SVENSK STANDARD SS-EN 61000-1-2

Fastställd	Utgåva	Sida	Ansvarig kommitté
2017-03-15	1	1 (1+75)	SEK TK EMC

Elektromagnetisk kompatibilitet (EMC) – Del 1-2: Allmänt – Metodik för att uppnå funktionell säkerhet i elektriska och elektroniska system med avseende på elektromagnetiska fenomen

Electromagnetic compatibility (EMC) – Part 1-2: General – Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena

Som svensk standard gäller europastandarden EN 61000-1-2:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61000-1-2:2016.

Nationellt förord

Europastandarden EN 61000-1-2:2016

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61000-1-2, First edition, 2016 - Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 33.100.99

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61000-1-2

September 2016

ICS 33.100.99

English Version

Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena (IEC 61000-1-2:2016)

Compatibilité électromagnétique (CEM) - Partie 1-2: Généralités - Méthodologie pour la réalisation de la sécurité fonctionnelle des systèmes électriques et électroniques, y compris les équipements, du point de vue des phénomènes électromagnétiques (IEC 61000-1-2:2016)

Elektromagnetische Verträglichkeit (EMV) - Teil 1-2: Allgemeines - Verfahren zum Erreichen der funktionalen Sicherheit von elektrischen und elektronischen Systemen einschließlich Geräten und Einrichtungen im Hinblick auf elektromagnetische Phänomene (IEC 61000-1-2:2016)

This European Standard was approved by CENELEC on 2016-05-18. 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 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

Ref. No. EN 61000-1-2:2016 E

SEK Svensk Elstandard

European foreword

The text of document 77/513/FDIS, future edition 1 of IEC 61000-1-2, prepared by IEC/TC 77 “Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-1-2:2016.

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)	2017-03-30
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-09-30

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

Endorsement notice

The text of the International Standard IEC 61000-1-2:2016 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 standards indicated:

IEC 61000-2 (series)	NOTE	Harmonized as EN 61000-2 (series).
IEC 61000-2-3	NOTE	Harmonized as EN 61000-2-3.
IEC 61000-2-4	NOTE	Harmonized as EN 61000-2-4.
IEC 61000-4-2	NOTE	Harmonized as EN 61000-4-2.
IEC 61000-4-3	NOTE	Harmonized as EN 61000-4-3.
IEC 61000-4-4	NOTE	Harmonized as EN 61000-4-4.
IEC 61000-4-5	NOTE	Harmonized as EN 61000-4-5.
IEC 61000-4-6	NOTE	Harmonized as EN 61000-4-6.
IEC 61000-4-8	NOTE	Harmonized as EN 61000-4-8.
IEC 61000-4-9	NOTE	Harmonized as EN 61000-4-9.
IEC 61000-4-10	NOTE	Harmonized as EN 61000-4-10.
IEC 61000-4-11	NOTE	Harmonized as EN 61000-4-11.
IEC 61000-4-12	NOTE	Harmonized as EN 61000-4-12.
IEC 61000-4-13	NOTE	Harmonized as EN 61000-4-13.

IEC 61000-4-16	NOTE	Harmonized as EN 61000-4-16.
IEC 61000-4-18	NOTE	Harmonized as EN 61000-4-18.
IEC 61000-4-19	NOTE	Harmonized as EN 61000-4-19.
IEC 61000-4-20	NOTE	Harmonized as EN 61000-4-20.
IEC 61000-4-21	NOTE	Harmonized as EN 61000-4-21.
IEC 61000-4-23	NOTE	Harmonized as EN 61000-4-23.
IEC 61000-4-24	NOTE	Harmonized as EN 61000-4-24.
IEC 61000-4-25	NOTE	Harmonized as EN 61000-4-25.
IEC 61000-4-27	NOTE	Harmonized as EN 61000-4-27.
IEC 61000-4-28	NOTE	Harmonized as EN 61000-4-28.
IEC 61000-4-29	NOTE	Harmonized as EN 61000-4-29.
IEC 61000-4-34	NOTE	Harmonized as EN 61000-4-34.
IEC 61000-6-1	NOTE	Harmonized as EN 61000-6-1.
IEC 61000-6-2	NOTE	Harmonized as EN 61000-6-2.
IEC 61000-6-3	NOTE	Harmonized as EN 61000-6-3.
IEC 61000-6-4	NOTE	Harmonized as EN 61000-6-4.
IEC 61508-1:2010	NOTE	Harmonized as EN 61508-1:2010.
IEC 61508-2	NOTE	Harmonized as EN 61508-2.
IEC 61508-3	NOTE	Harmonized as EN 61508-3.
IEC 61508-4:2010	NOTE	Harmonized as EN 61508-4:2010.
IEC 61508-5	NOTE	Harmonized as EN 61508-5.
IEC 61508-6	NOTE	Harmonized as EN 61508-6.
IEC 61508-7	NOTE	Harmonized as EN 61508-7.
IEC 62305-1:2010	NOTE	Harmonized as EN 62305-1:2010.
IEC 62305-2:2010	NOTE	Harmonized as EN 62305-2:2010.

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-161	-	International Electrotechnical Vocabulary (IEV) -- Chapter 161: Electromagnetic compatibility	-	-
IEC 61000-4-1	-	Electromagnetic compatibility (EMC) -- Part 4-1: Testing and measurement techniques - Overview of IEC 61000-4 series	EN 61000-4-1	-
IEC 61000-4	series	Electromagnetic compatibility (EMC)	-	series
IEC 61000-6-7	-	Electromagnetic compatibility (EMC) - Part 6-7: Generic standards - Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations	EN 61000-6-7	-
IEC 61508	series	Functional safety of electrical/electronic/programmable electronic safety-related systems	EN 61508	series
IEC/TR 61000-1-6	-	Electromagnetic compatibility (EMC) - Part 1-6: General - Guide to the assessment of measurement uncertainty	-	-
IEC/TR 61000-2-5	-	Electromagnetic compatibility (EMC) - Part 2-5: Environment - Description and classification of electromagnetic environments	-	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 1-2: General – Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61000-1-2 has been prepared by technical committee 77: Electromagnetic compatibility.

It has the status of a basic safety publication in accordance with IEC Guide 104.

This first edition cancels and replaces the second edition of IEC TS 61000-1-2 published in 2008. This edition constitutes a technical revision.

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

- Alignment with the changes done in the latest edition of the functional safety standard IEC 61508.

- Complete review with regard to transforming this document into an International Standard (instead of the previous edition as Technical Specification).
- New structure of Annex B.

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

FDIS	Report on voting
77/513/FDIS	77/519/RVD

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 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.

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, 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 completed by a second number identifying the subdivision (example: IEC 61000-3-11).

Particular considerations for IEC 61000-1-2

The aim of this international standard with regard to EMC and functional safety is to address the possible effects of electromagnetic disturbances on safety-related systems and to specify requirements for the relevant phases of the lifecycle of a safety-related system. The objective is to achieve the systematic capability as specified in the electrical/electronic/programmable electronic system safety requirements specification with regard to electromagnetic aspects.

This document makes use of existing relevant basic IEC standards, as far as appropriate. It considers the work of SC 65A relating to functional safety concepts of the IEC 61508 series and of TC 77 and its subcommittees relating to the electromagnetic environments. More details can be found in the publications of these committees.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 1-2: General – Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena

1 Scope

This part of IEC 61000 establishes a methodology for the achievement of functional safety only with regard to electromagnetic phenomena. This methodology includes the implication it has on equipment used in such systems and installations.

This standard:

a) applies to safety-related systems and installations incorporating electrical/electronic/programmable electronic equipment as installed and used under operational conditions;

b) considers the influence of the electromagnetic environment on safety-related systems;

c) is not concerned with direct hazards from electromagnetic fields on living beings nor is it concerned with safety related to breakdown of insulation or other mechanisms by which persons can be exposed to electrical hazards.

It mainly covers EMC related aspects of the design and application specific phases of safety-related systems and equipment used therein, and deals in particular with

- some basic concepts in the area of functional safety,
- the various EMC specific steps for the achievement and management of functional safety,
- the description and assessment of the electromagnetic environment,
- the EMC aspects of the design and integration process, taking into account the process of EMC safety planning on system as well as on equipment level,
- the validation and verification processes regarding the immunity against electromagnetic disturbances,
- the performance criterion and some test philosophy considerations for safety-related systems and the equipment used therein,
- aspects related to testing of the immunity of safety-related systems and equipment used therein against electromagnetic disturbances.

This International Standard is applicable to electrical/electronic/programmable electronic (E/E/PE) safety-related systems intended to comply with the requirements of IEC 61508 and/or associated sector-specific functional safety standards. It is intended for designers, manufacturers, installers and users of safety-related systems and can be used as a guide by IEC committees.

For safety-related systems covered by other functional safety standards, the requirements of this standard should be considered in order to identify the appropriate measures that should be taken with relation to EMC and functional safety.

NOTE This standard can also be used as a guide for considering EMC requirements for other systems having a direct contribution to safety.

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 60050-161, *International Electrotechnical Vocabulary (IEV) – Part 161: Electromagnetic compatibility*

IEC TR 61000-1-6, *Electromagnetic compatibility (EMC) – Part 1-6: General – Guide to the assessment of measurement uncertainty*

IEC TR 61000-2-5, *Electromagnetic compatibility (EMC) – Part 2-5: Environment – Description and classification of electromagnetic environments*

IEC 61000-4-X (all parts), *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques*

IEC 61000-4-1, *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

IEC 61000-6-7, *Electromagnetic compatibility (EMC) – Part 6-7: Generic standards – Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations*

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*