



# SLOVENSKI STANDARD

## SIST EN 61000-4-1:1997

01-marec-1997

Nadomešča:

SIST HD 481.1 S1:1997

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### Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 1: Overview of immunity test

Electromagnetic compatibility (EMC) -- Part 4: Testing and measurement techniques -- Section 1: Overview of immunity tests

Elektromagnetische Verträglichkeit (EMV) -- Teil 4: Prüf- und Meßverfahren -- Hauptabschnitt 1: Übersicht über Störfestigkeitsprüfverfahren

Compatibilité électromagnétique (CEM) -- Partie 4: Techniques d'essai et de mesure -- Section 1: Vue d'ensemble sur les essais d'immunité

Ta slovenski standard je istoveten z: EN 61000-4-1:1994

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#### **ICS:**

33.100.20      Imunost      Immunity

**SIST EN 61000-4-1:1997**      en

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EUROPEAN STANDARD

EN 61000-4-1

NORME EUROPEENNE

EUROPÄISCHE NORM

August 1994

UDC 621.37.001.365  
ICS 29.020Descriptors: Electromagnetic compatibility, tests, measuring techniques,  
immunity

## ENGLISH VERSION

Electromagnetic compatibility (EMC)  
Part 4: Testing and measurement techniques  
Section 1: Overview of immunity tests  
Basic EMC publication  
(IEC 1000-4-1:1992)



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO  
Urad RS za standardizacijo in meroslovje  
LJUBLJANA  
SIST... EN 61000-4-1 ...  
PREVZET PO METODI RAZGLASITVE

-03- 1997

Compatibilité électromagnétique  
(CEM)  
Partie 4: Techniques d'essai et  
de mesure  
Section 1: Vue d'ensemble sur  
les essais d'immunité  
Publication fondamentale en CEM  
(CEI 1000-4-1:1992)

Elektromagnetische  
Verträglichkeit (EMV)  
Teil 4: Prüf- und  
Meßverfahren  
Hauptabschnitt 1: Übersicht über  
Störfestigkeitsmeßverfahren  
EMV Grundnorm  
(IEC 1000-4-1:1992)

Tab STANDARD PREVIEW  
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This European Standard was approved by CENELEC on 1994-07-05.  
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 CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1000-4-1:1992 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 61000-4-1 on 5 July 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-03-15
- latest date of withdrawal of conflicting national standards (dow) 1995-03-15

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annex ZA is normative and annexes A and B are informative.

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ENDORSEMENT NOTICE

SIST EN 61000-4-1:1997

The text of the International Standard IEC 1000-4-1:1992 was approved by CENELEC as a European Standard without any modification.

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## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT 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.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication -----	Date -----	Title -----	EN/HD -----	Date -----
34-1 (mod)	1983	Rotating electrical machines - Part 1: Rating and performance	HD 53.1 S2	1985
50(161)	1990	International Electrotechnical Vocabulary (IEV) - Chapter 161: Electromagnetic compatibility	-	-
255-22-1	1988	Electrical relays - Part 22: Electrical disturbance tests for measuring relays and protection equipment - Part one: 1 MHz burst disturbance tests	-	-
521	1988	Classes 0.5, 1 and 2 alternating-current watthour meters	EN 60521	1994
790	1984	Oscilloscopes and peak voltmeters for impulse tests	HD 479 S1	1986
801-2	1991	Electromagnetic compatibility for industrial-process measurement and control equipment - Part 2: Electrostatic discharge requirements	EN 60801-2	1993
801-3	1984	Part 3: Radiated electromagnetic field requirements	HD 481.3 S1	1987
801-4	1988	Part 4: Electrical fast transient/burst requirements	-	-
801-5	-	Part 5: Surge voltage immunity requirements (under consideration)	-	-
801-6	-	Part 6: Immunity to conducted radio frequency disturbances above 9 kHz (under consideration)	-	-

IEC Publication	Date	Title	EN/HD	Date
816	1984	Guide on methods of measurement of short duration transients on low voltage power and signal lines.	-	-
1000-1	1992	Electromagnetic compatibility (EMC) Part 1: General	-	-
1000-2-1	1990	Part 2: Environment - Section 1: Description of the environment Electromagnetic environment for low-frequency conducted disturbances and signalling in public power supply systems	-	-
1000-2-2 (mod)	1990	Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	ENV 61000-2-2	1993
1000-2-3	1992	Section 3: Description of the environment - Radiated and non-network-frequency-related conducted phenomena	-	-
1000-4-X	-	Part 4: Testing and measurement techniques	-	-
1000-4-7	1991	Section 7: General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto	EN 61000-4-7	1993
1000-4-8	1993	Section 8: Power frequency magnetic field immunity test - Basic EMC Publication	EN 61000-4-8	1993
1000-4-9	1993	Section 9: Pulse magnetic field immunity test - Basic EMC Publication	EN 61000-4-9	1993
1000-4-10	1993	Section 10: Damped oscillatory magnetic field immunity test - Basic EMC Publication	EN 61000-4-10	1993
XXX	-	Static ripple control receivers for tariff and load control (under consideration)	-	-

## Other publications:

- 
- CCITT Recommendation K 20:1985 - Resistability of telecommunication switching equipment to overvoltages and overcurrents
- CCITT Recommendation K 21:1990 - Resistability of subscribers' terminals to overvoltages and overcurrents

Publication 1000-4-1 de la CEI  
(Première édition - 1992)

IEC Publication 1000-4-1  
(First edition - 1992)

Compatibilité électromagnétique (CEM)

Electromagnetic compatibility (EMC)

Partie 4: Techniques d'essai et de mesure –  
Section 1: Vue d'ensemble sur  
les essais d'immunité  
Publication fondamentale en CEM

Part 4: Testing and measurement techniques –  
Section 1: Overview of immunity tests  
Basic EMC publication

## CORRIGENDUM

*Correction dans le texte anglais uniquement*

Page 87

Figure A.13

*Instead of the existing legend, read:*

Figure A.13 – Diagram of a fast transient generator

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NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC  
1000-4-1

Première édition  
First edition  
1992-12

Compatibilité électromagnétique (CEM)

Partie 4:

Techniques d'essai et de mesure

Section 1: Vue d'ensemble sur les essais d'immunité

Publication fondamentale en CEM

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Electromagnetic compatibility (EMC)

Part 4:

Testing and measurement techniques

Section 1: Overview of immunity tests

Basic EMC publication

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE XB

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

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTROMAGNETIC COMPATIBILITY (EMC)

Part 4: Testing and measurement techniques  
 Section 1: Overview of immunity tests  
 Basic EMC publication

## FOREWORD

- 1) 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.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

International Standard IEC 1000-4-1 has been prepared by sub-committee 77B: Industrial and other non-public networks and equipment connected thereto of IEC technical committee 77: Electromagnetic compatibility.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting	Two Months' Procedure	Report on Voting
77B(CO)04	77B(CO)06	77B(CO)10	77B(CO)11

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

Annexes A and B are for information only.

## INTRODUCTION

IEC 1000-4 is a part of IEC 1000 series, according to the following structure:

### Part 1: General

General considerations (introduction, fundamental principles)  
Definitions, terminology

### Part 2: Environment

Description of the environment  
Classification of the environment  
Compatibility levels

### Part 3: Limits

Emission limits  
Immunity limits (in so far as they do not fall under the responsibility of product committees)

### Part 4: Testing and measurement techniques

Measurement techniques  
Testing techniques

### Part 5: Installation and mitigation guidelines

Installation guidelines  
Mitigation methods and devices

### Part 9: Miscellaneous

Each part is further subdivided into sections which can be published either as international standards or Technical reports.

These parts of IEC 1000-4 will be published in chronological order and numbered accordingly.

This section is an International Standard which gives an overview of electromagnetic compatibility immunity tests.

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## ELECTROMAGNETIC COMPATIBILITY (EMC)

### Part 4: Testing and measurement techniques

#### Section 1: Overview of immunity tests

##### Basic EMC publication

### 1 Scope and object

This section of IEC 1000-4 is a basic EMC (electromagnetic compatibility) publication. It considers immunity tests for electric and/or electronic equipment (apparatus and systems) in its electromagnetic environment. Both conducted and radiated phenomena are considered, this includes immunity tests for equipment connected to power, control and communication networks.

The object of this section is:

- to give a general and comprehensive reference to the technical committees of IEC or other bodies, users and manufacturers of electrical and electronic equipment on EMC immunity specifications and tests;
- to give general guidance on selection and application of these tests.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 1000-4. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 1000-4 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.

IEC 34-1: 1983, *Rotating electrical machines – Part 1: Rating and performance*

IEC 50(161): 1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 255-22-1: 1988, *Electrical relays – Part 22: Electrical disturbance tests for measuring relays and protection equipment – Part one: 1 MHz burst disturbance tests*

IEC 521: 1988, *Class 0.5, 1 and 2 alternating-current watt-hour meters*

IEC 790: 1984, *Oscilloscopes and peak voltmeters for impulse tests*

IEC 801-2: 1991, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 2: Electrostatic discharge requirements*

IEC 801-3: 1984, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 3: Radiated electromagnetic field requirements*

IEC 801-4: 1988, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 4: Electrical fast transient/burst requirements*

IEC 801-5, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 5: Surge voltage immunity requirements (under consideration)*

IEC 801-6, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 6: Immunity to conducted radio frequency disturbances above 9 kHz (under consideration)*

IEC 816: 1984, *Guide on methods of measurement of short duration transients on low-voltage power and signal lines*

IEC 1000-1: 1992, *Electromagnetic compatibility (EMC) – Part 1: General*

IEC 1000-2-1: 1990, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 1: Description of the environment – Electromagnetic environment for low-frequency conducted disturbances and signalling in public power supply systems*

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IEC 1000-2-2: 1990, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*  
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IEC 1000-2-3: 1992, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 3: Description of the environment – Radiated and non-network-related conducted phenomena*

IEC 1000-4-X, *Electromagnetic compatibility (EMC) – Part 4: Testing and measuring techniques (under consideration)*

IEC 1000-4-7: 1991, *Electromagnetic compatibility (EMC) – Part 4: Testing and measuring techniques – Section 7: General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

IEC 1000-4-8, *Electromagnetic compatibility (EMC) – Part 4: Testing and measuring techniques – Section 8: Power frequency magnetic field immunity test (under consideration)*

IEC 1000-4-9, *Electromagnetic compatibility (EMC) – Part 4: Testing and measuring techniques – Section 9: Pulse magnetic field immunity test (under consideration)*