
Konektorji za elektronsko opremo - Preskusi in meritve - 16-21. del: Mehanski preskusi kontaktov in priključkov - Preskus 16u: Preskus podaljševanja vlaken zaradi zunanje mehanske obremenitve

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

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**
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

<https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8-3d1220714000/sist-en-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

Ta slovenski standard je istoveten z: EN 60512-16-21:2012

ICS:

19.060	Mehansko preskušanje	Mechanical testing
31.220.10	Vtiči in vtičnice, konektorji	Plug-and-socket devices. Connectors

SIST EN 60512-16-21:2012

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60512-16-21:2012

<https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8-0db39acc4d7e/sist-en-60512-16-21-2012>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60512-16-21

June 2012

ICS 31.220.10

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)

SIST EN 60512-16-21:2012

<https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8->

This European Standard was approved by CENELEC on 2012-06-11. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

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.

ITEH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 60512-16-21:2012](https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8-0db39acc4d7e/sist-en-60512-16-21-2012)

<https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8-0db39acc4d7e/sist-en-60512-16-21-2012>

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60512-16-21:2012

<https://standards.iteh.ai/catalog/standards/sist/e80d70cc-bec5-47be-b7b8-0db39acc4d7e/sist-en-60512-16-21-2012>



IEC 60512-16-21

Edition 1.0 2012-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**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**

**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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 31.220.10

ISBN 978-2-88912-057-4

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope and object.....	5
2 Normative references	5
3 Terms and definitions	6
4 Test equipment.....	6
4.1 Optical microscope.....	6
4.2 Scanning electron microscope (SEM)	6
5 Preparation of the specimens	6
5.1 General.....	6
5.2 Handling of the specimens	7
5.3 Preconditioning	7
6 Measurement of whisker length	7
7 Test method	8
7.1 Initial measurement.....	8
7.2 Test.....	8
7.2.1 General	8
7.2.2 Test conditions	9
7.2.3 Accelerated conditions	9
7.2.4 Test duration	9
7.3 Final measurement.....	9
8 Requirements	9
9 Information to be recorded	9
10 Details to be specified	10
Annex A (informative) Whisker growth due to mechanical stresses induced by assembly processes and intended usage	11
Figure 1 – Whisker length	8
Figure A.1 – Filament whisker.....	11
Figure A.2 – Whisker on contact	11
Figure A.3 – Whisker on FFC.....	11
Table 1 – Preconditioning heat treatment of specimens for whisker test.....	7

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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**

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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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.