupling: butting
Alignment: resilient sleeve alignment

Variants: see page 7

Climatic category: 10/60/4

Environmental category: 4

Assessment level: A

QUALIFICATION PROCEDURE: Fixed sample procedure

SAFETY WARNING: Take care when handling small diameter optical fibre to prevent puncturing the skin, especially in the eye area. Direct viewing of the end of an optical fibre when it is propagating energy is not recommended unless prior assurance is obtained as to the safe energy output level.

Applicable fibre cable information

Mode field diameter	In accordance with IEC 60793-2
Cladding diameter	In accordance with IEC 60793-2
Core/cladding concentricity error	In accordance with IEC 60793-2
Buffer diameter	250 ± 15, 500 ± 30, 900 ± 50 µm
Jacket outer diameter	As required per variant
Fibre cut-off wavelength	1 100 – 1 280 nm
Additional information – Attenuation in random connection: less than 0,80 dB (95 % probability) less than 0,40 dB (average)	

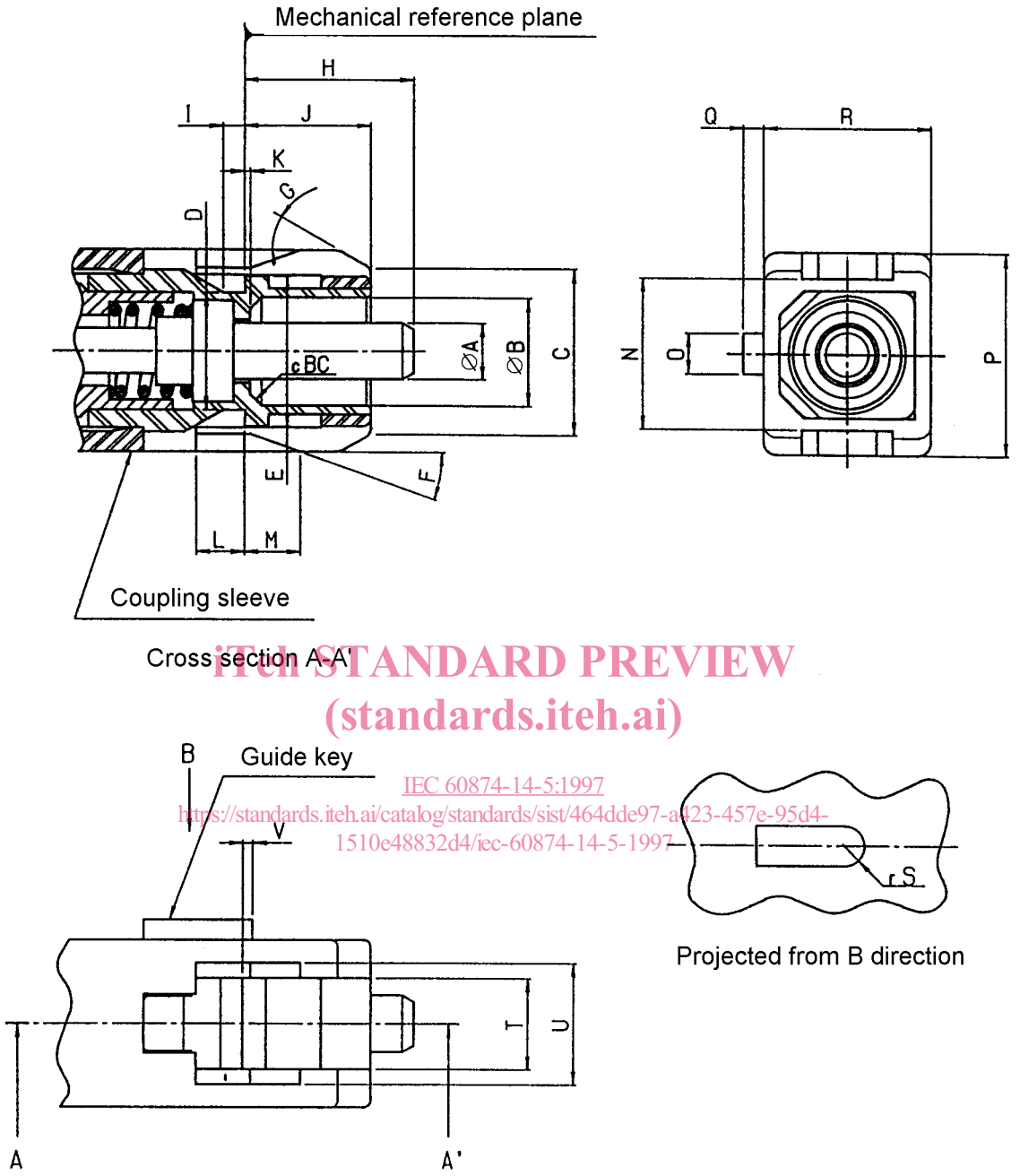


Figure 1 – Plug mating face dimensions

Reference	Dimensions		Notes
	Minimum	Maximum	
A	2,4985 mm	2,4995 mm	
B	4,8 mm	4,9 mm	
C	6,8 mm	7,4 mm	
D	4,9 mm	5,3 mm	
E	6,7 mm	6,8 mm	
F	19°	23°	
G	25°	35°	
H	7,15 mm	7,50 mm	1, 2
I	0,8 mm	1,2 mm	
J	5,3 mm	5,5 mm	
K	–0,1 mm	0,05 mm	3
L	2,11 mm	2,5 mm	
M	2,0 mm	2,8 mm	
N	6,6 mm	6,8 mm	
O	1,6 mm	1,8 mm	
P	8,89 mm	8,99 mm	
Q	0,8 mm	1,0 mm	
R	7,29 mm	7,39 mm	
rS	0,8 mm	0,9 mm	Radius
T	4,05 mm	4,15 mm	
U	5,4 mm	5,6 mm	
V	0 mm	0,5 mm	
cBC	0 mm	0,5 mm	Chamfer

NOTES

1 Ferrule compression force shall be from 7,8 N to 11,8 N, when the ferrule is compressed to a point where H is 7 ± 0,1 mm.

2 This value shows the dimension after the ferrule is polished and in the unmated condition.

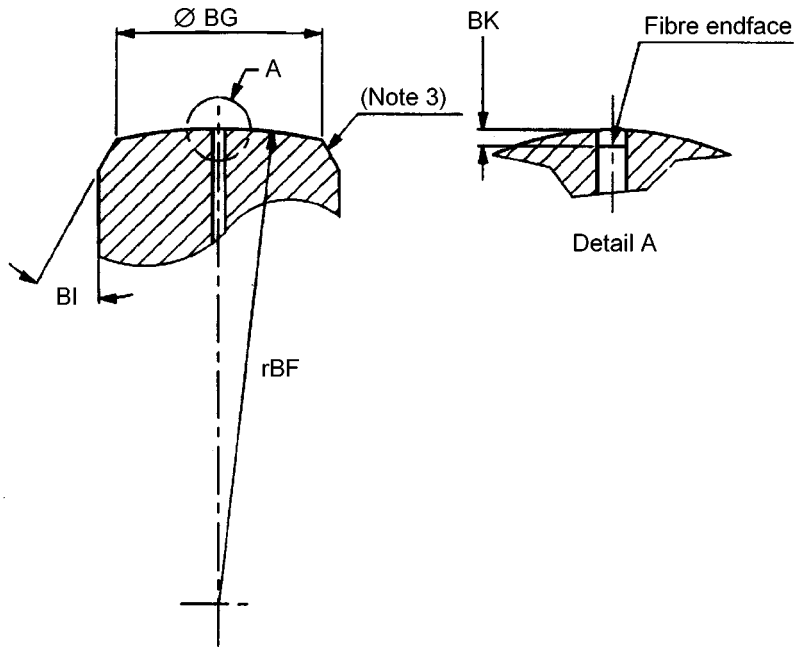
3 The negative dimension indicates that the position of the inside bottom plane is left-direction relative to the mechanical reference plane.

4 Where a tolerance of form is not specified, the limits of the dimensions for a feature control the form as well as the size.

5 Where interrelated features of size (features shown with a common axis or centre plane) have no geometric tolerance of location or run out specified, the limits of the dimensions for a feature control the location tolerance as well as the size.

6 Where perpendicular features (features shown at right angles) have no geometric tolerance of orientation or run out specified, the limits of the dimensions for a feature control the orientation tolerance as well as the size.

Figure 1 – Plug mating face dimensions *(continued)*



Reference	Dimensions		Notes
	Minimum	Maximum	
rBF	10 mm	25 mm	1, radius
BK	–0,0001 mm	see graph	2
BG	1,76 mm	2,26 mm	diameter, 4
BG	1,90 mm	2,26 mm	diameter, 5
BI	25°	35°	

NOTES

1 Eccentricity of a spherical polished ferrule endface is less than 50 µm.

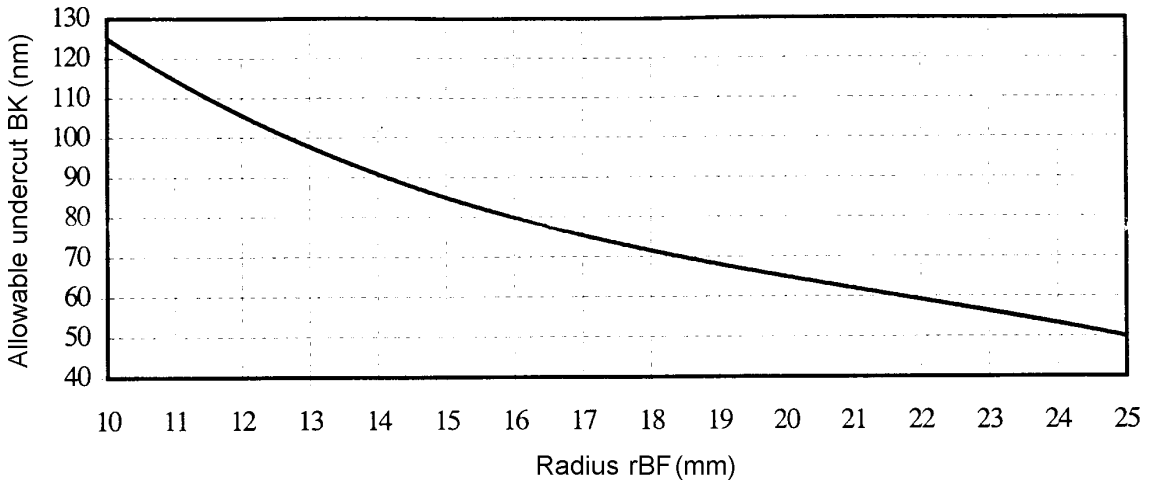
2 The negative dimension refers to the fibre protrusion.

3 Break edge.

4 This value is applicable to the variant numbers 1001, 1003, 1005 and 1007.

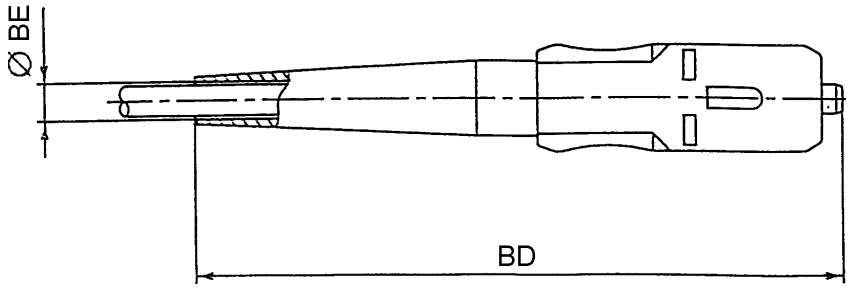
5 This value is applicable to the variant numbers 1002, 1004, 1006 and 1008.

Figure 2a – Ferrule endface geometry after termination



Allowable undercut = $-0,02*Radius^3 + 1,3*Radius^2 - 31*Radius + 325$

Figure 2b – Allowable undercut BK versus radius rBF



IEC 650/97

Reference	Dimensions mm		Notes
	Minimum	Maximum	
BD		60	
BE	2,2		1
BE	2,6		2
BE	2,9		3
BE	3,2		4

NOTES

1 This value is applicable to the variants number –1001 and –1002.

2 This value is applicable to the variants number –1003 and –1004.

3 This value is applicable to the variants number –1005 and –1006.

4 This value is applicable to the variants number –1007 and –1008.

Figure 3 – Plug dimension

VARIANT IDENTIFICATION NUMBERS Number: QC 910X01/0005-ZZZZ				
ZZZZ	Component name	Variant feature		
		Applicable cable jacket diameter	Ferrule material	Dimension BG
1001	Plug	2,0 mm	Zirconia	1, 76 – 2,26
1002	Plug	2,0 mm	Zirconia	1, 90 – 2, 26
1003	Plug	2,4 mm	Zirconia	1, 76 – 2,26
1004	Plug	2,4 mm	Zirconia	1, 90 – 2, 26
1005	Plug	2,7 mm	Zirconia	1, 76 – 2,26
1006	Plug	2,7 mm	Zirconia	1, 90 – 2, 26
1007	Plug	3,0 mm	Zirconia	1, 76 – 2,26
1008	Plug	3,0 mm	Zirconia	1, 90 – 2, 26

SUPPLEMENTARY INFORMATION

Preferred colour:

Colour of the coupling sleeve and boot shall be blue according to: RAL 5015.

Component marking:

The name and/or manufacturer's identification mark may be permanently identified. Figure 4 shows an example of the location of the component marking.

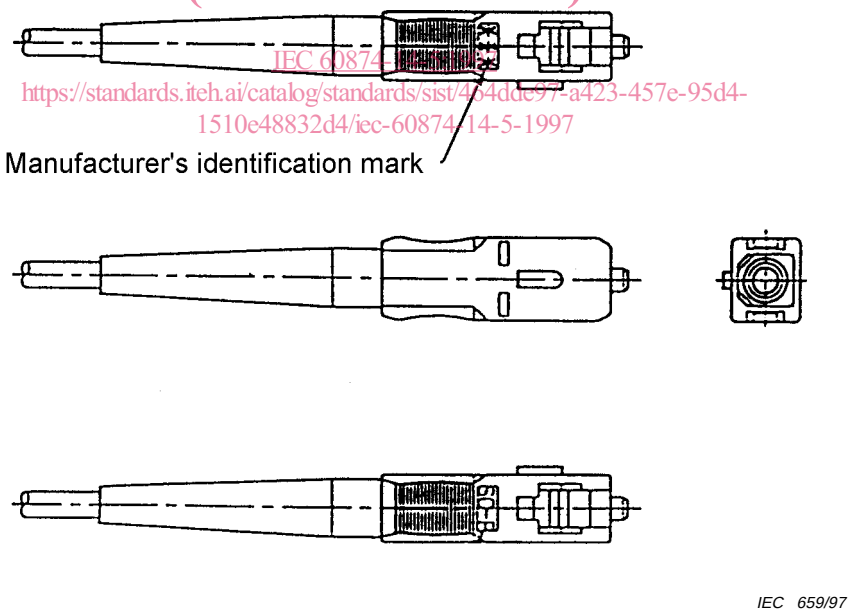


Figure 4 – Example of component marking

TABLE 1

FIXED SAMPLE TEST SCHEDULE FOR QUALIFICATION APPROVAL

Test sequence	Reference IEC 60874-1 (IEC 61300)	*n*
Group 0		
– Visual examination	4.4.1 (3-1)	20
– Dimensions	4.4.2 (3-1)	
– Ferrule compression force	4.4.12 (3-22)	
Group 1		
– Attenuation	4.4.7 (3-4)	20
– Return loss	4.4.12 (3-6)	
Group 2		
– Cold	4.5.17 (2-17)	
– Dry heat	4.5.18 (2-18)	6
– Damp heat (steady state)	4.5.19 (2-19)	
Group 3		
– Drop	4.5.14 (2-12)	
– Engagement and separation force	4.4.5 (3-11)	6
– Mechanical endurance	4.5.32 (2-2)	
Group 4		
– Vibration	4.5.1 (2-1)	4
– Change of temperature (test Nb)	4.5.22 (2-22)	
Group 5		
– Strength of coupling mechanism	4.5.6 (2-6)	4
– Cable pulling	4.5.4 (2-4)	
– Cable torsion	4.5.5 (2-5)	
Group 6		
– Fibre or ferrule retention	4.5.2 (2-4)	NA

NOTES

1 *n* = sample size (number of plugs).

2 To satisfy the qualification approval requirements of the detail specification there shall be no failures of any in the sample groups for any test parameter. If a failure does occur this shall be investigated and the cause of failure identified and corrected. The test which is affected shall then be repeated using the minimum sample size stated in this detail specification.

A fully documented test report and supporting data shall be prepared and shall be available for inspection. Failures and the corrective action taken to eliminate failures shall be documented and evidence shall be presented to show that the corrective action will have no detrimental effect on the performance in any of the other tests. Design changes, as opposed to improvements in quality control, will usually be deemed to necessitate a repeat of the full qualification programme.

3 Unless otherwise indicated, the test details, measurements and performance requirements are given in table 4.

4 Only group 1 tests shall be carried out using a reference connector. All other tests shall be carried out using the samples from the relevant group at random.