

SLOVENSKI STANDARD SIST EN IEC 61000-4-11:2020

01-maj-2020

Nadomešča:

SIST EN 61000-4-11:2005

SIST EN 61000-4-11:2005/A1:2017

Elektromagnetna združljivost (EMC) - 4-11. del: Preskusne in merilne tehnike - Preskusi odpornosti proti upadom napetosti, kratkotrajnim prekinitvam in odklonom napetosti za opremo z vhodnim tokom do 16 A na fazo

Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase

Elektromagnetische Verträglichkeit (EMV) - Teil 4-11: Prüf- und Messverfahren - Prüfungen der Störfestigkeit gegen Spannungseinbrüche, Kurzzeitunterbrechungen und Spannungsschwankungen für Geräte mit einem Eingangsstrom bis zu und einschließlich 16 A je Leiter

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 pour les appareils à courant d'entrée inférieur ou égal à 16 A par phase

Ta slovenski standard je istoveten z: EN IEC 61000-4-11:2020

ICS:

33.100.20 Imunost Immunity

SIST EN IEC 61000-4-11:2020 en

SIST EN IEC 61000-4-11:2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61000-4-11:2020 https://standards.iteh.ai/catalog/standards/sist/51fb081e-0095-416b-90b9-7412bca6dd49/sist-en-iec-61000-4-11-2020

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN IEC 61000-4-11

March 2020

ICS 33.100.20

Supersedes EN 61000-4-11:2004 and all of its amendments and corrigenda (if any)

English Version

Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase (IEC 61000-4-11:2020)

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 pour les appareils à courant d'entrée inférieur ou égal à 16

A par phase
(IEC 61000-4-11:2020)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-11: Prüfund Messverfahren - Prüfungen der Störfestigkeit gegen Spannungseinbrüche, Kurzzeitunterbrechungen und Spannungsschwankungen für Geräte mit einem Eingangsstrom bis zu und einschließlich 16 A je Leiter (IEC 61000-4-11:2020)

This European Standard was approved by CENELEC on 2020-03-03. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

EN IEC 61000-4-11:2020 (E)

European foreword

The text of document 77A/1039/FDIS, future edition 3 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 IEC 61000-4-11:2020.

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
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-03-03

This document supersedes EN 61000-4-11:2004 and all of its amendments and corrigenda (if any).

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.

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

(standards.iteh.ai)

SIST EN IEC 61000-4-11:2020 https://standards.iteh.ai/c**Endorsement notice** b081e-0095-416b-90b9-7412bca6dd49/sist-en-iec-61000-4-11-2020

The text of the International Standard IEC 61000-4-11:2020 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 61000-2-4	NOTE	Harmonized as EN 61000-2-4
IEC 61000-4-11:2004	NOTE	Harmonized as EN 61000-4-11:2004 (not modified)
IEC 61000-4-14	NOTE	Harmonized as EN 61000-4-14

EN IEC 61000-4-11:2020 (E)

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where 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 TR 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

SIST EN IEC 61000-4-11:2020 https://standards.iteh.ai/catalog/standards/sist/51fb081e-0095-416b-90b9 SIST EN IEC 61000-4-11:2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61000-4-11:2020 https://standards.iteh.ai/catalog/standards/sist/51fb081e-0095-416b-90b9-7412bca6dd49/sist-en-iec-61000-4-11-2020



IEC 61000-4-11

Edition 3.0 2020-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE



BASIC EMC PUBLICATION

PUBLICATION FONDAMENTALE EN CEM

Electromagnetic compatibility (EMC) – RD PREVIEW

Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase

Compatibilité électromagnétique (CEM) – s/sist/5 life

Partie 4-11: Techniques d'essai et de mesure – Essais d'immunité aux creux de tension, coupures brèves et variations de tension pour les appareils à courant d'entrée inférieur ou égal à 16 A par phase

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 33.100.20 ISBN 978-2-8322-7546-7

Warning! Make sure that you obtained this publication from an authorized distributor. Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 General	9
5 Test levels	9
5.1 General	9
5.2 Voltage dips and short interruptions	9
5.3 Voltage variations	11
6 Test instrumentation	14
6.1 Test generator	
6.1.1 General	
6.1.2 Characteristics and performance of the generator	15
6.1.3 Verification of the characteristics of the voltage dips, short interruptions generators	15
6.2 Power source	
7 Test set-up	
8 Test procedures	
8.1 General	17
8.2 Laboratory reference conditions	
8.2.1 Climatic conditions EN IEC 61000-4-11:2020	17
8.2.2 Electromagnetic conditions and and sist of 150 to 15	18
8.3 Execution of the test	18
8.3.1 General	18
8.3.2 Voltage dips and short interruptions	
8.3.3 Voltage variations	
9 Evaluation of test results	19
10 Test report	20
Annex A (normative) Test circuit details	21
A.1 Test generator peak inrush current drive capability	21
A.2 Current monitor's characteristics for measuring peak inrush current	
capability	
A.3 EUT peak inrush current requirement	
·	
Annex C (informative) Test instrumentation	24
Annex D (informative) Rationale for generator specification regarding voltage, rise-time and fall-time, and inrush current capability	
D.1 Concept of basic standard	
D.2 IEC 61000-4-11:1994 (first edition)	
D.3 Rationale for the need of rapid fall-times	
D.4 Interpretation of the rise-time and fall-time requirements during EUT testing	
D.5 Main conclusions D.6 Rationale for inrush current capability	
Bibliography	

– 3 –

Figure 1 – Voltage dip – Examples	12
Figure 2 – Short interruption	13
Figure 3 – Detailed view of rise and fall time	13
Figure 4 – Voltage variation	14
Figure 5 – Phase-to-neutral and phase-to-phase testing on three-phase systems	19
Figure A.1 – Circuit for determining the inrush current drive capability of the short interruptions generator	22
Figure A.2 – Circuit for determining the peak inrush current requirement of an EUT	22
Figure C.1 – Schematics of test instrumentation for voltage dips, short interruptions and voltage variations	25
Figure C.2 – Schematic of test instrumentation for three-phase voltage dips, short interruptions and voltage variations using a power amplifier	26
Table 1 – Preferred test levels and durations for voltage dips	10
Table 2 – Preferred test levels and durations for short interruptions	11
Table 3 – Timing of short-term supply voltage variations	11
Table 4 – Generator specifications	15

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61000-4-11:2020 https://standards.iteh.ai/catalog/standards/sist/51fb081e-0095-416b-90b9-7412bca6dd49/sist-en-iec-61000-4-11-2020

IEC 61000-4-11:2020 © IEC 2020

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) -

Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 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 61000-4-11 has been prepared by subcommittee 77A: EMC – Low frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

It forms Part 4-11 of IEC 61000. It has the status of a basic EMC publication in accordance with IEC Guide 107.

This third edition cancels and replaces the second edition published in 2004 and Amendment 1:2017. This edition constitutes a technical revision.

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

- a) rise time and fall time of transients are now defined terms in Clause 3;
- b) the origin of voltage dips and short interruptions is now stated in Clause 4.

IEC 61000-4-11:2020 © IEC 2020

- 5 -

The text of this International Standard is based on the following documents:

FDIS	Report on voting
77A/1039/FDIS	77A/1056/RVD

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

This document 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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

Teh STANDARD PREVIEW

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.

7412bca6dd49/sist-en-jec-61000-4-11-2020

IEC 61000-4-11:2020 © IEC 2020

INTRODUCTION

- 6 -

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 S. Iteh. a1)

Installation guidelines

SIST EN IEC 61000-4-1

Mitigation methods and devices attalog/standards/sist/51fb081e-0095-416b-90b9-

Part 6: Generic standards 12bca6dd49/sist-en-iec-61000-4-11-2020

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).