
Konektorji za elektronsko opremo – Preskusi in meritve – 12-4. del: Spajkalni preskusi – Preskus 12d: Odpornost proti spajkalni temperaturi, metoda s spajkalno banjico (IEC 60512-12-4:2006)

Connectors for electronic equipment - Tests and measurements - Part 12-4: Soldering tests - Test 12d: Resistance to soldering heat, solder bath method (IEC 60512-12-4:2006)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 60512-12-4:2006](https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4dfe-a6c7-2770894839a8/sist-en-60512-12-4-2006)

<https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4dfe-a6c7-2770894839a8/sist-en-60512-12-4-2006>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 60512-12-4:2006

<https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4dfe-a6c7-2770894839a8/sist-en-60512-12-4-2006>

**Connectors for electronic equipment -
Tests and measurements
Part 12-4: Soldering tests -
Test 12d: Resistance to soldering heat, solder bath method
(IEC 60512-12-4:2006)**

Connecteurs pour équipements
électroniques -
Essais et mesures
Partie 12-4: Essais de soudure -
Essai 12d: Résistance à la chaleur
de soudage, méthode de bain de brasage
(CEI 60512-12-4:2006)

Steckverbinder für elektronische
Einrichtungen -
Mess- und Prüfverfahren
Teil 12-4: Prüfungen der Lötbarkeit -
Prüfung 12d: Lötwärmebeständigkeit,
Lötbadverfahren
(IEC 60512-12-4:2006)

(standards.iteh.ai)

SIST EN 60512-12-4:2006

<https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-199892512016>

This European Standard was approved by CENELEC on 2006-03-01. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, 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 and the United Kingdom.

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

The text of document 48B/1579/FDIS, future edition 1 of IEC 60512-12-4, 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 was approved by CENELEC as EN 60512-12-4 on 2006-03-01.

This standard is to be read in conjunction with EN 60512-1 and EN 60512-1-100 which explains the structure of the EN 60512 series.

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) 2006-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2009-03-01

This European Standard makes reference to International Standards. Where the International Standard referred to has been endorsed as a European Standard or a home-grown European Standard exists, this European Standard shall be applied instead. Pertinent information can be found on the CENELEC web site.

iTeh STANDARD PREVIEW Endorsement notice (standards.iteh.ai)

The text of the International Standard IEC 60512-12-4:2006 was approved by CENELEC as a European Standard without any modification.

[SIST EN 60512-12-4:2006](https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4dfc-a6c7-2770894839a8/sist-en-60512-12-4-2006)

<https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4dfc-a6c7-2770894839a8/sist-en-60512-12-4-2006>

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60512-12-4

Première édition
First edition
2006-02

**Connecteurs pour équipements électroniques –
Essais et mesures –**

**Partie 12-4:
Essais de soudure –
Essai 12d: Résistance à la chaleur de soudage,
méthode de bain de soudage**

**Connectors for electronic equipment –
Tests and measurements –**

**Part 12-4:
Soldering tests –
Test 12d: Resistance to soldering heat,
solder bath method**

© IEC 2006 Droits de reproduction réservés — Copyright - all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

F

*Pour prix, voir catalogue en vigueur
For price, see current catalogue*

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CONNECTORS FOR ELECTRONIC EQUIPMENT –
TESTS AND MEASUREMENTS –****Part 12-4: Soldering tests –
Test 12d: Resistance to soldering heat,
solder bath method**

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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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 60512-12-4 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 12d of IEC 60512-6, issued in 1984, and constitutes a technical revision. 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/1579/FDIS	48B/1612/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.

IEC 60512-12 consists of the following parts, under the general title *Connectors for electronic equipment – Tests and measurements*:

- Part 12-1: Soldering tests – Test 12a: Solderability, wetting, solder bath method¹
- Part 12-2: Soldering tests – Test 12b: Solderability, wetting, soldering iron method
- Part 12-3: Soldering tests – Test 12c: Solderability, de-wetting
- Part 12-4: Soldering tests – Test 12d: Resistance to soldering heat, solder bath method
- Part 12-5: Soldering tests – Test 12e: Resistance to soldering heat, soldering iron method
- Part 12-6: Soldering tests – Test 12f: Sealing against flux and cleaning solvents in machine soldering
- Part 12-7: Soldering tests – Test 12g: Solderability, wetting balance method

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

[SIST EN 60512-12-4:2006](https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-2770894839a8/sist-en-60512-12-4-2006)

- reconfirmed; <https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-2770894839a8/sist-en-60512-12-4-2006>
- withdrawn;
- replaced by a revised edition, or
- amended.

¹ Under consideration.

CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 12-4: Soldering tests – Test 12d: Resistance to soldering heat, solder bath method

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 part of IEC 60512 is to detail a standard test method to assess the ability of a connector to withstand the heating stresses produced by a mass soldering operation.

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.

IEC 60068-2-20:1979, *Basic environmental testing procedures – Part 2 Tests. Test T: Soldering*

[SIST EN 60512-12-4:2006](https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-2770894839a8/sist-en-60512-12-4-2006)

[https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-](https://standards.iteh.ai/catalog/standards/sist/8852ca9c-5857-4df6-a6c7-2770894839a8/sist-en-60512-12-4-2006)

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

3 Preparations

3.1 General

A solder bath at 260 °C, as described in 5.4 of IEC 60068-2-20, shall be prepared.

NOTE The development of lead-free solder may necessitate the use of higher temperatures. Reference to IEC 60068-2-58 is recommended.

If required by the detail specification, a thermal screen, as described in 5.4.3 of IEC 60068-2-20, shall be provided.

Alternatively, if required by the detail specification, a heat sink shall be used. This will consist of a single or double-sided printed circuit board of 1,6 mm thickness, with 35 µm conductive copper tracks. The conductive pattern shall consist of evenly distributed conductors, which cover 50 % ± 10 % of each side of the printed board. The hole pattern shall correspond to the connector specification requirements. The length and width of the printed board shall be such that the contour (plan view) of the specimen is exceeded by 15 mm minimum in all directions.

3.2 Preparation of specimen

The specimen shall consist of a connector with its terminations. As given in the connector detail specification, a screen of thermally insulating material, or a heat sink shall be used.

Unless otherwise specified in the detail specification, the terminations shall not be cleaned or degreased prior to the application of the solderability test.

NOTE Care should be taken not to touch or otherwise contaminate the terminations to be tested.

3.3 Conditioning

If accelerated ageing before testing is to be applied, one of the ageing procedures detailed in 4.5 of IEC 60068-2-20 shall be prescribed in the detail specification. Ageing time 16 h at 155 °C (Method 3 according to 4.5.3 of IEC 60068-2-20) shall be used, unless otherwise stated in the detail specification.

4 Method

4.1 Procedure

The test shall be carried out in accordance with IEC 60068-2-20: Test Tb: Resistance of components to soldering heat: 5.4 Method 1A: Solder bath at 260 °C.

Where a thermal screen is to be used, the terminations shall be immersed so that the thermal screen nearly touches the surface of the solder bath. Where a heat sink is used it shall just touch the surface of the solder bath. Immersion time shall be (5 ± 1) s or (10 ± 1) s, as specified in the detail specification.

4.2 Measurements

4.2.1 Initial measurements

Visual examination according to IEC 60512-1-1 shall be done. There shall be no defects which would impair the validity of the test.

4.2.2 Final measurements

Visual examination according to IEC 60512-1-1 shall be done with 10× magnification. There shall be no defects, which would impair the normal functioning of the connector.

4.2.3 Special attention

Special attention shall be given to shroud dimensions for printed board connectors that could impair the mating, blind mating, and contact retention functions.

5 Details to be specified

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

- a) pre-ageing requirements, if other than those specified in 3.3;
- b) if a thermal screen or heat sink is to be used;
- c) immersion time;
- d) any deviation from the above test method.