

INTERNATIONAL STANDARD

IEC
60874-19-3

QC 910005XX0003

First edition
1999-09

Connectors for optical fibres and cables –

Part 19-3:

Fibre optic adaptor (duplex) type SC for multimode fibre connectors – Detail specification

Connecteurs pour câbles et fibres optiques –

Partie 19-3:

Adaptateur (duplex) pour fibres optiques de type SC pour connecteurs pour fibres multimodes – Spécification particulière



Reference number
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR OPTICAL FIBRES AND CABLES –

Part 19-3: Fibre optic adaptor (duplex) type SC for multimode fibre connectors – Detail specification

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60874-19-3 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/1222/FDIS	86B/1258/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 not been drafted in complete accordance with the ISO/IEC Directives, Part 3.

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.

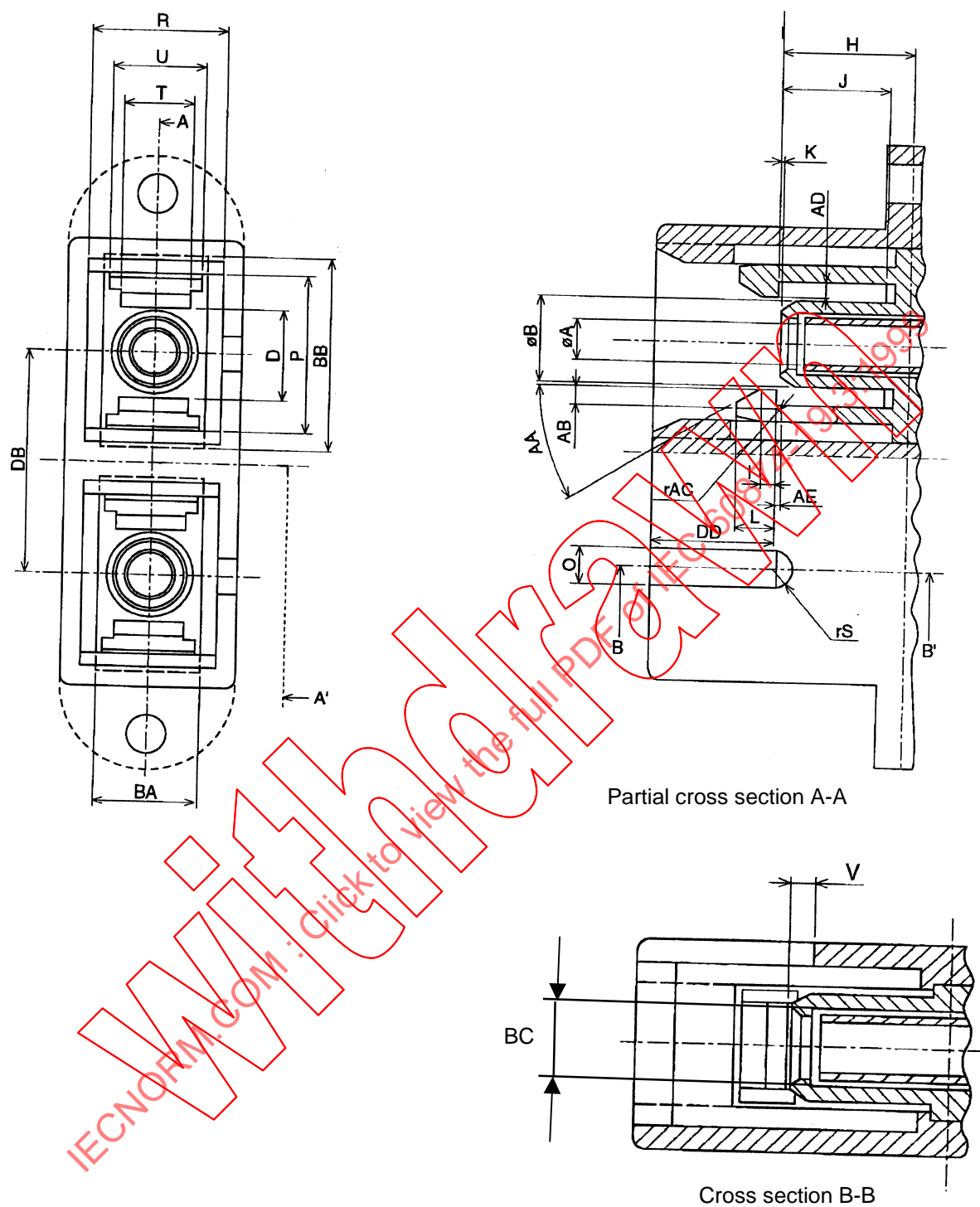
The committee has decided that the contents of this publication will remain unchanged until 2012. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

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CONNECTORS FOR OPTICAL FIBRES AND CABLES Part 19-3: Fibre optic adaptor (duplex) type SC for multimode fibre connectors – Detail specification	
NATIONAL STANDARDS ORGANIZATION: Date
DETAIL SPECIFICATION IEC QC 910005XX0003 FIBRE OPTIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH <ul style="list-style-type: none"> • GENERIC SPECIFICATION: QC 910000 (IEC 60874-1) • BLANK DETAIL SPECIFICATION: QC 910004 (IEC 60874-1-1) FIBRE OPTIC ADAPTOR	
CLASSIFICATION: Type: Name: SC-(duplex) for multimode connectors 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: <ul style="list-style-type: none"> – Adaptor: see figures 1, 2 and 3 – Gauge: see figures 4 and 5 Variants: see page 10 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.	



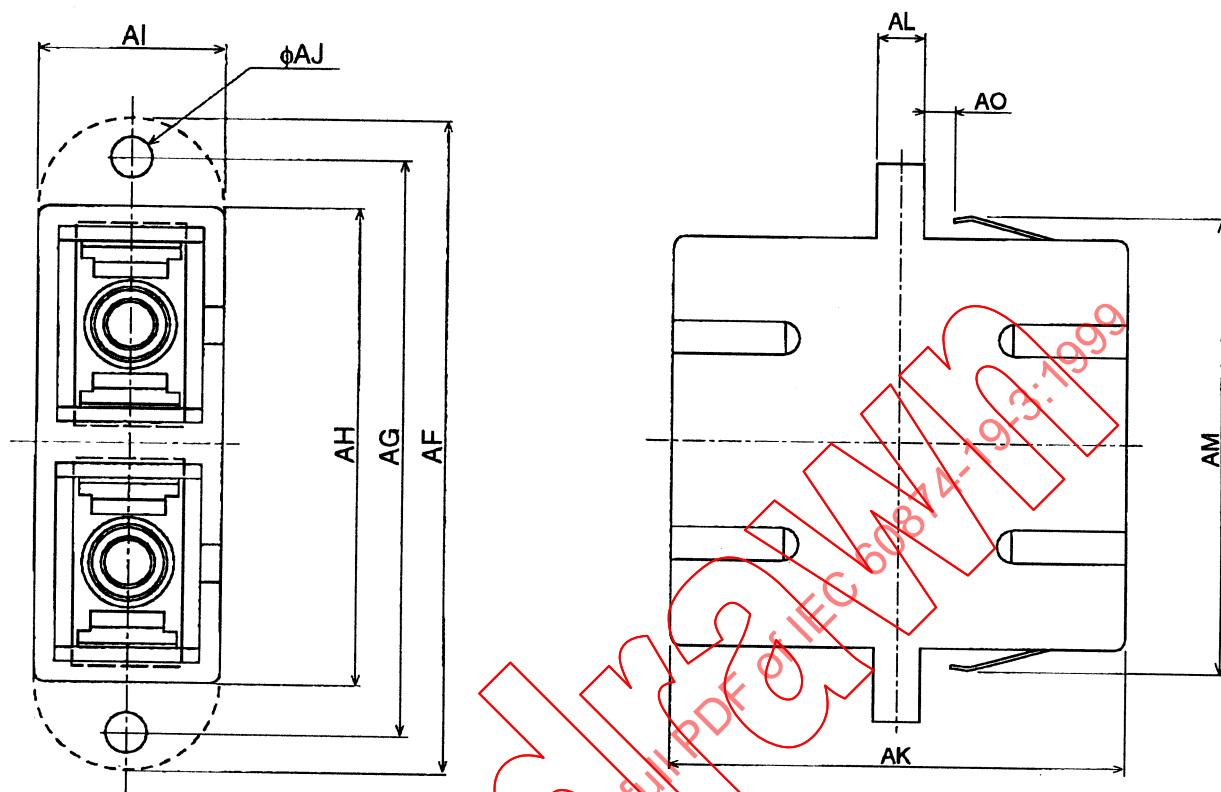
IEC 1030/99

NOTE – The dotted lines are for information only and represent the outer shape of the fixture of the adaptor.

Figure 1 – Adaptor mating face dimensions

Reference	Dimension		Notes
	Minimum	Maximum	
A	–	–	1, Diameter
B	4,59 mm	4,69 mm	Diameter
D	4,90 mm	5,50 mm	
H	6,90 mm	7,10 mm	
I	0,40 mm	0,80 mm	
J	5,51 mm	5,90 mm	
K	0,06 mm	1,00 mm	
L	1,90 mm	2,10 mm	
O	2,00 mm	2,20 mm	2
P	9,00 mm	9,10 mm	
R	7,40 mm	7,50 mm	
rS	1,00 mm	1,10 mm	Radius
T	3,80 mm	4,04 mm	
U	5,00 mm	5,30 mm	
V	0,60 mm	1,60 mm	
AA	27°	33°	
AB	0,80 mm	1,00 mm	
AC	0,40 mm	0,60 mm	
AD	0,70 mm	0,80 mm	
AE	0,40 mm	0,60 mm	
BA	5,40 mm	5,60 mm	
BB	10,80 mm	11,20 mm	
BC	2,70 mm	2,80 mm	Diameter
DB	12,65 mm	12,75 mm	
DD	5,60 mm	6,99 mm	
<p>NOTES</p> <p>1 The connector alignment feature is a resilient alignment sleeve. The gauge retention force shall be measured with two gauge pins, each inserted into the middle of the alignment feature. The gauge retention force shall be from 2,0 N to 5,9 N.</p> <p>2 Where a tolerance of form is not specified, the limits of the dimensions for a feature control the form as well as the size.</p> <p>3 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.</p> <p>4 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.</p>			

Figure 1 – Adaptor mating face dimensions (continued)



IEC 1031/99

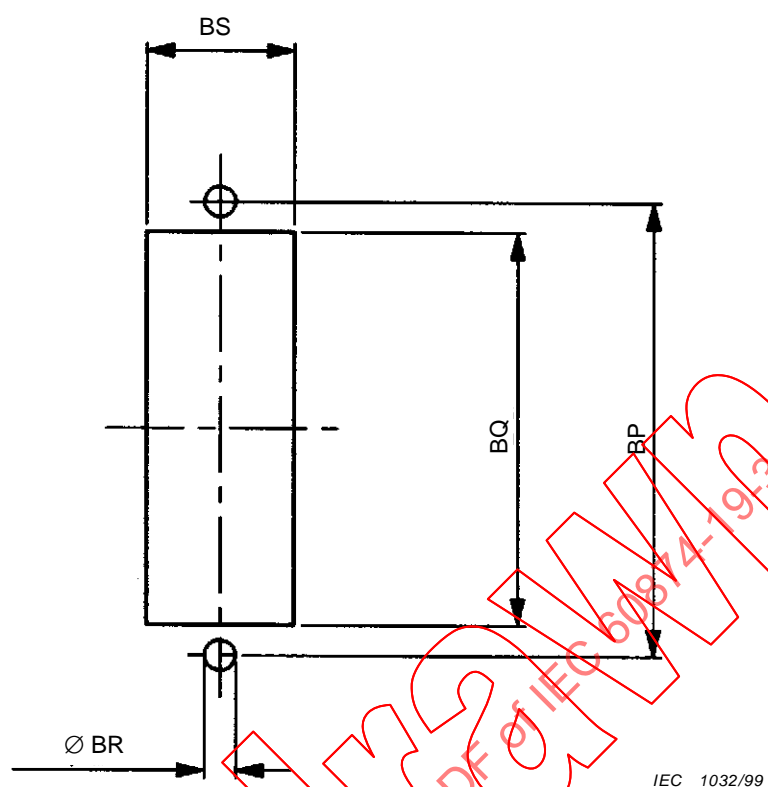
Reference	Dimension mm		Notes
	Minimum	Maximum	
AF	34,50	35,20	1
AG	30,20	31,20	
AH	25,20	25,90	
AJ	2,20	2,40	
AI	9,20	9,40	1
AK	27,00	27,80	
AL	2,80	3,20	2
AM	27,50	29,50	
AO	1,70	2,00	

NOTES

1 The dotted lines are illustrative only, the flange may be radiused or have square corners.

2 The thickness of the panel shall be 1,6 mm when the adaptor is mounted using the spring hook.

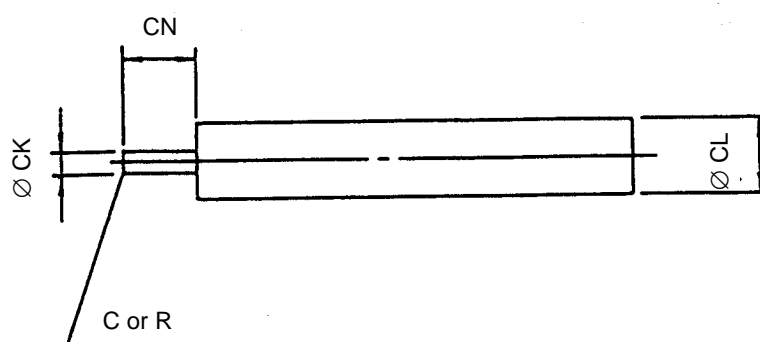
Figure 2 – Adaptor dimension



Reference	Dimensions mm		Notes
	Minimum	Maximum	
BP	30,60	31,20	
BQ	26,20	26,40	
BR	2,40	2,60	
BS	9,50	10,00	

NOTE – If the adaptor is mounted using bolts only, this hole shall be threaded M2.

Figure 3 – Panel piercing and mounting detail



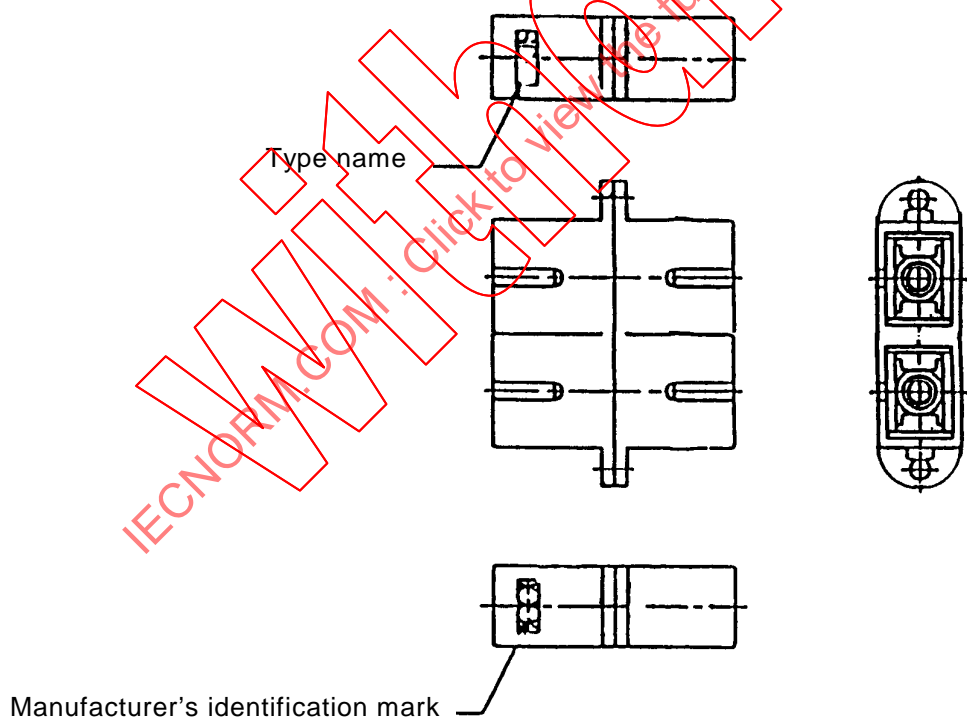
IEC 1033/99

Reference	Dimensions mm		Notes
	Minimum	Maximum	
CK	2,4985	2,4995	1
CL	2,80	4,80	
CN	7	–	
NOTE – Surface roughness grade N4 (0,2 μm Ra).			

Figure 4 – Dimension of a pin gauge for an adaptor

VARIANT IDENTIFICATION NUMBERS NUMBER: XXXXXXXXXXXXXXXX				
ZZZZ	Component name	Variant feature		
		Housing part material	Sleeve material	Preferred housing colour/indicator
1001	Adaptor MMF	Plastic	Zirconia	Beige
1002	Adaptor MMF	Plastic	Phosphor bronze	Beige
1003	Adaptor MMF	Plastic	Solid bore	Beige
1004	Adaptor MMF	Metal	Zirconia	NA
1005	Adaptor MMF	Metal	Phosphor bronze	NA
1006	Adaptor MMF	Metal	Solid bore	NA

SUPPLEMENTARY INFORMATION
<p>Colour:</p> <p>For MMF: beige according to RAL 1013.</p> <p>Component marking:</p> <p>The name and/or manufacturer's identification mark may be permanently identified. Figure 5 shows an example of the location of component marking.</p>



IEC 1034/99

Figure 5 – Example of component marking

TABLE 1
FIXED SAMPLE TEST SCHEDULE FOR QUALIFICATION APPROVAL

Test sequence	Reference IEC 60874-1 (IEC QC 910000) (IEC 61300)	<i>n</i>
Group 0		
– Visual examination	4.4.1 (3-1)	20
– Dimensions	4.4.2 (3-1)	
– Gauge retention force	(3-33)	
Group 1		
– Attenuation	4.4.7 (3-4)	20
Group 2		
– Cold	4.5.17 (2-17)	6
– Dry heat	4.5.18 (2-18)	
– Damp heat (steady state)	4.5.19 (2-19)	
Group 3		
– 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

NOTES

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

2 To satisfy the qualification approval requirements of the detail specification, there shall be no failures 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 made available for inspection. Failures and the corrective action taken to eliminate failures shall be documented and evidence 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 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 samples selected randomly from production.

TABLE 2 LOT-BY-LOT QUALITY CONFORMANCE INSPECTION SCHEDULE GROUPS A AND B			
Test sequence	Reference IEC 60874-1 (IEC QC 910000) (IEC 61300)	Assessment level A	
		IL	AQL
Group A			
– Visual examination	4.4.1 (3-1)	II	4 %
Group B			
– Attenuation	4.4.7 (3-4)	II	4 %
NOTES 1 Unless otherwise indicated, the details, measurements and performance requirements are given in table 4. 2 IL = Inspection level; AQL = Acceptable quality level. 3 Only attenuation tests shall be carried out using a reference connector. All other tests shall be carried out using products selected randomly from production.			

TABLE 3
PERIODIC QUALITY CONFORMANCE INSPECTION SCHEDULE
GROUPS C AND D

Test sequence	Reference IEC 60874-1 (IEC 61300)	Assessment level A	
		<i>n</i>	<i>p</i>
Group C0			
– Visual examination	4.4.1 (3-1)	18	24
– Dimensions	4.4.2 (3-1)		
– Gauge retention force	(3-33)		
Group C1			
– Attenuation	4.4.7 (3-4)	18	24
Group C2			
– Cold	4.5.17 (2-17)		
– Dry heat	4.5.18 (2-18)	6	24
– Damp heat (steady state)	4.5.19 (2-19)		
Group D0			
– Visual examination	4.4.1 (3-1)	20	48
– Dimensions	4.4.2 (3-1)		
– Gauge retention force	(3-33)		
Group D1			
– Attenuation	4.4.7 (3-4)	20	48
Group D2			
– Cold	4.5.17 (2-17)		
– Dry heat	4.5.18 (2-18)	6	48
– Damp heat (steady state)	4.5.19 (2-19)		
Group D3			
– Engagement and separation force	4.4.5 (3-11)		
– Mechanical endurance	4.5.2 (2-2)	6	48
Group D4			
– Vibration	4.5.1 (2-1)	4	48
– Change of temperature (test Nb)	4.5.22 (2-22)		
Group D5			
– Strength of coupling mechanism	4.5.6 (2-6)	4	48

NOTES

- 1 n = sample size (number of plugs); p = periodicity in months.
- 2 To satisfy the conformance inspection requirements of the detail specification, there shall be no failures 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 made available for inspection. Failures and the corrective action taken to eliminate failures shall be documented and evidence 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 necessitate a repeat of the full qualification programme.
- 3 Unless otherwise indicated, the details, measurements and performance requirements are given in table 4.
- 4 Only C1 and D1 tests shall be carried out using a reference connector. All other tests shall be carried out using samples selected randomly from production.

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TABLE 4
DETAILS, MEASUREMENTS AND PERFORMANCE REQUIREMENTS

Visual examination 4.4.1 (61300-3-1)

Requirements:

- Marking shall be clear

Dimensions 4.4.2 (61300-3-1)

- Gauge retention force (61300-3-33)

Requirements:

- All size dimensions shall be in accordance with this specification

Attenuation 4.4.7 (61300-3-4)

Details:

- Method No. 8
- Equilibrium mode condition

Definitions of reference components are as follows:

- The reference plug shall be in accordance with IEC 60874-14-1
- The reference adaptor is a selected low-loss adaptor. The selection criteria that shall be met are as follows: using two reference plugs and the adaptor, 10 repeated measurements of attenuation with direction insertion of the plugs alternated between measurements will give a maximum attenuation less than 0,1 dB.
 - Number of measurements to be averaged: 5
 - Source: LED.
 - Peak wavelength: 1,3 μm .
 - Preconditioning procedure: the ferrule endface of the reference plug shall be cleaned using lint-free cloth
 - Length L1: 2 m
 - Length L2: 2 m

Requirements:

- Allowable attenuation less than 0,2 dB against two reference plugs