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Elektromagnetisk kompatibilitet (EMC) – Del 4-9: Mät- och provningsmetoder – Provning av immunitet mot transienta magnetiska fält

*Electromagnetic compatibility (EMC) –
Part 4-9: Testing and measurement techniques –
Impulse magnetic field immunity test*

Som svensk standard gäller europastandarden EN 61000-4-9:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61000-4-9:2016.

Nationellt förord

Europastandarden EN 61000-4-9:2016

består av:

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- **IEC 61000-4-9, Second edition, 2016 - Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Impulse magnetic field immunity test**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61000-4-9, utgåva 1, 1994 och SS-EN 61000-4-9/A1, utgåva 1, 2001, gäller ej fr o m 2019-08-17.

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English Version

**Electromagnetic compatibility (EMC) - Part 4-9: Testing and
measurement techniques - Impulse magnetic field immunity test
(IEC 61000-4-9:2016)**

Compatibilité électromagnétique (CEM) - Partie 4-9:
Techniques d'essai et de mesure - Essai d'immunité au
champ magnétique impulsionnel
(IEC 61000-4-9:2016)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-9: Prüf-
und Messverfahren - Prüfung der Störfestigkeit gegen
impulsförmige Magnetfelder
(IEC 61000-4-9:2016)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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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

European foreword

The text of document 77B/728/CDV, future edition 2 of IEC 61000-4-9, 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 61000-4-9:2016.

The following dates are fixed:

- latest date by which the document has to be (dop) 2017-05-17
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2019-08-17
standards conflicting with the
document have to be withdrawn

This document supersedes EN 61000-4-9:1993.

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This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard IEC 61000-4-9:2016 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)
**Normative references to international publications
with their corresponding European publications**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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	-	series

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –**Part 4-9: Testing and measurement techniques –
Impulse magnetic field 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 61000-4-9 has been prepared by subcommittee 77B: High frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms Part 4-9 of the IEC 61000 series. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This second edition cancels and replaces the first edition published in 1993 and Amendment 1:2000. This edition constitutes a technical revision.

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

- a) new Annex B on induction coil field distribution;
- b) new Annex D on measurement uncertainty;
- c) new Annex E on mathematical modeling of surge waveform;

- d) new Annex F on characteristics using two standard induction coils;
- e) new Annex G on 3D numerical simulations;
- f) coil factor calculation and calibration using current measurement have been addressed in this edition.

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

CDV	Report on voting
77B/728/CDV	77B/745A/RVC

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.

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 website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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 (insofar 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 "pulse magnetic field".

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-9: Testing and measurement techniques – Impulse magnetic field immunity test

1 Scope and object

This part of IEC 61000 specifies the immunity requirements, test methods, and range of recommended test levels for equipment subjected to impulse magnetic disturbances mainly encountered in:

- industrial installations,
- power plants,
- railway installations,
- medium voltage and high voltage sub-stations.

The applicability of this standard to equipment installed in different locations is determined by the presence of the phenomenon, as specified in Clause 4.

This standard does not consider disturbances due to capacitive or inductive coupling in cables or other parts of the field installation. Other IEC standards dealing with conducted disturbances cover these aspects.

The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to impulse magnetic fields. 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 levels for their products.

This standard defines:

- a range of test levels;
- test equipment;
- test setups;
- test procedures.

The task of the described laboratory test is to find the reaction of the equipment under test (EUT) under specified operational conditions to impulse magnetic fields caused by switching and lightning effects.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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)