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STN	**Nespájkované spoje Časť 7: Spoje s pružinovým upnutím Všeobecné požiadavky, skúšobné metódy a praktické pokyny**	**STN EN IEC 60352-7 35 4061**

Solderless connections - Part 7: Spring clamp connections - General requirements, test methods and practical guidance

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/26

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EUROPÄISCHE NORM

EN IEC 60352-7

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English Version

Solderless connections - Part 7: Spring clamp connections - General requirements, test methods and practical guidance (IEC 60352-7:2026)

Connexions sans soudure - Partie 7: Connexions à ressort - Exigences générales, méthodes d'essai et guide pratique (IEC 60352-7:2026)

Lötfreie Verbindungen - Teil 7: Federklemmverbindungen - Allgemeine Anforderungen, Prüfverfahren und Anwendungshinweise (IEC 60352-7:2026)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60352-7:2026 E

European foreword

The text of document 48B/3177/FDIS, future edition 3 of IEC 60352-7, prepared by SC 48B "Electrical connectors" of IEC/TC 48 "Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60352-7:2026.

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) 2027-02-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2029-02-28

This document supersedes EN IEC 60352-7:2021 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60352-7:2026 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60352-9	NOTE	Approved as EN IEC 60352-9
IEC 60512-1-100	NOTE	Approved as EN 60512-1-100
IEC 60947-7-1:2025	NOTE	Approved as EN IEC 60947-7-1:2025 (not modified)
IEC 60947-7-4:2019	NOTE	Approved as EN IEC 60947-7-4:2019 (not modified)
IEC 61984:2008	NOTE	Approved as EN 61984:2009 (not modified)

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-581	-	International Electrotechnical Vocabulary - Part 581: Electromechanical components for electronic equipment	-	-
IEC 60068-1	-	Environmental testing - Part 1: General and guidance	EN 60068-1	-
IEC 60189-3	-	Low-frequency cables and wires with PVC insulation and PVC sheath - Part 3: Equipment wires with solid or stranded conductor wires, PVC insulated, in singles, pairs and triples	-	-
IEC 60228	-	Conductors of insulated cables	EN IEC 60228	-
IEC 60512-1	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 1: Generic specification	EN IEC 60512-1	-
IEC 60512-1-1	-	Connectors for electronic equipment - Tests and measurements - Part 1-1: General examination - Test 1a: Visual examination	EN 60512-1-1	-
IEC 60512-1-2	-	Connectors for electronic equipment - Tests and measurements - Part 1-2: General examination - Test 1b: Examination of dimension and mass	EN 60512-1-2	-
IEC 60512-2-1	-	Connectors for electronic equipment - Tests and measurements - Part 2-1: Electrical continuity and contact resistance tests - Test 2a: Contact resistance - Millivolt level method	EN 60512-2-1	-
IEC 60512-2-2	2003	Connectors for electronic equipment - Tests and measurements - Part 2-2: Electrical continuity and contact resistance tests - Test 2b: Contact resistance - Specified test current method	EN 60512-2-2	2003

EN IEC 60352-7:2026 (E)

IEC 60512-2-5	-	Connectors for electronic equipment - Tests and measurements - Part 2-5: Electrical continuity and contact resistance tests - Test 2e: Contact disturbance	EN 60512-2-5	-
IEC 60512-6-4	-	Connectors for electronic equipment - Tests and measurements - Part 6-4: Dynamic stress tests - Test 6d: Vibration (sinusoidal)	EN 60512-6-4	-
IEC 60512-9-5	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 9-5: Endurance tests - Test 9e: Current loading, cyclic	EN IEC 60512-9-5	-
IEC 60512-11-1	-	Connectors for electrical and electronic equipment - Tests and measurements - Part 11-1: Climatic tests - Test 11a - Climatic sequence	EN IEC 60512-11-1	-
IEC 60512-11-4	-	Connectors for electronic equipment - Tests and measurements - Part 11-4: Climatic tests - Test 11d: Rapid change of temperature	EN 60512-11-4	-
IEC 60512-11-7	-	Connectors for electronic equipment - Tests and measurements - Part 11-7: Climatic tests - Test 11g: Flowing mixed gas corrosion test	EN 60512-11-7	-
IEC 60512-11-9	-	Connectors for electronic equipment - Tests and measurements - Part 11-9: Climatic tests - Test 11i: Dry heat	EN 60512-11-9	-
IEC 60512-11-10	-	Connectors for electronic equipment - Tests and measurements - Part 11-10: Climatic tests - Test 11j: Cold	EN 60512-11-10	-
IEC 60512-16-20	-	Electromechanical components for electronic equipment - Basic testing procedures and measuring methods - Part 16: Mechanical tests on contacts and terminations - Section 20: Test 16t: Mechanical strength (wired termination of solderless connections)	EN 60512-16-20	-

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Solderless connections -
Part 7: Spring clamp connections - General requirements, test methods and practical guidance

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Solderless connections - Part 7: Spring clamp connections - General requirements, test methods and practical guidance

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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9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of a patent, which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60352-7 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

This third edition cancels and replaces the second edition published in 2020. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Addition of definition 3.6 contact pressure via insulating material CoPI;
b) Addition of definition 3.7 spring clamp connecting device with CoPI;
c) Addition of a dedicated test group for spring clamp connections made with spring clamp terminations, which achieve contact pressure through insulating material (CoPI), which shall be tested according to Annex B in Subclause 6.1;

d) Addition of test group “CoPI” in Clause 8;

e) Addition of Annex B to detail tests for resiliency in metallic parts to compensate for any shrinkage or yielding of insulating material with regards to contact pressure transmitted through the insulating material (CoPI), referenced in the “Test group CoPI” added in both test schedules.

The text of this International Standard is based on the following documents:

Draft	Report on voting
48B/3177/FDIS	48B/3186/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 60352 series, published under the general title *Solderless connections*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

This part of IEC 60352 covers spring clamp connections and includes requirements, tests and practical guidance information.

Two test schedules are provided.

a) The basic test schedule applies to spring clamp connections which conform to all requirements of Clause 5. These requirements are derived from experience with successful applications of such spring clamp connections.
b) The full test schedule applies to spring clamp connections which do not fully conform to all requirements of Clause 5, for example which are manufactured using materials or finishes not included in Clause 5.

This approach ensures cost and time effective performance verification using a limited basic test schedule for established spring clamp connections and an expanded full test schedule for spring clamp connections requiring more extensive performance validation.

In this third edition, a dedicated test group providing requirements and tests for spring clamp connections with contact pressure transmitted via insulating material (CoPI) has been added in both test schedules, referring to the new Annex B (normative). In such instance, this provides means to fulfil both the requirement of 6.6.3 of IEC 61984:2008 concerning the design of electrical connections of connectors, and the requirement of 8.2 of IEC 60999-1:1999 concerning the design of clamping units connecting devices.

The values given in this document are minimum values, which are harmonized with other IEC documents. Other standards or the manufacturer’s specification can specify other values.

The test procedure for resiliency in metallic parts to compensate for any shrinkage or yielding of insulating material with regards to contact pressure transmitted via insulating material (CoPI) has been derived from IEC 60947-7-4:2019.

1 Scope

This part of IEC 60352 is applicable to spring clamp connections made with stripped wire of the following types and sizes according to IEC 60228 or IEC 60189-3, without further preparation (later described “unprepared”):

– solid conductors (e.g. class 1 of IEC 60228) of 0,32 mm to 3,7 mm nominal diameter (0,08 mm^2 to 10 mm^2 cross-section), or

– stranded conductors (e.g. class 2 of IEC 60228) of 0,08 mm^2 to 10 mm^2 cross-section, or

– flexible conductors (e.g. class 5 or 6 of IEC 60228) of 0,08 mm^2 to 10 mm^2 cross-section,

for use in electrical and electronic equipment and components.

Information on materials and data from industrial experience is included in addition to the test procedures to provide electrically stable connections under prescribed environmental conditions.

The object of this document is to determine the suitability of spring clamp connections under specified mechanical, electrical and atmospheric conditions.

NOTE IEC Guide 109 advocates the need to minimize the impact of a product on the natural environment throughout the product life cycle. It is understood that some of the materials permitted in this document can have a negative environmental impact. As technological advances lead to acceptable alternatives for these materials, they will be eliminated from this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60050-581, *International Electrotechnical Vocabulary (IEV) - Part 581: Electromechanical components for electronic equipment*

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

IEC 60189-3, *Low-frequency cables and wires with PVC insulation and PVC sheath - Part 3: Equipment wires with solid or stranded conductor, PVC insulated, in singles, pairs and triples*

IEC 60228, *Conductors of insulated cables*

IEC 60512-1, *Connectors for electrical and electronic equipment - Tests and measurements - Part 1: Generic specification*

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

IEC 60512-1-2, *Connectors for electronic equipment - Tests and measurements - Part 1-2: General examination - Test 1b: Examination of dimension and mass*

IEC 60512-2-1, *Connectors for electronic equipment - Tests and measurements - Part 2-1: Electrical continuity and contact resistance tests - Test 2a: Contact resistance - Millivolt level method*

IEC 60512-2-2:2003, *Connectors for electronic equipment - Tests and measurements - Part 2-2: Electrical continuity and contact resistance tests - Test 2b: Contact resistance - Specified test current method*

IEC 60512-2-5, *Connectors for electronic equipment - Tests and measurements - Part 2-5: Electrical continuity and contact resistance tests - Test 2e: Contact disturbance*

IEC 60512-6-4, *Connectors for electronic equipment - Tests and measurements - Part 6-4: Dynamic stress tests - Test 6d: Vibration (sinusoidal)*

IEC 60512-9-5, *Connectors for electrical and electronic equipment - Tests and measurements - Part 9-5: Endurance tests - Test 9e: Current loading, cyclic*

IEC 60512-11-1, *Connectors for electrical and electronic equipment - Tests and measurements - Part 11-1: Climatic tests - Test 11a - Climatic sequence*

IEC 60512-11-4, *Connectors for electronic equipment - Tests and measurements - Part 11-4: Climatic tests - Test 11d: Rapid change of temperature*

IEC 60512-11-7, *Connectors for electronic equipment - Tests and measurements - Part 11-7: Climatic tests - Test 11g: Flowing mixed gas corrosion test*

IEC 60512-11-9, *Connectors for electronic equipment - Tests and measurements - Part 11-9: Climatic tests - Test 11i: Dry heat*

IEC 60512-11-10, *Connectors for electronic equipment - Tests and measurements - Part 11-10: Climatic tests - Test 11j: Cold*

IEC 60512-16-20, *Electromechanical components for electronic equipment - Basic testing procedures and measuring methods - Part 16: Mechanical tests on contacts and terminations - Section 20: Test 16t: Mechanical strength (wired termination of solderless connections)*