



SLOVENSKI STANDARD SIST EN 61000-4-12:2018

01-januar-2018

Nadomešča:

SIST EN 61000-4-12:2007

**Elektromagnetna združljivost (EMC) - 4-12. del: Preskusne in merilne tehnike -
Preskus odpornosti proti zadušenemu nihajnemu valu**

Electromagnetic compatibility (EMC) - Part 4-12: Testing and measurement techniques -
Ring wave immunity test

Elektromagnetische Verträglichkeit (EMV) - Teil 4-12: Prüf- und Messverfahren -
Störfestigkeit gegen gedämpfte Sinusschwingungen (Ringwave)

Compatibilité électromagnétique (CEM) - Partie 4-12: Techniques d'essai et de mesure -
Essai d'immunité à l'onde sinusoïdale amortie

Ta slovenski standard je istoveten z: EN 61000-4-12:2017

ICS:

33.100.20 Imunost Immunity

SIST EN 61000-4-12:2018 en

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EUROPEAN STANDARD

EN 61000-4-12

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2017

ICS 33.100.20

Supersedes EN 61000-4-12:2006

English Version

Electromagnetic compatibility (EMC) - Part 4-12: Testing and measurement techniques - Ring wave immunity test (IEC 61000-4-12:2017)

Compatibilité électromagnétique (CEM) -
Partie 4-12: Techniques d'essai et de mesure - Essai
d'immunité à l'onde sinusoïdale fortement amortie
(IEC 61000-4-12:2017)

Elektromagnetische Verträglichkeit (EMV) -
Teil 4-12: Prüf- und Messverfahren - Prüfung der
Störfestigkeit gegen gedämpfte Sinusschwingungen (Ring
wave)
(IEC 61000-4-12:2017)

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN 61000-4-12:2017**European foreword**

The text of document 77B/764/CDV, future edition 3 of IEC 61000-4-12, prepared by SC 77B "High frequency phenomena" of IEC/TC 77 "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-4-12:2017.

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) 2018-05-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-08-22

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

IEC 60068-1	NOTE	Harmonized as EN 60068-1.
IEC 61000-4-5	NOTE	Harmonized as EN 61000-4-5.
IEC 61000-4-18	NOTE	Harmonized as EN 61000-4-18.
IEC 61010-1	NOTE	Harmonized as EN 61010-1.

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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	Series	International Electrotechnical Vocabulary (IEV)	-	-

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IEC 61000-4-12

Edition 3.0 2017-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE



BASIC EMC PUBLICATION
PUBLICATION FONDAMENTALE EN CEM

Electromagnetic compatibility (EMC) –
Part 4-12: Testing and measurement techniques – Ring wave immunity test

Compatibilité électromagnétique (CEM) –
Partie 4-12: Techniques d'essai et de mesure – Essai d'immunité à l'onde
sinusoïdale fortement amortie

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.100.20

ISBN 978-2-8322-4556-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 4-12: Testing and measurement techniques –
Ring wave immunity test**

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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International Standard IEC 61000-4-12 has been prepared by subcommittee 77B: High frequency phenomena, of IEC technical Committee 77: Electromagnetic compatibility.

It forms Part 4-12 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This third edition cancels and replaces the second edition published in 2006. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to the previous edition:

- a) addition of a mathematical modelling of ring wave waveform;
- b) new Annex B on selection of generators and test levels;
- c) new Annex C on explanatory notes;
- d) new Annex D on measurement uncertainty;

- e) addition of high speed CDN;
- f) addition of a calibration procedure for CDN.

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

CDV	Report on voting
77B/764/CDV	77B/774/RVC

Full information on the voting for the approval of this International 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.

A list of all parts in the IEC 61000 series, published under the general title *Electromagnetic compatibility (EMC)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

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INTRODUCTION

IEC 61000 is published in separate parts 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 the 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 6: Generic standards

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as international standards or as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

This part is an International Standard which gives immunity requirements and test procedures related to ring waves. It should be noted that edition 1 of IEC 61000-4-12, published in 1995, covered immunity tests against two phenomena, ring waves and damped oscillatory waves. This situation was changed in edition 2, published in 2006, where IEC 61000-4-12 covered the ring wave phenomena only and the damped oscillatory wave phenomenon was moved into a new standard IEC 61000-4-18.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-12: Testing and measurement techniques – Ring wave immunity test

1 Scope

This part of IEC 61000 relates to the immunity requirements and test methods for electrical and electronic equipment, under operational conditions, to ring waves occurring in low-voltage power, control and signal lines supplied by public and non-public networks.

The object of this document is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to ring waves. The test method documented in this part of IEC 61000 describes a consistent method to assess the immunity of an equipment or system against a defined phenomenon.

NOTE As described in IEC Guide 107, this is a basic EMC publication for use by product committees of the IEC. As also stated in Guide 107, the IEC product committees are responsible for determining whether this immunity test standard is applied or not, and if applied, they are responsible for determining the appropriate test levels and performance criteria. TC 77 and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular immunity test and test levels for their products.

This document defines:

- test voltage and current waveforms;
- a range of test levels;
- test equipment;
- test setups;
- test procedures.

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 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at www.electropedia.org)

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050 (all parts) as well as the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1 calibration

set of operations which establishes, by reference to standards, the relationship which exists under specified conditions, between an indication and a result of a measurement

Note 1 to entry: This term is based on the "uncertainty" approach.

Note 2 to entry: The relationship between the indications and the results of measurement can be expressed, in principle, by a calibration diagram.

[SOURCE: IEC 60050-311:2001, 311-01-09]

3.1.2 coupling

interaction between circuits, transferring energy from one circuit to another

3.1.3 coupling network CN

electrical circuit for the purpose of transferring energy from one circuit to another

3.1.4 coupling/decoupling network CDN

combination of a coupling network and a decoupling network

3.1.5 decoupling network DN

electrical circuit for the purpose of preventing test voltages applied to the equipment under test (EUT) from affecting other devices, equipment, or systems which are not under test

3.1.6 immunity (to a disturbance)

ability of a device, equipment, or system to perform without degradation in the presence of an electromagnetic disturbance

[SOURCE: IEC 60050-161:1990, 161-01-20]

3.1.7 port

particular interface of an equipment, which couples this equipment with the external electromagnetic environment (IEC 60050-161:1990, 161-01-01) and through which the equipment is influenced by the environment

[SOURCE: IEC 60050-161:1990, 161-01-27]

3.1.8 ring wave

damped oscillation, whose damping time constant is of the order of one period

[SOURCE: IEC 60050-161:1990, 161-02-30]

3.1.9 rise time

T_r

interval of time between the instants at which the instantaneous value of an impulse first reaches 10 % value and then the 90 % value