SLOVENSKI STANDARD

SIST EN 60512-13-2:2006

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Konektorji za elektronsko opremo – Preskusi in meritve – 13-2. del: Mehansko preskušanje – Preskus 13b: Sile za vtikanje in izvlečenje (IEC 60512-13-2:2006)

Connectors for electronic equipment - Tests and measurements - Part 13-2: Mechanical operation tests - Test 13b: Insertion and withdrawal forces (IEC 60512-13-2:2006)

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Connectors for electronic equipment - Tests and measurements Part 13-2: Mechanical operation tests - Test 13b: Insertion and withdrawal forces

(IEC 60512-13-2:2006)

Connecteurs pour équipements électroniques -
Essais et mesures
Partie 13-2: Essais de fonctionnement mécanique -
Essai 13b: Forces d'insertion et d'extraction
(CEI 60512-13-2:2006)

Steckverbinder für elektronische Einrichtungen -
Mess- und Prüfverfahren
Teil 13-2: Prüfungen der mechanischen Bedienbarkeit -
Prüfung 13b: Gesamtsteck- und -ziehkraft
(IEC 60512-13-2:2006)

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.

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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

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Foreword

The text of document 48B/1582/FDIS, future edition 1 of IEC 60512-13-2, 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 60512-13-2 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.

Endorsement notice

The text of the International Standard IEC 60512-13-2:2006 was approved by CENELEC as a European Standard without any modification.

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Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces

FOREWORD

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International Standard IEC 60512-13-2 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 13b of IEC 60512-7, issued in 1993, 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/1582/FDIS	48B/1615/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 60512-13 consists of the following parts, under the general title *Connectors for electronic equipment – Tests and measurements*:

Part 13-1: Mechanical operation tests – Test 13a: Engaging and separating forces

Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces

Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying 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

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

CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 13-2: Mechanical operation tests – Test 13b: Insertion and withdrawal forces

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 measure the insertion and withdrawal forces of mating connectors, or of a connector with the mating insertion and/or withdrawal gauge(s) specified in the connector detail specification, without the effect of any locking, latching, sealing, engaging, separating or similar device.

NOTE 1 This may, for some designs, involve irreversible alteration to the connectors.

The connector may be a single pair of contacts without the influence of any housing, or a contact or contacts in a housing where parts of this housing have been disabled or removed in order to eliminate their influence on the test and measurements.

NOTE 2 When in the following text the word "connector(s)" is used, this is also applicable to individual contact pairs.

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

3 Preparation

3.1 Preparation of specimen

The specimen shall consist of a mating pair of connectors with all contacts in place or two mating contacts as applicable, and as given in the detail specification. Any locking, latching, sealing, engaging, separating, or similar device shall be rendered inoperative.

3.2 Test gauge

If specified in the detail specification, a gauge(s) to that specification shall be provided.

NOTE It is recommended that in addition to measurements of the insertion and withdrawal forces generated between connector pairs, gauge(s) designed to simulate max/min dimensions of the connector system, are used and the forces re-measured with the appropriate mating parts.

3.3 Lubricant

If the detail specification so requires, the specified lubricant shall be applied in the manner given in the detail specification.

3.4 Mounting

One of the connectors shall be rigidly fixed in position. The mating part shall be free to self-align using only such means that are provided by the connectors under test.

4 Method

4.1 Rate of insertion and withdrawal

The rate of insertion and withdrawal shall be 50 mm/min maximum, at constant speed, unless otherwise stated in the detail specification.

4.2 Insertion and withdrawal

The connectors shall be fully inserted and withdrawn, without the effect of any locking, latching, sealing, engaging, separating, or similar device, in a normal manner unless special instructions are given in the detail specification.

This shall be done the number of times stated in the detail specification.

4.3 Measurements

4.3.1 Initial measurements

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

4.3.2 Test measurements

The forces to fully insert and withdraw the connectors shall be measured. This shall be done as many times as required by the detail specification. At least, the forces for the first and last cycle shall be recorded.

4.3.3 Final measurements

Visual examination according to IEC 60512-1-1 shall be done with 10× magnifications. Any defects, which would impair the normal functioning of the connector, shall be documented.

5 Details to be specified

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

a) maximum value of the insertion force;

b) maximum and minimum values of the withdrawal force;

c) rate of insertion and withdrawal, if other than those given in 4.1;