Irish Standard
I.S. EN 60512-16-21:2012

Connectors for electronic equipment - Tests and measurements -- Part 16-21: Mechanical tests on contacts and terminations - Test 16u: Whisker test via the application of external mechanical stresses (IEC 60512-16 -21:2012 (EQV))

I.S. EN 60512-16-21:2012

Incorporating amendments/corrigenda issued since publication:

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EUROPEAN STANDARD

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EN 60512-16-21

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English version

Connectors for electronic equipment - Tests and measurements - Part 16-21: Mechanical tests on contacts and terminations - Test 16u: Whisker test via the application of external mechanical stresses

(IEC 60512-16-21:2012)

Connecteurs pour équipements électroniques - Essais et mesures - Partie 16-21: Essais mécaniques des contacts et des sorties - Essai 16u: Essai des trichites au moyen de l'application de contraintes mécaniques extérieures
(CEI 60512-16-21:2012)

Steckverbinder für elektronische Einrichtungen - Mess- und Prüfverfahren - Teil 16-21: Mechanische Prüfungen an Kontakten und Anschlüssen -Prüfung 16u: Whisker-Prüfung unter Anwendung äußerer mechanischer Beanspruchungen
(IEC 60512-16-21:2012)

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

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Foreword

The text of document 48B/2284/FDIS, future edition 1 of IEC 60512-16-21, prepared by SC 48B “Connectors”, of IEC/TC 48 "Electromechanical components and mechanical structures for electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60512-16-21:2012.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2013-03-11
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-06-11

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60512-16-21:2012 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-581	-	International Electrotechnical Vocabulary (IEV) - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60068-2-58	2004	Environmental testing - Part 2-58: Tests - Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	EN 60068-2-58 + corr. December	2004 2004
IEC 60068-2-82 + corr. December	2007 2009	Environmental testing - Part 2-82: Tests - Test XW_1: Whisker test methods for electronic and electric components	EN 60068-2-82	2007
IEC 60512-1	-	Connectors for electronic equipment - Tests and measurements - Part 1: General	EN 60512-1	-
IEC 61760-1	2006	Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)	EN 61760-1	2006

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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 60512-16-21 has been prepared by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

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

FDIS	Report on voting
48B/2284/FDIS	48B/2294/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.

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability 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

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

CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 16-21: Mechanical tests on contacts and terminations Test 16u: Whisker test via the application of external mechanical stresses

1 Scope and object

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

The object of this standard is to define a standard test method to assess the possibility of whisker growth by external mechanical stress on the tin and tin-alloy plated parts of a connector in its application (after wire termination, after soldering, after mounting, mated with counterpart).

This standard does not cover internal stress type whisker.

NOTE 1 The test method dealing with internal stress type whisker, which is caused by the formation of intermetallic compound by diffusion, or by the formation of oxide film of the plating surface, or by the difference between coefficients of thermal expansion, is specified in IEC 60068-2-82.

While for internal stress type whisker, it is possible to apply accelerated test conditions, e.g.: by damp heat or temperature cycling, for the external mechanical stress type whisker covered by this standard, due to the different whisker generation mechanism, there are no accelerated conditions. The test detailed in this standard shall then be conducted under normal ambient conditions.

NOTE 2 Physical changes during the application process may cause changes of the material qualities, so that this test cannot be used as a qualification test of a connector in ‘as produced’ condition.

NOTE 3 The conditions specified in this test may accelerate the growth of tin whiskers in a test specimen, but no correlation has been demonstrated between the extent of whisker growth, which may occur in this test, and the extent of whisker growth which may be expected in actual use. Whisker growth in actual use may therefore be less than or greater than the extent of whisker growth found when using this test.

2 Normative references

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

IEC 60050-581, *International Electrotechnical Vocabulary (IEV) – Part 581: Electromechanical components for electronic equipment*

IEC 60068-68-1, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-58: 2004, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*