



# SLOVENSKI STANDARD

## SIST-TS IEC/TS 61000-3-5:2009

01-november-2009

Nadomešča:

SIST-TP IEC/TR2 61000-3-5:2004

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**Elektromagnetna združljivost (EMC) - 3-5. del: Mejne vrednosti - Mejne vrednosti kolebanja napetosti in flikerja v nizkonapetostnih napajalnih sistemih za opremo z naznačenim tokom, večjim od 75 A**

Electromagnetic compatibility (EMC) - Part 3-5: Limits - Limitation of voltage fluctuations and flicker in low-voltage power supply systems for equipment with rated current greater than 75 A

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Compatibilité électromagnétique (CEM) - Partie 3-5: Limites - Limitation des fluctuations de tension et du flicker dans les réseaux basse tension pour les équipements ayant un courant appelé supérieur à 75 A

**Ta slovenski standard je istoveten z: IEC/TS 61000-3-5**

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**ICS:**

33.100.01      Elektromagnetna združljivost      Electromagnetic compatibility  
na splošno      in general

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# TECHNICAL SPECIFICATION

# SPÉCIFICATION TECHNIQUE

**Electromagnetic compatibility (EMC) –**  
**Part 3-5: Limits – Limitation of voltage fluctuations and flicker in low-voltage  
power supply systems for equipment with rated current greater than 75 A**

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à 75 A**

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ELECTROTECHNICAL  
COMMISSION

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ICS 33.100.10

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMAGNETIC COMPATIBILITY (EMC) –****Part 3-5: Limits –  
Limitation of voltage fluctuations and  
flicker in low-voltage power supply systems for  
equipment with rated current greater than 75 A**

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- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC/TS 61000-3-5, which is a technical specification, has been prepared by subcommittee 77A: Low frequency phenomena of IEC technical committee 77: Electromagnetic compatibility.

This second edition cancels and replaces IEC 61000-3-5, published as Technical Report type 2 in 1994 and constitutes a technical revision.

It includes the following significant technical changes with respect to the previous edition: the whole document and the title have been modified to eliminate any conflict with the published IEC 61000-3-11.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
77A/681/DTS	77A/693/RVC

Full information on the voting for the approval of this technical specification 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

- transformed into an International standard,
- 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 product committees)

### **Part 4: Testing and measurement techniques**

Measurement techniques

Testing techniques

### **Part 5: Installation and mitigation guidelines**

Installation guidelines

Mitigation methods and devices

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### **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).

### **IEC/TS 61000-3-5**

This Technical Specification is presented as an informative document as it is already a requirement, in most countries, for equipment having a rated input current exceeding 75 A per phase to be subject to assessment and connection by the public supply network operator. Therefore, it is not intended, at the time of publication, to be converted into an International Standard.

## ELECTROMAGNETIC COMPATIBILITY (EMC) –

### Part 3-5: Limits – Limitation of voltage fluctuations and flicker in low-voltage power supply systems for equipment with rated current greater than 75 A

#### 1 Scope

This part of IEC 61000 deals with emission of disturbances due to voltage fluctuations and flicker.

The recommendations in this Technical Specification are applicable to electrical and electronic equipment that has a rated input current exceeding 75 A per phase and is intended to be connected to a public low-voltage a.c. distribution system.

Recommendations that specify information enabling a supply authority, manufacturer, or consumer to assess equipment are given in Annex A.

#### 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 – Chapter 161: Electromagnetic compatibility*

IEC 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current  $\leq 16$  A per phase)*

IEC 61000-3-3, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection*

IEC 61000-3-11:2000, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current  $\leq 75$  A and subject to conditional connection*

#### 3 Terms and definitions

For the purposes of this document the terms and definitions of IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11 and IEC 60050(161) apply.

#### 4 Equipment assessment

##### 4.1 General

Methods of flicker assessment for different types of voltage fluctuations are described in IEC 61000-3-3 and IEC 61000-3-11.



It is recommended that the disturbance levels present in the electricity supply are measured before and after the connection of a new load which is critical in any respect. The assessment method and data used should be verified.

An item of equipment having a rated input-current exceeding 75 A per phase, should comply with the limits for all relevant phase-to-neutral voltages given in Clause 5.

#### 4.2 Information from a consumer

When a consumer enquires about connection of a major load to a low voltage public supply network he should, on request, provide information to enable assessment of the possible disturbances caused by the load, otherwise connection may be refused.

The basic information to facilitate the assessment of equipment is recommended in the questionnaire contained in Annex A. This questionnaire should be completed by the user, or his authorized installation engineer, when connections of electrical loads to low-voltage public power supply networks require special authorization.

The completed questionnaire should be given to the electricity supplier well in advance of purchase and installation of the equipment to be connected.

#### 4.3 Evaluation of equipment with a rated input current exceeding 75 A per phase

For equipment with a rated input current exceeding 75 A, a detailed system study is recommended in order to facilitate conditional connection.

The equipment should be evaluated against the actual system impedance. It is recommended that IEC 61000-3-3 and IEC 61000-3-11 voltage change limits for  $d_{\max}$  and  $d_c$ , given in Clause 5, are applied.

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### 5 Recommended voltage change and flicker limits

#### 5.1 Recommended voltage change limits

The following limits are recommended to be applicable to equipment having ratings greater than 75 A per phase:

- the relative steady state voltage change,  $d_c$ , should not exceed 3,3 %;
- the maximum relative voltage change,  $d_{\max}$ , should not exceed
  - a) 4 % without additional conditions;
  - b) 6 % for equipment with automatic switching more than twice per day and that has a delayed restart (the order of magnitude of the delay being of a few minutes) or that has manual restart after power supply interruption;

NOTE The cycling frequency is further limited by the  $P_{st}$  and  $P_{lt}$  limit. For example: a  $d_{\max}$  of 6 % with rectangular voltage change characteristic twice per hour gives a  $P_{lt}$  of about 0,65.

- c) 7 % for equipment which is attended whilst in use, or is switched on automatically, or is intended to be switched on manually no more than twice per day and has a delayed restart (the delay being not less than a few tens of seconds) or manual restart after a power supply interruption.

In the case of equipment incorporating multiple loads, limits b) and c) should only apply if there is delayed or manual restart after a power supply interruption. For all equipment with automatic switching, that is energised immediately on restoration of supply after a power supply interruption, a) should apply. For all equipment with manual switching, limits b) or c) should apply, depending on the rate of switching.