



# SLOVENSKI STANDARD

## SIST EN 61007:2002

01-september-2002

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### Transformers and inductors for use in electronic and telecommunication equipment- Measuring methods and test procedure (IEC 61007:1994, modified)

Transformers and inductors for use in electronic and telecommunication equipment - Measuring methods and test procedures

Transformatoren und Drosseln für die Anwendung in elektronischen und nachrichtentechnischen Einrichtungen - Meßmethoden und Prüfverfahren

Transformateurs et inductances utilisés dans les équipements électroniques et de télécommunications - Méthodes de mesure et procédures d'essais

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Ta slovenski standard je istoveten z: EN 61007:1997

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#### **ICS:**

29.180          Transformatorji. Dušilke          Transformers. Reactors

**SIST EN 61007:2002**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61007**

May 1997

ICS 29.180

Descriptors: Electronic and telecommunication equipment, transformers, inductors, measuring methods, test procedures

English version

**Transformers and inductors for use in electronic and telecommunication equipment - Measuring methods and test procedures**  
(IEC 1007:1994, modified)

Transformateurs et inductances utilisés dans les équipements électroniques et de télécommunications - Méthodes de mesure et procédures d'essais (CEI 1007:1994, modifiée)

Transformatoren und Drosseln für die Anwendung in elektronischen und nachrichtentechnischen Einrichtungen Meßmethoden und Prüfverfahren (IEC 1007:1994, modifiziert)

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This European Standard was approved by CENELEC on 1997-03-11. 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 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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 the International Standard IEC 1007:1994, prepared by IEC TC 51, Magnetic components and ferrite materials, together with common modifications prepared by Reporting Secretariat SR 51, was submitted to the formal vote and was approved by CENELEC as EN 61007 on 1997-03-11.

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) 1998-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-03-01

Annexes designated "normative" are part of the body of the standard.  
In this standard, annex ZA is informative.  
Annex ZA has been added by CENELEC.

### Endorsement notice

The text of the International Standard IEC 1007:1994 was approved by CENELEC as a European Standard with agreed common modifications as given below.

### COMMON MODIFICATIONS

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### Contents

Replace "4.2.1 Safety screen position" by "4.2.1 Protective screen position".

3.13 Replace "safety screen" by "protective screen".

Add the following note after the definition:

NOTE: "protective" is often replaced by "safety", "isolating", or "earth".

4.2.1 Replace "safety screen" by "protective screen" in the title and throughout the text.

Replace the note by:

NOTE: "protective" is often replaced by "safety", "isolating", or "earth".

4.4.18.2 Replace "safety screens" by "protective screens" in the title and throughout the text.

Replace the note by:

NOTE: "protective" is often replaced by "safety", "isolating", or "earth".



## Annex ZA (normative)

Normative references to international publications  
with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 27	series	Letter symbols to be used in electrical technology	HD 245	series
IEC 44-4	1980	Instrument transformers Part 4: Measurement of partial discharges	-	-
IEC 50	series	International electrotechnical vocabulary (IEV)	-	-
IEC 68-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 <sup>1)</sup>	1994
+ A1	1992			
IEC 68-2-1 A1	1990 1993	Part 2: Tests - Tests A: Cold	EN 60068-2-1 A1	1993 1993
IEC 68-2-2 A1	1974 1993	Test B: Dry heat	EN 60068-2-2 <sup>2)</sup> A1	1993 1993
IEC 68-2-3	1969	Test Ca: Damp heat, steady state	HD 323.2.3 S2 <sup>3)</sup>	1987
IEC 68-2-6	1982	Test Fc and guidance: Vibration (Sinusoidal)	HD 323.2.6 S2 <sup>4)</sup>	1988
IEC 68-2-7 + A1	1983 1986	Test Ga and guidance: Acceleration, steady state	EN 60068-2-7	1993
IEC 68-2-10	1988	Test J and guidance: Mould growth	HD 323.2.10 S3	1988
IEC 68-2-13	1983	Test M: Low air pressure	HD 323.2.13 S1	1987

1) EN 60068-1 also includes corrigendum october 1988 to IEC 68-1.

2) EN 60068-2-2 includes supplement A:1976 to IEC 68-2-2.

3) HD 323.2.3 S2 includes A1:1984 to IEC 68-2-3.

4) HD 323.2.6 S2 is superseded by EN 60068-2-6:1995, which is based on IEC 68-2-6:1995 + corrigendum March 1995.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 68-2-14 + A1	1984 1986	Test N: Change of temperature	HD 323.2.14 S2	1987
IEC 68-2-17 A4	1978 1991	Test Q: Sealing	HD 323.2.17 S4 <sup>5)</sup>	1990
IEC 68-2-20 + A2	1979 1987	Test T: Soldering	HD 323.2.20 S3	1988
IEC 68-2-21 A2 A3	1983 1991 1992	Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21 <sup>6)</sup> A2 A3	1997 1997 1997
IEC 68-2-27	1987	Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 68-2-29	1987	Test Eb and guidance: Bump	EN 60068-2-29 <sup>7)</sup>	1993
IEC 68-2-30 + A1	1980 1985	Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	HD 323.2.30 S3	1988
IEC 68-2-42	1982	Test Kc: Sulphur dioxide test for contacts and connections	-	-
IEC 68-2-45	1980	Test Xa and guidance: Immersion in cleaning solvents	EN 60068-2-45	1992
IEC 68-2-52	1984	Test Kb: Salt mist, cyclic (sodium chloride solution)	HD 323.2.52 S1 <sup>8)</sup>	1987
IEC 68-2-58	1989	Test Td: Solderability, resistance to dissolution of metallization and to soldering heat of Surface Mounting Devices (SMD)	HD 323.2.58 S1	1991
IEC 270	1981	Partial discharge measurements	-	-
IEC 367-1 A1 A2	1982 1984 1992	Cores for inductors and transformers for telecommunications Part 1: Measuring methods	- - -	- - -
IEC 551 (mod)	1987	Determination of transformer and reactor sound levels	EN 60551	1992

5) HD 323.2.17 S4 is superseded by EN 60068-2-17:1994, which is based on IEC 68-2-17:1994.

6) EN 60068-2-21 includes corrigendum November 1991 + A1:1985 to IEC 68-2-21.

7) EN 60068-2-29 includes corrigendum to IEC 68-2-29.

8) HD 323.2.52 S1 is superseded by EN 60068-2-52:1996, which is based on IEC 68-2-52:1996.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 617	series	Graphical symbols for diagrams	-	-
IEC 651 A1	1979 1993	Sound level meters	EN 60651 A1	1994 1994
IEC 695-2-2	1991	Fire hazard testing Part 2: Test methods Section 2: Needle-flame test	EN 60695-2-2	1994
IEC 695-2-4/0	1991	Section 4/sheet 0: Diffusion type and premixed type flame test methods	EN 60695-2-4/0	1993
IEC 695-2-4/1	1991	Section 4/sheet 1: 1 kW nominal pre-mixed test flame and guidance	EN 60695-2-4/1	1993
ISO 3	1973	Preferred numbers - Series of preferred numbers	-	-
ISO 497	1973	Guide to the choice of series of preferred numbers and of series containing more rounded values of preferred numbers	-	-
ISO 1000	1992	SI units and recommendations for the use of their multiples and of certain other units	-	-

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INTERNATIONALE  
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**CEI  
IEC**

**61007**

Deuxième édition  
Second edition  
1994-10

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**Transformateurs et inductances utilisés  
dans les équipements électroniques  
et de télécommunications –  
Méthodes de mesure et procédures d'essais**

**iTeh STANDARD PREVIEW**

**(standards.iteh.ai)**

**Transformers and inductors for use  
in electronic and telecommunication  
equipment –**

**Measuring methods and test procedures**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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For price, see current catalogue

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TRANSFORMERS AND INDUCTORS FOR USE  
IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT –  
MEASURING METHODS AND TEST PROCEDURES**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The 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 the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

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International Standard IEC 1007 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

This second edition cancels and replaces the first edition published in 1990, and amendments 1 and 2 (published in 1993), and constitutes a technical revision.

The text of this standard is based on the first edition of IEC 1007, amendments 1 and 2 and the following documents:

DIS	Report on voting
51(CO)309	51(CO)312

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

# TRANSFORMERS AND INDUCTORS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT – MEASURING METHODS AND TEST PROCEDURES

## 1 Scope

This standard describes measuring methods and test procedures for inductors and transformers for use in electronic and telecommunication equipment that may be involved in any specifications for such components, in particular those forming part of the IEC Quality Assessment System for Electronic Components (IECQ scheme).

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of IEC 1007. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on IEC 1007 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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IEC 27: *Letter symbols to be used in electrical technology*

IEC 44-4: 1980, *Instrument transformers – Part 4: Measurement of partial discharges*

IEC 50, *International Electrotechnical Vocabulary (IEV)*

IEC 68-1: 1988, *Environmental testing – Part 1: General and guidance*  
Amendment 1 (1992)

IEC 68-2: *Environmental testing – Part 2: Tests*

IEC 68-2-1: 1990, *Environmental testing – Part 2: Tests – Tests A: Cold*  
Amendment 1 (1993)

IEC 68-2-2: 1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*  
Amendment 1 (1993)

IEC 68-2-3: 1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 68-2-6: 1982, *Environmental testing – Part 2: Tests – Test Fc and guidance: Vibration (sinusoidal)*

IEC 68-2-7: 1983, *Environmental testing – Part 2: Tests – Test Ga and guidance: Acceleration, steady state*  
Amendment 1 (1986)

IEC 68-2-10: 1988, *Environmental testing – Part 2: Tests – Test J and guidance: Mould growth*

IEC 68-2-13: 1983, *Environmental testing – Part 2: Tests – Test M: Low air pressure*

IEC 68-2-14: 1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*  
Amendment 1 (1986)

IEC 68-2-17: 1978, *Environmental testing – Part 2: Tests – Test Q: Sealing*  
Amendment 4 (1991)

IEC 68-2-20: 1979, *Environmental testing – Part 2: Tests – Test T: Soldering*  
Amendment 2 (1989)

IEC 68-2-21: 1983, *Environmental testing – Part 2: Tests – Test U: Robustness of terminations and integral mounting devices*  
Amendment 2 (1991), Amendment 3 (1992)

IEC 68-2-27: 1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

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IEC 68-2-29: 1987, *Environmental testing – Part 2: Tests – Test Eb and guidance: Bump*

IEC 68-2-30: 1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*  
Amendment 1 (1985)

IEC 68-2-42: 1982, *Environmental testing – Part 2: Tests – Test Kc: Sulphur dioxide test for contacts and connections*

IEC 68-2-45: 1980, *Environmental testing – Part 2: Tests – Test XA and guidance: Immersion in cleaning solvents*

IEC 68-2-52: 1984, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 68-2-58: 1989, *Environmental testing – Part 2: Tests – Test Td: Solderability, resistance to dissolution of metallization and to soldering heat of Surface Mounting Devices (SMD)*

IEC 270: 1981, *Partial discharge measurements*

IEC 367-1: 1982, *Cores for inductors and transformers for telecommunications – Part 1: Measuring methods*  
Amendment 1 (1984), Amendment 2 (1992)

IEC 551: 1987, *Determination of transformer and reactor sound levels*

IEC 617, *Graphical symbols for diagrams*

IEC 651: 1979, *Sound level meters*  
Amendment 1 (1993)

IEC 695-2: *Fire hazard testing – Part 2: Test methods*

IEC 695-2-2: 1991, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*

IEC 695-2-4/0: 1991, *Fire hazard testing – Part 2: Test methods – Section 4/Sheet 0: Diffusion type and pre-mixed type flame test methods*

IEC 695-2-4/1: 1991, *Fire hazard testing – Part 2: Test methods – Section 4/Sheet 1: 1 kW nominal pre-mixed test flame and guidance*

ISO 3: 1973, *Preferred numbers* (Series of preferred numbers)

ISO 497: 1973, *Guide to the choice of series of preferred numbers and of series containing more rounded values of preferred numbers*

ISO 1000: 1992, *SI units and recommendations for the use of their multiples and of certain other units*

### 3 Terminology

For the purpose of this standard the following definitions apply in addition to those of IEC 50:

3.1 **component**: A transformer or an inductor.

3.2 **peak working voltage**: The maximum instantaneous voltage for which the winding insulation is rated under working circuit conditions.

3.3 **pulse waveform parameters** (see figure 1)

a) **peak pulse amplitude,  $U_m$** : The maximum value of an extrapolated smooth curve through the top of the pulse, excluding any initial "spike" or "overshoot", the duration of which is less than 10 % of the pulse duration.

b) **pulse duration,  $t_d$** : The time interval between the first and last instants at which the pulse amplitude equals 50 % of the peak pulse amplitude.