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 + IEC 61000-4-34:2005/A1:2009 + IEC 61000-4-34:2005/AMD2:2025)

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 61000-4-34:2007+A1 +A2:2025 sisaldab Euroopa standardi EN 61000-4-34:2007 ja selle muudatuste A1:2010 ja A2:2025, ingliskeelset teksti.	This Estonian standard EVS-EN 61000-4-34:2007+A1+A2:2025 consists of the English text of the European standard EN 61000-4-34:2007 and its amendments A1:2010 and A2:2025.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.06.2007, muudatused A1 21.08.2009 ja A2 03.10.2025.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 19.06.2007, for A1 21.08.2009 and A2 03.10.2025.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A1⟩ ⟨A1]. Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A2⟩ ⟨A2]. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags [A1⟩ ⟨A1]. The start and finish of text introduced or altered by amendment A2 is indicated in the text by tags [A2⟩ ⟨A2]. The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.100.20

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61000-4-34 + A1 + A2

May 2007, August 2009, October 2025

ICS 33.100.20

English Version

Electromagnetic compatibility (EMC) - 〚A1〛 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 〈A1〛 (IEC 61000-4-34:2005 + IEC 61000-4-34:2005/A1:2009 + IEC 61000-4-34:2005/AMD2:2025)

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 + IEC 61000-4-34:2005/A1:2009 + IEC 61000-4-34:2005/AMD2:2025)

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 + IEC 61000-4-34:2005/A1:2009 + IEC 61000-4-34:2005/AMD2:2025)

This European Standard was approved by CENELEC on 2007-04-01. Amendment A1 was approved by CENELEC on 2009-07-01. Amendment A2 was approved by CENELEC on 2025-09-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard and its amendments the status of a national standard without any alteration.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 61000-4-34:2007 E + EN 61000-4-34:2007/A1:2009 E + EN 61000-4-34:2007/A2:2025 E

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).

[A1] Amendment A1 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. [A1]

A2 Amendment A2 European foreword

The text of document 77A/1233/CDV, future edition 1 of IEC 61000-4-34/AMD2, prepared by SC 77A "EMC - Low frequency phenomena" of IEC/TC 77 "Electromagnetic compatibility" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61000-4-34:2007/A2:2025.

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) 2026-10-31
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2028-10-31

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Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61000-4-34:2005/AMD2:2025 was approved by CENELEC as a European Standard without any modification. A2

IEC 61000-4-34

Edition 1.2 2025-08

INTERNATIONAL STANDARD

CONSOLIDATED VERSION

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

ICS 33.100.20

ISBN 978-2-8327-0645-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTROMAGNETIC COMPATIBILITY (EMC) –

⟦A1⟩ 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 ⟨A1⟩

FOREWORD

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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.

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

FDIS	Report on voting
77A/498/FDIS	77A/515/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.

The committee has decided that the contents of this publication 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.

[A1] Amendment A1 FOREWORD

This amendment has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

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

Enquiry draft	Report on voting
77A/670/CDV	77A/688/RVC

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

The committee has decided that the contents of this amendment and the base publication 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.

The contents of the corrigendum of October 2009 have been included in this copy. [A1]

A2 Amendment A2 FOREWORD

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Amendment 2 to IEC 61000-4-34:2005 has been prepared by subcommittee 77A: *EMC - Low frequency phenomena*, of IEC technical committee 77: Electromagnetic compatibility.

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

Draft	Report on voting
77A/1233/CDV	77A/1247/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

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- reconfirmed,
- withdrawn, or
- revised. 〈A2〉

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).

[A2] INTRODUCTION to Amendment 2

This amendment contains the following main changes in comparison with IEC 61000-4-34:2005 and IEC 61000-4-34:2005/AMD1:2009:

- Addition of a note in Annex C: The sign of phase angles of three-phase systems can differ depending on the convention used. It should be noted that phase angles opposite to those used in the figures and tables in this annex (i.e. -120° for L2 instead of +120°) are also common. It is not intended to specify the direction of rotation of the three-phase system used for testing.
- Add UL1-N = √(1+3P^2)/2 in Annex C.3,
- Add a new annex "Interpretation of the rise-time and fall-time requirements during EUT testing" (Annex F), as in IEC 61000-4-11:2020, Clause D.4: [A2]

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.

〈A1〉 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. 〈A1〉

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: Electro-magnetic compatibility*

IEC 61000-2-8, *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, *Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques – Power quality measurement methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-161 as well as the following definitions apply:

3.1
basic EMC standard (ACEC)[1)]
standard giving general and fundamental conditions or rules for the achievement of EMC, which are related or applicable to all products and systems, and serve as reference documents for product committees

3.2
immunity (to a disturbance)
ability of a device, equipment or system to perform without degradation in the presence of an electromagnetic disturbance

[IEV 161-01-20]

3.3
voltage dip
sudden reduction of the voltage at a particular point of an electricity supply system below a specified dip threshold followed by its recovery after a brief interval

NOTE 1 Typically, a dip is associated with the occurrence and termination of a short circuit or other extreme current increase on the system or installations connected to it.

NOTE 2 A voltage dip is a two-dimensional electromagnetic disturbance, the level of which is determined by both voltage and time (duration).

3.4
short interruption
sudden reduction of the voltage on all phases at a particular point of an electric supply system below a specified interruption threshold followed by its restoration after a brief interval

NOTE Short interruptions are typically associated with switchgear operation related to the occurrence and termination of short circuits on the system or installations connected to it.

3.5
residual voltage (of voltage dip)
minimum value of r.m.s. voltage recorded during a voltage dip or short interruption

NOTE The residual voltage may be expressed as a value in volts or as a percentage or per unit value relative to the reference voltage.

〖A1〉 ***deleted text*** 〈A1〗

〖A1〉 **3.6** 〈A1〗
malfunction
termination of the ability of equipment to carry out intended functions or the execution of unintended functions by the equipment

1) Advisory Committee on Electromagnetic Compatibility (ACEC).