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Connectors for electronic equipment – Tests and measurements – Part 16-1: Mechanical tests on contacts and terminations – Test 16a: Probe damage

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CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 16-1: Mechanical tests on contacts and terminations – Test 16a: Probe damage

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International Standard IEC 60512-16-1 has been prepared by subcommittee 48B, Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

This standard cancels and replaces test 16a of IEC 60512-8, issued in 1993. This standard is to be read in conjunction with IEC 60512-1 and IEC 60512-1-100 which explains the structure of the IEC 60512 series.

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

FDIS	Report on voting
48B/1877/FDIS	48B/1910/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 been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60512 series, under the general title *Connectors for electronic equipment – Tests and measurements*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- withdrawn;
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CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 16-1: Mechanical tests on contacts and terminations – Test 16a: Probe damage

1 Scope and object

This part of IEC 60512, when required by the detail specification, is used for testing connectors within the scope of technical committee 48. It may also be used for similar devices when specified in a detail specification.

The object of this part of IEC 60512 is to detail a standard test method to assess the effectiveness of the elastic system of contacts to resist damage from the insertion of a specified test probe.

Although this test is intended for cylindrical contacts, the use for contacts with other geometries is not excluded. In which case, the detail specification should contain sufficient detail, given under the Clause 5 f), to enable the test to be done.

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2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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IEC 60512-1-1, *Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination*

IEC 60512-16-5, *Connectors for electronic equipment – Tests and measurements – Part 16-5: Mechanical tests on contacts and terminations – Test 16e: Gauge retention force (resilient contacts)*[1]

3 Preparations

3.1 Preparation of specimen

The specimen shall consist of the female part of a connector with its terminations, and may be wired if so specified in the detail specification. If the design of the connector does not prevent the rotation of the contact in its cavity, means to ensure this shall be used. Any such means shall not affect the validity of the test. If this is not possible, the contact shall be installed in its insert, and or housing, in the manner specified in the detail specification.

Any preconditioning given in the detail specification shall be applied.

3.2 Equipment

A test pin and handle, such as that shown in Figure 1, shall be provided. They shall conform to the following requirements.

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1 To be published.

a) Length A, shall be 0,75 times the minimum depth specified for the bore of the female contact under test.

b) Diameter B, shall be equal to the nominal diameter of the male mating contact.

c) Length L shall not be less than $10 \times A$.

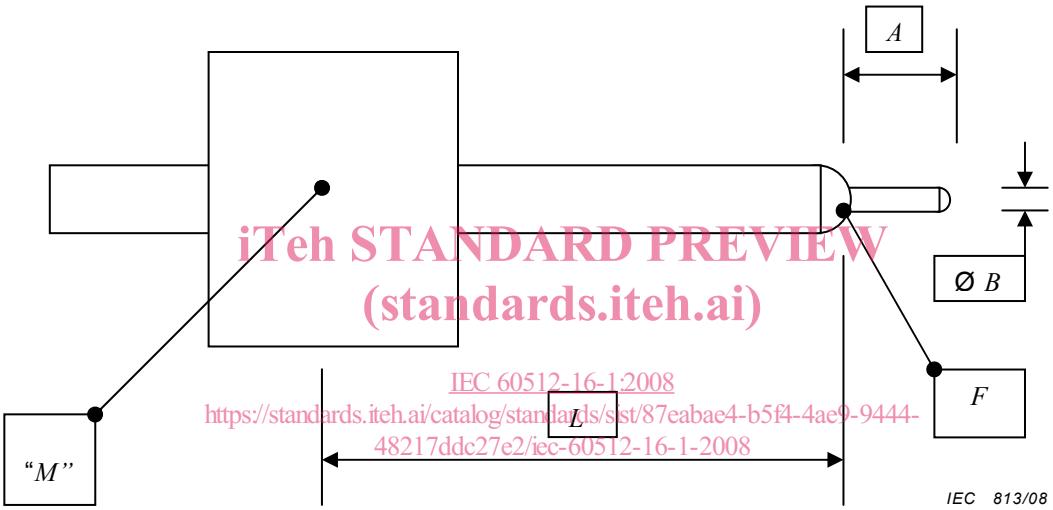
d) Mass M shall be such that $M \times L$ = the specified torque. The mass of the handle shall be taken into account in this calculation.

e) The test pin shall have a hemispherical end.

f) The test pin shall be made from hardened steel and have a polished surface.

g) The handle shall have a spherical radius at the point marked “fulcrum”.

h) Either, an alternative test pin with length A reduced to 0,50 times the minimum depth specified for the bore of the contact under test, or a spacer, which replicates the fulcrum of the handle, to achieve the same effect, shall be provided.



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M	centre of mass
F	fulcrum
A	length
L	length
B	diameter

Figure 1 – Test pin, handle and mass

3.3 Mounting

If mounting of the specimen is appropriate, it shall be as specified in the detail specification.

4 Test method

4.1 Procedure

The axis of the contact shall be horizontal at all times during the test.

The specified test probe shall be fully inserted. The connector under test shall then be slowly rotated through 360° such that test load is applied in all possible positions.

This forgoing procedure shall be repeated, either with the reduced length test pin, or the spacer specified in 3.2 h).

Test IEC 60512-16-5, gauge retention force, shall then be carried out.

4.2 Measurements and requirements

4.2.1 Before testing

Visual examination according to IEC 60512-1-1 shall be carried out. The gauge retention requirements defined in the relevant detail specification shall be met.

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4.2.2 After testing

The requirements of the detail specification for gauge retention shall be met. Visual examination according to IEC 60512-1-1 shall be carried out. Special attention shall be given to elastic members within the contact under test.

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5 Details to be specified

When this test is required by a detail specification, the following shall be given therein:

NOTE It is anticipated that the detail specification will contain sufficient detail to allow calculation required in 3.2 to be carried out.

a) whether preconditioning required;

b) wiring of the specimen;

c) whether special mounting of the specimen is required;

d) torque to be applied;

e) gauge retention requirements;

f) if the contact is not cylindrical, sufficient details of equipment procedure, and measurements, for the test to be done;

g) any deviation from the standard test method.

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