

**Harmonized system of quality
assessment for electronic components**

Sectional specification: Circular connectors

The European Standard EN 175200:1996 has the status of a
British Standard

ICS 31.220.10

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee EPL/48, Electromechanical components for electronic equipment, to Subcommittee EPL/48/2, Connectors for electronic equipment, upon which the following bodies were represented:

- Association of Manufacturers Allied to the Electrical and Electronic Industry (BEAMA Ltd.)
- British Telecommunications plc
- BSI Quality Assurance
- Federation of the Electronics Industry
- Ministry of Defence
- Premises Cabling Association

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 April 1997

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First published January 1993
Second edition April 1997

The following BSI references relate to the work on this standard:
Committee reference: EPL/48/2
Draft for comment: 94/205862 DC

ISBN 0 580 27364 4

Amendments issued since publication

Amd. No.	Date	Comments

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National foreword

This British Standard has been prepared by Subcommittee EPL/48/2, and is the English language version of EN 175200:1996 *Sectional Specification: Circular connectors*, published by the European Committee for Electrotechnical Standardization (CENELEC). It supersedes BS EN 175200:1992, which will be withdrawn 1997-07-15.

Cross-references

Publication referred to	Corresponding British Standard
CECC 00 007:1973	BS E9007:1975 <i>Specification for harmonized system of quality assessment for electronic components: Basic specification: Sampling plans and procedures for inspection by attributes</i>
CECC 00 009:1980	BS CECC 00009:1982 <i>Specification for harmonized system of quality assessment for electronic components: Basic specification: Basic testing procedures and measuring methods for electromechanical components</i>
EN 2591	BS EN 2591 <i>Elements of electrical and optical connection. Test methods</i>
IEC 50(581):1978	BS 4727 <i>Glossary of electrotechnical, power, telecommunication, electronics, lighting and colour terms</i> Part 1 <i>Terms common to power, telecommunications and electronics</i> Group 13:1991 <i>Electromechanical components for electronic equipment</i>
IEC 68-1:1988	BS EN 60068 <i>Environmental testing</i> Part 1:1995 <i>General and guidance</i>
ISO 1000:1992	BS 5555:1993 <i>Specification for SI units and recommendations for the use of their multiples and of certain other units</i>

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 68, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

English version

Sectional Specification: Circular connectors

Spécification intermédiaire:
Connecteurs cylindriques

Rahmenspezifikation:
Rundsteckverbinder

This European Standard was approved by CENELEC on 1995-07-07. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

This European Standard was prepared by Working Group CLC/TC CECC/SC 48B (former WG 25).

It is based, wherever possible, on the Publications of the International Electrotechnical Commission and in particular on IEC 512: Electromechanical components for electronic equipment; basic testing procedures and measuring methods.

The text of the draft based on document CECC(Secretariat)3555 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3663, it was approved as EN 175200 on 1995-07-07.

This European Standard replaces EN 175200:1991.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-15
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-07-15

NOTE This specification does not comply completely with the requirements of CECC 00 400.

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CECC SPECIFICATION SYSTEM for LF Connectors		
EN 175200	EN 61076-4	EN 175300
SECTIONAL SPECIFICATION for Circular Connectors	SECTIONAL SPECIFICATION for Printed Board Connectors	SECTIONAL SPECIFICATION for Rectangular Connectors
	Scope General Tests & Test Schedules Quality Assessment Procedures Preparation of Detail Specifications	
EN 61076-2-001	EN 175101	EN 61076-2-001
EXAMPLE DETAIL SPECIFICATION/BLANK DETAIL SPECIFICATION	EXAMPLE DETAIL SPECIFICATION/BLANK DETAIL SPECIFICATION Provides an example of layout and the basis of a proforma for preparation of Detail Specifications	EXAMPLE DETAIL SPECIFICATION/BLANK DETAIL SPECIFICATION
CECC 75 201-8XX	CECC 75 101-8XX	CECC 75 301-8XX
DETAIL SPECIFICATION	DETAIL SPECIFICATION (Connector Type ...) Description Type Designation Outline Drawings Characteristics Assessment Levels Test Schedules	DETAIL SPECIFICATION

NOTE Sectional specifications include generic data.

1 Scope

This Sectional Specification is applicable to circular connectors for use in electrical and electronic equipment and systems. It shall be used in conjunction with the basic specification, IEC 512: Electromechanical components for electronic equipment, basic testing procedures and measuring methods, and the relevant DS.

The object of this Sectional Specification is to establish uniform specification, method and type test requirements for circular connectors and to establish rules for the preparation of DS.

In the event of conflict between this Sectional Specification and the DS, the requirements of the DS shall prevail.

2 General

2.1 Related documents

EN 61076-2-001, *EDS/BDS Rectangular Connectors*¹⁾.

CECC 00 007, *Harmonization document for IEC 410: Sampling procedures and tables for inspection by attributes for electronic components of assessed quality*.

CECC 00 009, *Harmonization document for IEC 512: Basic testing procedure and measuring methods for electromechanical components*.

CECC 00 100, *Basic Rules (1974)*.

EN 2591, *Aerospace series — Elements of electrical and optical connection, Test methods, General*.

IEC 27, *Letter symbols to be used in electrotechnology*.

IEC 50(581), *International Electrotechnical Vocabulary (IEV) — Chapter 581: Electromechanical components for electronic equipment*.

IEC 68-1, *Basic environmental testing procedures — Part 1: General and Guidance*.

IEC 410, *Sampling procedures and tables for inspection by attributes for electronic components for assessed quality (see CECC 00 014)*.

IEC 512, *Electromechanical components for electronic equipment; basic testing procedures and measuring methods (see CECC 00 009)*.

ISO/R/1000, *Rules for the use of the units of the International system of units and selection of the decimal multiples and submultiples of the SI units*.

2.2 Terminology

The terminology used in and applicable to this specification is included in IEC 50 (581). IEC 512 and EN 2591 also contain applicable terms.

For the purpose of this specification, the following additional terms and definitions shall apply:

2.2.1 hybrid connectors

Detailed specifications in accordance with this Sectional Specification which contain integrated hybrid elements from other Sectional Specifications in the CECC system shall be permitted providing that :—

- a) The hybridising elements are assessed using the appropriate test method from its sectional specification e.g. CECC 22 000 for RF contacts, CECC 86 000 for optical contacts, or Genetic Specification, CECC 33 000 for integrated filter contacts;
- b) Where such test methods are not published in existing specifications they shall be included as Annex to the Detail Specification.

2.2.2 group of related connectors

A group of connectors within a sub-family having common features. Typical examples:

- same mounting and coupling features but different kinds and numbers of contacts, different inserts and types of shells.

A group of related connectors is covered by a single DS.

¹⁾ In preparation

2.2.3 type

Connectors within a particular sub-family such as multi-contact connector with threaded coupling.

2.2.4 range

The housing (shell) sizes and contact arrangements within a type.

2.2.5 style

A particular external configuration of a connector within a range such as fixed, free, coupler or adaptor, connectors mounting features, etc.

2.2.6 variant

Variations within a type and style or within a group of related connectors.

2.2.7 Examples

- Family : Connector.
- Sub-family : Circular connectors.
- Type : Circular multi-contact connector with threaded coupling.
- Range : Shell size 1 with two contacts to Shell size 3 with 62 contacts.
- Variant : Shell size 1 with two contacts — plating finish, termination, etc.

2.3 Classification into climatic categories

The connectors are classified into climatic categories in accordance with the general rules given in IEC 68-1.

The following preferred temperature ranges and severities of the damp heat steady state tests have been selected.

Climatic category	Temperature range	Damp heat steady state	Identification code ^a
65/260/56	– 65 °C to + 260 °C	56 days	Under consideration
65/200/56	– 65 °C to + 200 °C	56 days	
65/175/56	– 65 °C to + 175 °C	56 days	
65/155/56	– 65 °C to + 155 °C	56 days	
55/155/56	– 55 °C to + 155 °C	56 days	
55/125/56	– 55 °C to + 125 °C	56 days	
55/125/21	– 55 °C to + 125 °C	21 days	
40/100/21	– 40 °C to + 100 °C	21 days	
40/100/10	– 40 °C to + 100 °C	10 days	
25/085/21	– 25 °C to + 85 °C	21 days	
25/070/10	– 25 °C to + 70 °C	10 days	
10/070/04	– 10 °C to + 70 °C	4 days	
^a Identification code to be used for CECC type designation			

2.4 Creepage and clearance distances

Permissible operating voltages depend on the application and on the applicable or specified safety requirements. Therefore, creepage and clearance distances as well as proof voltages under specified air pressure shall be specified in the DS — See also IEC 664 and 664A.

NOTE Creepage and clearance distances are in the context of the connector and do not refer to the wiring of the equipment.

2.5 Current

For each connector, the current carrying capacity shall be specified in the Detail Specification, preferably by the derating curve evaluated in accordance with Test 5b of IEC 512-3, or by at least one value of current and the associated temperature on the derating curve as well as the maximum operating temperature.

2.6 Marking

2.6.1 On the connector

Each connector shall have the following information marked upon it. Identification of the contact position as prescribed in the Detail Specification. If space does not permit full marking, as much as possible of the following in the order shown shall be included:

- 1) mark of origin (manufacturer's name or trade mark);
- 2) date code, if prescribed by the Detail Specification;
- 3) type designation.

2.6.2 On the package

The information in 1), 2) and 3) of **2.6.1** shall also be marked on the package.

2.7 Type designation — connectors

Circular connectors to which this specification applies shall be designated by the following indications and in the order given:

NOTE The number of characters shall not exceed 18 including spaces.

- 1) CECC abbreviated to "C";
- 2) An abbreviated reference of this sectional specification to "752" followed by the number of the Detail Specification eg. 800 for a Committee Detail Specification or 001 for a Manufacturer's Detail Specification;
- 3) A letter denoting the style of the connector. (The system shall be prescribed in the Detail Specification.)
- 4) A letter denoting a housing (shell) or body size;
- 5) two numbers denoting the contact arrangement. (Not necessarily the number of contacts);
- 6) A letter denoting the type of contact. The following letters shall be used.
 M = male contact
 F = female contact
 H = hermaphroditic contact
- 7) A letter denoting the basic type of the terminations. The following letters shall be used:
 E = solder termination, eyelet
 S = solder termination, solder bucket
 F = solder termination, printed wires
 C = crimp
 W = wrap termination
 D = insulation displacement
 P = press-in
- 8) A letter or digit denoting polarization or orientation by a particular arrangement of keys and keyways on housing (shells) or bodies, or position of insert in housing such as N, A, C, D, W, X, Y, Z or 0, 1, 2, etc., where N and 0 are the neutral²⁾ position.
- 9) A digit to denote variations permitted by the Detail Specification. For example: plating, performance, colour, etc.;
- 10) If prescribed in the Detail Specification, the type designation may optionally be extended to include an additional block to cover further information such as climatic category, termination information, etc. (See CECC 75 201);

²⁾ Neutral position is the normal or standard position.

11) Where the Detail Specification provides for a variation of performance and assessment levels, a single digit and a letter shall be used to denote Performance Level (PL) and Assessment Level (AL) respectively. The letter and digit shall be prescribed in the Detail Specification and shall be included as the final cyphers of the type designation.

2.7.1 Type designation — tools and accessories

Tools and accessories to which this specification applies shall be designated by the following indication and in the order given:

- 1) CECC abbreviated to “C”;
- 2) An abbreviated reference of this sectional specification to “752” followed by the number of the Detail Specification eg. 800 for a Committee Detail Specification or 001 for a Manufacturer’s Detail Specification;
- 3) A letter denoting the style of the tool/accessory;
- 4) A letter denoting housing (shell) size of applicable connector. (For contacts, seating plugs and insertion/removable tools, this letter will be O)
- 5) A letter denoting modifier, e.g. size of tool/contact or description of cable accessory, etc.;
- 6) A letter denoting plating finish of cable accessory dust cover, etc.

3 General requirements, tests and test schedules

3.1 Workmanship

The connectors shall be processed in a careful and workmanlike manner, in accordance with good current practice.

3.2 Testing

3.2.1 General aspects

All tests shall be in accordance with the requirements of IEC 512. Test methods not published in IEC 512 are included in Annex C to this document. Common test methods published in EN 2591 may be used as alternatives to those in the annex.

The Detail Specification shall prescribe the tests and test sequences and the number of specimens for each test sequence (not less than four) in accordance with this Sectional Specification.

Individual variants may be submitted to type tests for the approval of those particular variants.

It is permissible to limit the number of variants tested to a selection representative of the whole range for which approval is required (which may be less than the range covered by the Detail Specification), but each feature and characteristic shall be proved. This standard does not specify the number of permissible defects.

3.2.2 Preconditioning

Before the tests are made, the connectors shall be preconditioned under standard atmospheric conditions for testing for a period of 24 h, unless otherwise prescribed by the Detail Specification (see clause 5 of IEC 512-1).

3.2.3 Preparation of specimens

Tests on connectors shall be performed with all contacts fitted, unless otherwise prescribed by the Detail Specification.

Where wire or cable is used for test purposes, this should preferably have PTFE extruded insulation.

3.2.4 Mounting of specimens

When mounting is required in a test, the connector shall be rigidly mounted on a metal plate using the normal mounting method, fixing devices and panel cut-out as prescribed in the Detail Specification, or as otherwise specified.

Where prescribed, connectors shall be mounted in particular attitudes, these attitudes shall be recorded.

3.2.5 Recovery

Where conditioning is followed by recovery and subsequent measurements the specimens shall remain mated or unmated as they were during the conditioning, unless otherwise prescribed by the Detail Specification.

3.3 Test schedule (applicable to Qualification Approval only)

The basic (minimum) test schedule is given in 3.3.1.

A full test schedule is laid down in 3.3.2.

To provide for different applications of connectors, the extent of the test schedule may be different in the various Detail Specifications. The Detail Specification shall state the tests to be carried out and shall specify the requirements to be fulfilled. In no case shall the tests required by the Detail Specification be less than those listed in 3.3.1.

For many connector types an intermediate Test Schedule will be appropriate. This may then be formed by using the full Test Schedule and omitting entire groups and/or those tests and/or conditionings that are not necessary.

When a sequence of the test phases in a test group, is not entirely appropriate to a particular type or style, this sequence of the tests may be **arranged** for that particular connector's Detail Specification **in a separate test group**.

Where a Detail Specification prescribes additional characteristics which require testing, the appropriate existing or new test shall be added at the appropriate place. In special fields of application, test methods may be used which are not included in IEC 512. Such tests shall be added as annexes to the Detail Specification.

3.3.1 Basic (minimum) test schedule

Where this test schedule is appropriate, the Detail Specification shall prescribe the following tests and shall specify the characteristics to be examined and the requirements to be fulfilled.

- | | |
|---|---------------------------|
| 1) General examination | IEC 512-2, Test 1; |
| 2) Engaging and separating forces | IEC 512-7, Test 13a; |
| 3) Contact resistance | IEC 512-2, Test 2a or 2b; |
| 4) Insulation resistance | IEC 512-2, Test 3a; |
| 5) Voltage proof | IEC 512-2, Test 4a; |
| 6) Applicable termination test, for example,
solderability for terminations type S | IEC 512. |

3.3.2 Full test schedule —

Test schedule for connectors for GENERAL APPLICATION.

Preliminary group P

All specimens shall be subjected to the following tests in sequence.

The specimens shall then be divided into the appropriate number of groups. All connectors in each group shall undergo such of the following tests as are prescribed in the Detail Specification, and in the sequence given therein.

NOTE Use IEC 512 tests and measurements and/or tests and measurements according to the indicated appropriate annex.

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512 Part	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
P 1	General ^d examination	1		Visual examination	2, Test 1a	X
P 2	Polarising method	7, Test 13e	X	Examination of dimension and mass	2, Test 1b ^c Annex B10 ^e	X
P 3				Contact resistance	2, Test 2a or Test 2b plus Annex B2	X
P 3.1				Housing (shell) continuity	2, Test 2f plus Annex B3	
P 4				Insulation resistance	2, Test 3a plus Annex B4	X
P 5				Voltage proof	2, Test 4a plus Annex B5	X
P 6	Sealing (air Leakage) ^a or Sealing (gas leakage) ^b	7, Test 14a or Annex C1 Test 14b or Annex C18	X			
P7	Contact insertion release and extraction force	8, Test 15d plus Annex B6	X			
P 8	Electrical ^c engagement	Annex C2	X			
^a If applicable ^b Applicable to hermetic types only ^c Initial qualification only ^d If satisfactory measurement at time of production is available, this measurement may be accepted by national authority in lieu of test-phase PI-measurement ^e Applicable after initial Qualification Approval						

Group AP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
AP1	Engaging and separating forces	Annex C4	X	Voltage proof ^b	– 2 Test 4a plus Annex B5	X
AP2	Soldering ^a	Test 12a to 12c (as applicable)	X			X
AP3						X
AP4	Mechanical impact	Test 7b	X			
AP5	Contact retention in insert	Test 15a	X			
AP6				Visual examination	– 2 Test 1a	X
AP7	Insert retention in housing (axial)	Test 15b plus Annex B7	X			
AP8				Visual examination	– 2 Test 1a	X
AP9	Bump	Test 6b	X	Contact disturbance in the microsecond range	– 2 Test 2e	X
AP10	Vibration sinusoidal and random	Test 6d plus Annex B8 and Annex C5	X	Contact resistance variation (during test)	– 2 Test 2c	X
AP11	shock	Test 6c	X	Contact disturbance in the microsecond range	– 2 Test 2e	X
AP12	Acceleration	Test 6a	X			
AP13	Rapid change of temperature	Test 11d	X			
AP14				Insulation resistance	2, Test 3a plus Annex B4	X
AP15				Voltage proof	2, Test 4a plus Annex B5	X

^a Other applicable termination tests may be covered in other test sequences.

^b To be carried out only when a soldering test is carried out with contacts installed.

Group AP

Test Phase	Test			Measurement to be performed					
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS			
AP16	Climatic sequence Dry heat Low air pressure Damp heat cyclic, first cycle Cold Low air pressure Damp heat cyclic remaining cycles	Test 11a Test 11i plus Annex B9 Test 11k Test 11m or Annex C6 Test 11j Test 11k Test 11m or Annex C6	X X X X X X	Sealing (Air leakage) ^a or gas leakage ^b	7. Test 14a or Annex C1 Test 14a or Annex C18	X			
AP17				Visual examination	2, Test 1a	X			
AP18									
AP18.1									
AP18.2									
AP18.3									
AP18.4									
AP18.5									
AP18.6									
AP19							Insulation resistance	2, test 3a plus Annex B4	X
AP20							Contact resistance	2, Test 2a or 2, Test 2b plus Annex B2	X
AP21							Voltage proof	2, Test 4a plus Annex B5	X
AP22							Engaging and separating forces	7,Test 13a	X
AP23							Visual examination	2, Test 1a	X
AP24	Interfacial sealing	Test 14f	X	Voltage proof	2, Test 4a plus Annex B5	X			
AP25									
AP26	Probe damage	Test 16a	X			X			
AP27	Gauge retention force	Test 16e	X			X			
^a If applicable ^b Applicable to hermetic types only									

Group BP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
BP1				Engaging and separating force	7, Test 13a	X
BP2	Mechanical operation(half the specified number of operations)	Test 9a	X			
BP3	Climatic test		X			
BP3.1	Corrosion salt mist or	Test 11f				
BP3.2	Corrosion ^a industrial atmosphere or	Test 11g				
BP3.3	Climatic sequence or	Test 11a				
BP3.4	Damp heat	Test 11c or 11m or Annex C6				
BP4				Contact resistance	2, Test 2a or Test 2b plus Annex B5	X
BP5	Mechanical operation (remaining number of operations)	Test 9a	X			
BP6				Insulation resistance	2, Test 3a plus Annex B5	X
BP7				Housing (shell) continuity	2, Test 2f plus Annex B3	X
BP8				Voltage proof	2, Test 4a plus Annex B5	X
BP9				Engaging and separating forces		X
BP9a				Gauge retention force	7, Test 13a	X
BP9b	Contact insertion, release and extraction force ^a	8, Test 16e	X			
BP9c	Contact retention in insert, cable nutation ^b	Test 15d plus Annex B6	X			
		Test 15e	X			

^a Warning: Drab olive green chromate treated cadmium has an enhanced resistance to corrosion when compared with some alternative finishes defined within a Detail Specification.

Group BP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
BP9d	Contact retention system, resistances to tool application	15h(u.c.) Annex C19	X	Sealing air leakage	14a(u/c) Annex C1	X
BP10 BP11	Static load(axial)	Test 8b	X	Visual examination	2, Test 1a	X
^a Not on contacts to be tested in test phase P ^b Applicable to removable contacts only						

Group CP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
CP1	Immersion at low air pressure ^a	test 14e	X			
CP2				Insulation resistance	2, Test 3a plus Annex B4	X
CP3	Damp heat, steady state	Test 11c	X			
CP4				Insulation resistance	2, Test 3a plus Annex B4	X
CP5				Housing (shell) continuity ^a	2, Test 3f plus Annex B3	X
CP6				Contact resistance	2, Test 2a or Test 2b plus Annex B2	X
CP7				Voltage proof	2, Test 4a plus Annex B5	X
CP8				Engaging and separating forces	7, Test 13a	X
CP9				Sealing (air leakage ^a or gas leakage ^b)	7, Test 14a or Annex C1 Test 14b or Annex C18	X
CP10				Visual examination	2, Test 1a	X
CP11				Contact retention in insert	8, Test 15a	X
^a If applicable ^b Applicable to hermetic types only.						

Group DP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
DP1	Rapid change or temperature	Test 11d	X			
DP2	Mechanical operation	Test 9a	X			
DP3	Electrical load and temperature or Endurance at temperature (mechanical load)	Test 9b	X			
		Annex C8	X			
DP4				Insulation resistance (hot)	2, Test 3a plus Annex B4	X
DP5				Contact resistance	2, Test 2a or Test 2b plus Annex B2	X
DP6				Voltage proof	2, Test 4a plus Annex B5	X
DP7				Sealing (air leakage) ^a or gas leakage ^b or Sealing (air leakage, hot) ^a	7, Test 14a or Annex C1 Test 14b or Annex C18 7, Test 14a or Annex C1	X
DP7a				Interfacial sealing	7, Test 14f	X
DP8	Sand and dust			Visual examination	2, Test 1a	X
DP9		Test 11h or Annex C9	X			
DP10				Functional check of engaging and separating		By hand
DP11				Visual examination	2, Test 1a	X

^a If applicable^b Applicable to hermetic types only

Group EP

Test Phase	Test			Measurement to be performed		
	Title	Publ.512	Severity or condition of test in DS	Title	Publ.512 Part	Requirement in DS
EP1	Mould growth ^a	Test 11e	X			
EP2				Insulation resistance	2, Test 3a plus Annex B4	X
EP3				Visual examination	2, Test 1a	X
EP4						X
EP5	Flammability ^b	Test 20a or Annex C10	X	Insulation resistance	2, Test 3a plus Annex B4	X
EP6				Voltage proof at normal pressure	2, Test 4a plus Annex B4	X
EP7				Contact retention in insert	8, Test 15a	
EP8				Visual examination	2, Test 1a	X
EP9	Fireproofness ^c	Test 20b or Annex C11	X			
^a This test may be omitted, where agreement exists upon evidence of adequate performance ^b EP5 should not be carried out, when EP10 is applicable ^c Applicable to fireproof connectors only						

Group FP

Test Phase	Test			Measurement to be performed		
	Title	Publ.512	Severity or condition of test in DS	Title	Publ.512 Part	Requirement in DS
FP1	Resistance to fluids	Annex C12	X			X
FP2				Engaging and separating forces	Annex C4	X
FP3				Contact resistance	2, Test 2a or Test 2b plus Annex B2	X
FP4				Insulation resistance	2, Test 3a plus Annex B4	X
					2, Test 4a plus Annex B5	X
FP5				Voltage proof	8, Test 15b plus Annex B7	
FP6				Insert retention in housing (axial)	2, Test 1a	X
FP7				Visual examination		X

Group GP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
GP1	Robustness of termination	16f ^a 16g ^b or	X			
GP2	Connections, solderless wire wrap crimp IDC now assemble press-in	IEC 352-1 IEC 352-2 IEC 352-3 IEC 352-4 IEC 352-5	X X X X X			
^a Applicable to solder and wire wrap ^b Applicable to crimp						

Group HP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
HP 1	Mechanical strength of rear accessory	Test 8a or 8b or Annex C13	X			

Group KP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
KP1	Low temperature low air pressure damp heat	Test 11b or Annex C14	X			
KP2	Ozone exposure	Annex C15	X	Voltage proof	2, Test 4a plus Annex B5	X
KP3						
KP4						
KP5				Contact resistance	2, Test 2a or Test 2b plus Annex B2 8, Test 16r	X
KP6				Pin contact stability		X
				Static load transverse	5, Test 8a	X

Group LP

Test Phase	Test			Measurement to be performed		
	Title	Publ. 512	Severity or condition of test in DS	Title	Publ. 512 Part	Requirement in DS
LP 1	Visual examination	Test 1a	X			
LP 2	Spring force of grounding fingers (if applicable)	Test 16i	X			
LP 3	Shell to shell conductivity	Test 2f plus Annex B3	X			
LP 4	RFI shielding frequency range 10 kHz to 100 MHz 100 MHz to 1 GHz	Test 23a	X			
		Annex C17	X			
LP 5	Mechanical operation	Test 9a	X			
LP 6	Rapid change of temperature ^a	Test 11d	X			
LP 7	Corrosion, salt mist	Test 11f	X			
LP 8	Shell to shell conductivity	Test 2f plus Annex B3	X			
LP 9	RFI shielding frequency range 10 kHz to 100 MHz 100 MHz to 1 GHz	Test 23a	X			
		Annex C17	X			

^a Not applicable to connectors with passivated surface platings.

4 Preparation of Detail Specifications (DS)

4.1 Titles of detail specifications

The titles of Details Specifications shall clearly state the characteristic features of the connector detailed. (Coupling system, contact termination style, contact release/removal mode, etc.). If possible, the titles should be sufficiently explicit to differentiate one Detail Specification from another.

4.2 Drawing information

In order to facilitate comparison of various Detail Specifications, the following uniform presentation of drawing information is recommended.

4.2.1 Projection method and dimensioning system

One projection method shall be used and indicated throughout the Detail Specification, either first angle or third angle projection. The Detail Specification shall state which method has been applied.

The system of units adopted for international standardization in CECC is the SI System. Therefore, all dimensions shall be given in metric units. Inch equivalents may be added if necessary. The original dimensions shall be stated.

Dimensions and deviations in drawings shall be given in accordance with the relevant ISO recommendations, such as R 129, R 286 and R 1101.

4.2.2 Drawings and dimensions

The drawings are not intended to be used as manufacturing drawings.

Their purpose is:

- to provide the user with the information necessary to Choose and apply the connectors;
- to provide manufacturers, users and approving and inspection authorities with the information necessary to ensure and to check interchangeability, intermateability and intermountability, (such as form, fit and function);
- to provide manufacturers with the information necessary as a basis for their particular design.

The drawings and the associated dimensions shall contain all information necessary to serve this purpose.

Permissible deviations shall be stated where necessary, nominal values without tolerances or simple maxima or minima shall be given where sufficient.

Drawings and dimensions shall cover:

- overall dimensions of individual and mated connectors;
- mounting information;

NOTE The maximum extension of individual connectors internal and external to the equipment shall be related to the mounting face.

- mating face details, including contact arrangements with contact identification, polarization, orientation features, if any, and their relationship to a given datum;
- any accessories and their method of assembly to the basic connector and to connecting wires, cable, etc.;
- contact information;
- cable clamp device;
- special tools if applicable;
- testing gauges and jigs.

4.3 System of lettering

In order to facilitate comparison of various Detail Specifications and recognition of corresponding dimensions of fixed and free connectors the following uniform lettering system shall be used wherever practicable.

Capital letters shall be used for the main dimensions in accordance with Annex A.

Small letters shall optionally be chosen and used for all other dimensions.

4.4 Contents of detail specification

In order to facilitate comparison of the various Detail Specifications, the following standard format shall be used.

The Detail Specification shall contain all the information listed below and in the order given.

If a clause or subclause is not applicable to the connector under consideration, this shall be stated but the title and number of the clause or subclause shall be included. The clauses and subclauses listed below may further be subdivided if necessary or desirable for the sake of clarity.

An example of a Detail Specification is given in EN 61076-2-001/IEC 1076-2-001 (in, preparation).

(1) Title

See 4.1.

The front page shall contain information covering titles, clause 1 Scope and the additional information given on the front page of EN 61076-2-001.

(2) Clause 1 Scope

It shall be clearly stated which connectors are covered, and the characteristic features shall be mentioned. Features already included in the title may be repeated.

The description of the connector shall make reference to the method of coupling, polarization (and orientation if applicable), contact type (crimp, solder, etc., removable, non-removable), material or finish and range of wire/cable sizes that can be accommodated.