This is a free page sample. Access the full version online.

NSAI Standards

Irish Standard
I.S. EN 61000-4-34:2007

Electromagnetic compatibility (EMC) -- Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase (IEC 61000-4-34:2005 (EQV))

© NSAI 2007 No copying without NSAI permission except as permitted by copyright law.

This is a free page sample. Access the full version online.

I.S. EN 61000-4-34:2007

Incorporating amendments/corrigenda issued since publication:

EN 61000-4-34:2007/A1:2009

This document replaces:	*This document is based on:* EN 61000-4-34:2007	*Published:* 4 May, 2007

This document was published under the authority of the NSAI and comes into effect on: 30 May, 2007	ICS number: 33.100.20

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W **NSAI.ie**

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61000-4-34/A1

August 2009

ICS 33.100.20

English version

Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase

(IEC 61000-4-34:2005/A1:2009)

Compatibilité électromagnétique (CEM) - Partie 4-34: Techniques d'essai et de mesure - Essais d'immunité aux creux de tension, coupures brèves et variations de tension pour matériel ayant un courant d'alimentation de plus de 16 A par phase (CEI 61000-4-34:2005/A1:2009)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-34: Prüf- und Messverfahren - Prüfungen der Störfestigkeit von Geräten und Einrichtungen mit einem Netzstrom > 16 A je Leiter gegen Spannungseinbrüche, Kurzzeitunterbrechungen und Spannungsschwankungen (IEC 61000-4-34:2005/A1:2009)

This amendment A1 modifies the European Standard EN 61000-4-34:2007; it was approved by CENELEC on 2009-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

© 2009 CENELEC - All rights of exploitation in any form and by any means reserved worldwide for CENELEC members.

Ref. No. EN 61000-4-34:2007/A1:2009 E

This is a free page sample. Access the full version online.

Foreword

The text of document 77A/670/CDV, future amendment 1 to IEC 61000-4-34:2005, prepared by SC 77A, Low frequency phenomena, of IEC TC 77, Electromagnetic compatibility, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 61000-4-34:2007 on 2009-07-01.

The following dates were fixed:

– latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-04-01
– latest date by which the national standards conflicting with the amendment have to be withdrawn	(dow)	2012-07-01

Endorsement notice

The text of amendment 1:2009 to the International Standard IEC 61000-4-34:2005 was approved by CENELEC as an amendment to the European Standard without any modification.

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61000-4-34

May 2007

ICS 33.100.20

English version

Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current more than 16 A per phase

(IEC 61000-4-34:2005)

Compatibilité électromagnétique (CEM) - Partie 4-34: Techniques d'essai et de mesure - Essais d'immunité aux creux de tension, coupures brèves et variations de tension pour matériel ayant un courant appelé de plus de 16 A par phase (CEI 61000-4-34:2005)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-34: Prüf- und Messverfahren - Prüfungen der Störfestigkeit von Geräten und Einrichtungen mit einem Eingangsstrom > 16 A je Leiter gegen Spannungseinbrüche, Kurzzeitunterbrechungen und Spannungsschwankungen (IEC 61000-4-34:2005)

This European Standard was approved by CENELEC on 2007-04-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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

© 2007 CENELEC - All rights of exploitation in any form and by any means reserved worldwide for CENELEC members.

Ref. No. EN 61000-4-34:2007 E

This is a free page sample. Access the full version online.

Foreword

The text of document 77A/498/FDIS, future edition 1 of IEC 61000-4-34, prepared by SC 77A, Low frequency phenomena, of IEC TC 77, Electromagnetic compatibility, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61000-4-34 on 2007-04-01.

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)	2008-01-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-04-01

Annex ZA has been added by CENELEC.

_____

Endorsement notice

The text of the International Standard IEC 61000-4-34:2005 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 61000-2-4	NOTE	Harmonized as EN 61000-2-4:2002 (not modified).
IEC 61000-4-11	NOTE	Harmonized as EN 61000-4-11:2004 (not modified).
IEC 61000-4-14	NOTE	Harmonized as EN 61000-4-14:1999 (not modified).

_____

This is a free page sample. Access the full version online.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-161	- [1]	International Electrotechnical Vocabulary (IEV) - Chapter 161: Electromagnetic compatibility	-	-
IEC/TR 61000-2-8	- [1]	Electromagnetic compatibility (EMC) - Part 2-8: Environment - Voltage dips and short interruptions on public electric power supply systems with statistical measurement results	-	-
IEC 61000-4-30	- [1]	Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods	EN 61000-4-30	2003 [2]

[1] Undated reference.

[2] Valid edition at date of issue.

This is a free page sample. Access the full version online.

This page is intentionally left BLANK.

This is a free page sample. Access the full version online.

CONTENTS

FOREWORD 4
INTRODUCTION 6

1 Scope 7
2 Normative references 7
3 Terms and definitions 8
4 General 9
5 Test levels 9
5.1 Voltage dips and short interruptions 10
5.2 Voltage variations (optional) 11
6 Test instrumentation 13
6.1 Test generator 13
6.2 Power source 14
7 Test set-up 14
8 Test procedures 14
8.1 Laboratory reference conditions 15
8.2 Execution of the test 15
9 Evaluation of test results 18
10 Test report 18

Annex A (normative) Test generator current drive capability 19
Annex B (informative) Electromagnetic environment classes 21
Annex C (informative) Vectors for three-phase testing 22
Annex D (informative) Test instrumentation 28
Annex E (informative) Dip immunity tests for equipment with large mains current 31

Bibliography 33

Figure 1 – Voltage dip – 70 % voltage dip sine wave graph 12
Figure 2 – Voltage variation 12
Figure 3a – Phase-to-neutral testing on three-phase systems 17
Figure 3b – Phase-to-phase testing on three-phase systems – Acceptable Method 1 phase shift 17
Figure 3c – Phase-to-phase testing on three-phase systems – Acceptable Method 2 phase shift 17
Figure 3d – Not acceptable – phase-to-phase testing without phase shift 17
Figure A.1 – Circuit for determining inrush current drive capability 20
Figure C.1 – Phase-to-neutral dip vectors 22
Figure C.2 – Acceptable Method 1 – phase-to-phase dip vectors 24
Figure C.3 – Acceptable Method 2 – phase-to-phase dip vectors 26
Figure D.1 – Schematic of example test instrumentation for voltage dips and short interruptions using tapped transformer and switches 28

This is a free page sample. Access the full version online.

Figure D.2 – Applying the example test instrumentation of Figure D.1 to create the Acceptable Method 1 vectors of Figures C.1, C.2, 4a and 4b 29

Figure D.3 – Schematic of example test instrumentation for three-phase voltage dips, short interruptions and voltage variations using power amplifier 30

Table 1 – Preferred test level and durations for voltage dips 10

Table 2 – Preferred test level and durations for short interruptions 11

Table 3 – Timing of short-term supply voltage variations 11

Table 4 – Generator specifications 13

Table A.1 – Minimum peak inrush current capability 19

Table C.1 – Vector values for phase-to-neutral dips 23

Table C.2 – Acceptable Method 1 – vector values for phase-to-phase dips 25

Table C.3 – Acceptable Method 2 – vector values for phase-to-phase dips 27

This is a free page sample. Access the full version online.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-34: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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 61000-4-34 has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms Part 4-34 of IEC 61000. It has the status of a Basic EMC Publication in accordance with IEC Guide 107.

This consolidated version of IEC 61000-4-34 consists of the first edition (2005) [documents 77A/498/FDIS and 77A/515/RVD], its amendment 1 (2009) [documents 77A/670/CDV and 77A/688/RVC] and its corrigendum 1 of November 2009.

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

This is a free page sample. Access the full version online.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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.

This is a free page sample. Access the full version online.

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: 61000-6-1).

This is a free page sample. Access the full version online.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 4-34: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase

1 Scope

This part of IEC 61000 defines the immunity test methods and range of preferred test levels for electrical and electronic equipment connected to low-voltage power supply networks for voltage dips, short interruptions, and voltage variations.

This standard applies to electrical and electronic equipment having a rated mains current exceeding 16 A per phase. (See Annex E for guidance on electrical and electronic equipment rated at more than 200 A per phase.) It covers equipment installed in residential areas as well as industrial machinery, specifically voltage dips and short interruptions for equipment connected to either 50 Hz or 60 Hz a.c. networks, including 1-phase and 3-phase mains.

NOTE 1 Equipment with a rated mains current of 16 A or less per phase is covered by publication IEC 61000-4-11.

NOTE 2 There is no upper limit on rated mains current in this publication. However, in some countries, the rated mains current may be limited to some upper value, for example 75 A or 250 A, because of mandatory safety standards.

It does not apply to electrical and electronic equipment for connection to 400 Hz a.c. networks. Tests for equipment connected to these networks will be covered by future IEC standards.

The object of this standard is to establish a common reference for evaluating the immunity of electrical and electronic equipment when subjected to voltage dips, short interruptions and voltage variations.

NOTE 1 Voltage fluctuations are covered by publication IEC 61000-4-14.

NOTE 2 For equipment under test with rated currents above 250 A, suitable test equipment may be difficult to obtain. In these cases, the applicability of this standard should be carefully evaluated by committees responsible for generic, product and product-family standards. Alternatively, this standard might be used as a framework for an agreement on performance criteria between the manufacturer and the purchaser.

The test method documented in this part of IEC 61000 describes a consistent method to assess the immunity of equipment or a system against a defined phenomenon. 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 should be applied or not, and if applied, they are responsible for defining the appropriate test levels. Technical committee 77 and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular immunity tests for their products.

2 Normative references

The following referenced documents are indispensable for the application 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 60050-161, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation