

INTERNATIONAL STANDARD

IEC 61000-3-2

Edition 2.2
2004-11

Edition 2:2000 consolidated with amendment 1:2001 and 2:2004

Electromagnetic compatibility (EMC) –

Part 3-2: Limits –

Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 3-2: Limits –

Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

FOREWORD

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International Standard IEC 61000-3-2 has been prepared by sub-committee 77A: Low-frequency phenomena, of IEC technical committee 77: Electromagnetic compatibility.

This consolidated version of IEC 61000-3-2 is based on the second edition (2000) [documents 77A/310//FDIS and 77A/320/RVD], its amendment 1 (2001) [documents 77A/337/FDIS and 77A/357/RVD] and its amendment 2 (2004) [documents 77A/465/FDIS and 77A/472/RVD].

It bears the edition number 2.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

Annexes A, B and C form an integral part of this standard.

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- withdrawn,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.

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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 levels
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 sections which are to be published either as international standards, technical specifications, or as technical reports.

These standards and reports will be published in chronological order and numbered accordingly (for example, 61000-6-1).

This part is an international standard which gives emission limits for harmonic currents from equipment having an input current up to and including 16 A per phase.

This part is a Product Family Standard.

ELECTROMAGNETIC COMPATIBILITY (EMC) –

Part 3-2: Limits –

Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

1 Scope

This part of IEC 61000 deals with the limitation of harmonic currents injected into the public supply system.

It specifies limits of harmonic components of the input current which may be produced by equipment tested under specified conditions.

Harmonic components are measured according to annexes A and B.

This part of IEC 61000 is applicable to electrical and electronic equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems.

Arc welding equipment which is not professional equipment, with input current up to and including 16 A per phase, is included in this standard.

Arc welding equipment intended for professional use, as specified in IEC 60974-1, is excluded from this standard and may be subject to installation restrictions as indicated in IEC 61000-3-4.

NOTE 1 It is intended to replace technical report IEC 61000-3-4 by an international standard, IEC 61000-3-12 (under consideration).

The tests according to this standard are type tests. Test conditions for particular equipment are given in annex C.

For systems with nominal voltages less than 220 V (line-to-neutral), the limits have not yet been considered.

NOTE 2 The words apparatus, appliance, device and equipment are used throughout this standard. They have the same meaning for the purpose of this standard.

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(131), *International Electrotechnical Vocabulary (IEV) – Chapter 131: Electric and magnetic circuits*

IEC 60050(161), *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

IEC 60065, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60107-1, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

IEC 60155, *Glow-starters for fluorescent lamps*

IEC 60268-3, *Sound system equipment – Part 3: Amplifiers*

IEC 60335-2-2, *Safety of household and similar electrical appliances – Part 2-2: Particular requirements for vacuum cleaners and water suction cleaning appliances*

IEC 60335-2-7, *Safety of household and similar electrical appliances – Part 2-7: Particular requirements for washing machines*

IEC 60335-2-14, *Safety of household and similar electrical appliances – Part 2-14: Particular requirements for kitchen machines*

IEC 60974-1, *Arc welding equipment – Part 1: Welding power sources*

IEC 61000-2-2, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

IEC/TS 61000-3-4, *Electromagnetic compatibility (EMC) – Part 3-4: Limits – Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A*

IEC 61000-4-7, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 7: General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

Recommendation ITU-R BT.471-1, *Nomenclature and description of colour bar signals*

3 Definitions

For the purpose of this part of IEC 61000, the following definitions apply, as well as the definitions of IEC 60050(161).

3.1 portable tool

an electrical tool which is hand-held during normal operation and used for a short time (a few minutes) only

3.2 lamp

a source for producing light

3.3 self-ballasted lamp

a unit which cannot be dismantled without being permanently damaged, provided with a lamp cap and incorporating a light source and any additional element necessary for starting and stable operation of the light source

3.4 luminaire

an apparatus (other than a lamp) which distributes, filters or transforms the light transmitted from one or more lamps and which includes all the parts necessary for supporting, fixing and protecting the lamps, and, where necessary, circuit auxiliaries, together with the means for connecting them to the supply

3.5

semi-luminaire

a unit similar to a self-ballasted lamp but designed to utilize a replaceable light source and/or starting device

3.6

ballast

a device connected between the supply and one or more discharge lamps which serves mainly to limit the current of the lamp(s) to the required value. It may include means for transforming the supply voltage and/or frequency, correcting the power factor and, either alone or in combination with a starting device, provide the necessary conditions for starting the lamp(s)

3.7

step-down converter for lighting equipment

a unit inserted between the supply and one or more tungsten halogen or other filament lamps which serves to supply the lamp(s) with its (their) rated voltage, generally at high frequency. The unit may consist of one or more separate components. It may include means for dimming, correcting the power factor and suppressing radio interference

3.8

lighting unit

lighting equipment consisting of one self-ballasted lamp or the combination of one control device (ballast, semi-luminaire, transformer or the like) operating one or more lamps

3.9

reference lamp

a lamp selected for testing ballasts which, when associated with a reference ballast, has electrical characteristics that are close to the objective values given in the relevant lamp specification

3.10

reference ballast

a special inductive-type ballast designed for the purpose of providing comparison standards for use in testing ballasts and for the selection of reference lamps. It is essentially characterized by a stable voltage-to-current ratio, which is relatively uninfluenced by variations in current, temperature, and the magnetic surroundings

3.11

input current

current directly supplied to an equipment or a part of equipment by the a.c. distribution system

3.12

circuit power factor

the circuit power factor is the ratio of the measured active input power to the product of the supply voltage (r.m.s.) and the supply current (r.m.s.)

3.13

active power

the mean value, taken over one period, of the instantaneous power
[IEV 131-03-18]

NOTE The active input power is the active power measured at the input supply terminals of the equipment under test.