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BSI Standards Publication

## Electromagnetic compatibility (EMC)

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Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11:2004/A1:2017)

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## National foreword

This British Standard is the UK implementation of EN 61000-4-11:2004+A1:2017. It supersedes BS EN 61000-4-11:2004, which is withdrawn.

BSI as a member of CENELEC is obliged to publish BS EN 61000-4-11:2004+A1:2017 as a British Standard. However, attention is drawn to the fact that at the international voting stages of the draft for amendment 1, the British National Committee voted against its approval. The British National Committee draws users' attention to Informative Annex D clause D.3 – D.5. However, as Annex D is informative, the information contained in it is not mandatory for compliance with the Standard.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee GEL/210/11, EMC - Standards Committee.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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### **Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 26 October 2004.

### **Amendments/corrigenda issued since publication**

Date	Text affected
28 February 2018	Implementation of IEC amendment 1:2017 with CENELEC endorsement A1:2017

EUROPÄISCHE NORM

August 2017

ICS 33.100.20

English Version

**Electromagnetic compatibility (EMC) — Part 4-11:  
Testing and measurement techniques — Voltage dips,  
short interruptions and voltage variations immunity  
tests (IEC 61000-4-11:2004/A1:2017)**

Compatibilité électromagnétique (CEM) —  
Partie 4-11: Techniques d'essai et de  
mesure — Essais d'immunité aux creux de  
tension, coupures brèves et variations de  
tension (IEC 61000-4-11:2004/A1:2017)

Elektromagnetische Verträglichkeit  
(EMV) — Teil 4-11: Prüf- und Messverfahren —  
Prüfungen der Störfestigkeit gegen  
Spannungseinbrüche, Kurzzeitunterbrechungen  
und Spannungsschwankungen  
(IEC 61000-4-11:2004/A1:2017)

This European Standard was approved by CENELEC on 2004-06-01. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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## European foreword

The text of document 77A/452/FDIS, future edition 2 of IEC 61000-4-11, 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 61000-4-11 on 2004-06-01.

This European Standard replaces EN 61000-4-11:1994 + A1:2001.

It constitutes a technical revision in which:

- 1) preferred test values and durations have been added for the different environment classes;
- 2) the tests for the three-phase systems have been specified.

The following dates are 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) 2005-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2007-06-01

Annex ZA has been added by CENELEC.

### Endorsement notice

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

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## Foreword to Amendment 1

The text of the international Standard 77A/951/FDIS, future IEC 61000-4-11:2004/A1, 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 61000-4-11:2004/A1:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2018-03-22  
national level by publication of an identical national standard  
or by endorsement
- latest date by which the national standards conflicting with the (dow) 2020-06-22  
document have to be withdrawn

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

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

### Endorsement notice

The text of the International Standard IEC 61000-4-11:2004/A1:2017 was approved by CENELEC as a European Standard without any modification.

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## 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 NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 61000-2-8	- <sup>1)</sup>	Electromagnetic compatibility (EMC) Part 2-8: Environment - Voltage dips and short interruptions on public electric power supply systems with statistical measurement results	-	-

1) Undated reference.

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## 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 61000-4-11 has been prepared by subcommittee 77A: Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

This second edition constitutes a technical revision in which

- 1) preferred test values and durations have been added for the different environment classes;
- 2) the tests for the three-phase systems have been specified.

It forms part 4-11 of IEC 61000. It has the status of a Basic EMC Publication in accordance with IEC Guide 107.

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



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The committee has decided that the contents of the base publication and its amendment 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: 61000-6-1).

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# Electromagnetic compatibility (EMC) —

## Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

### 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 input current not exceeding 16 A per phase, for connection to 50 Hz or 60 Hz a.c. networks.

It does not apply to electrical and electronic equipment for connection to 400 Hz a.c. networks. Tests for 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 Voltage fluctuation immunity tests are covered by IEC 61000-4-14.

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 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*

### 3 Terms and definitions

For the purpose of this document, the following terms and definitions apply:

#### 3.1

##### basic EMC standard

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

Note 1 to entry: As determined by the Advisory Committee on Electromagnetic Compatibility (ACEC) - see IEC Guide 107.