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Uninterruptible power systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements (IEC 62040-2:2005)

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<u>SIST EN 62040-2:2006</u> https://standards.iteh.ai/catalog/standards/sist/30563a50-1047-4b7c-882aba063fd417f8/sist-en-62040-2-2006

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EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN 62040-2

March 2006

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English version

Uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements (IEC 62040-2:2005)

Alimentations sans interruption (ASI) Partie 2: Exigences pour la compatibilité électromagnétique (CEM) (CEI 62040-2:2005) Unterbrechungsfreie Stromversorgungssysteme (USV) Teil 2: Anforderungen an die elektromagnetische Verträglichkeit (EMV) (IEC 62040-2:2005)

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This European Standard was approved by CENELEC on 2005-10-01. 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. ba063fd417f8/sist-en-62040-2-2006

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.

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CENELEC

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

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Foreword

The text of document 22H/74A/FDIS, future edition 2 of IEC 62040-2, prepared by SC 22H, Uninterruptible Power Systems (UPS), of IEC TC 22, Power electronic systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62040-2 on 2005-10-01.

This European Standard supersedes EN 50091-2:1995 + corrigendum January 1998.

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)	2006-10-01
-	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2008-10-01

This European Standard was prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and supports the essential requirements of Directive 89/336/EEC (see Annex ZZ).

This European Standard makes reference to International Standards. Where the International Standard referred to has been endorsed as a European Standard or a home-grown European Standard exists, this European Standard shall be applied instead. Pertinent information can be found on the CENELEC web site.

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Endorsement notice

The text of the International Standard IEC 62040-2:2005 Was 5 approved by CENELEC as a European Standard without any modification. ba063 id417f8/sist-en-62040-2-2006

Annex ZZ

(informative)

Coverage of Essential Requirements of EC Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essentiel requirements as given in the EC Directive 89/336/EEC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EC Directives may be applicable to the products falling within the scope of this standard.

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NORME INTERNATIONALE INTERNATIONAL STANDARD

CEI **IEC** 62040-2

Deuxième édition Second edition 2005-10

Alimentations sans interruption (ASI) -

Partie 2: Exigences pour la compatibilité électromagnétique (CEM)

iTeh STANDARD PREVIEW

Uninterruptible power systems (UPS) -

Part 2: SIST EN 62040-2:2006 https://Electromagnetic compatibility (EMC) requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

UNINTERRUPTIBLE POWER SYSTEMS (UPS) -

Part 2: Electromagnetic compatibility (EMC) requirements

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 62040-2 has been prepared by subcommittee 22H: Uninterruptible Power Systems (UPS), of IEC technical committee 22: Power electronic systems and equipment.

This second edition cancels and replaces the first edition published in 1999 and constitutes a technical revision.

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

a) New UPS categories C1, C2, C3 replace previous "restricted and unrestricted sales distribution" emission only related UPS categories "A, B and Table 2". C1, C2, C3 take into account both emission and immunity requirements of the environment in which the UPS is intended to operate.

- b) Mains terminal and a.c. output interference voltage limits apply now for UPS with currents in excess of 400 A. They are identical to those applying to UPS with currents in excess of 100 A.
- c) Lower a.c output interference voltage limits apply now for UPS with currents in excess of 100 A.
- d) Higher immunity requirements apply now for UPS intended to operate in commercial and industrial environments.

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

FDIS	Report on voting
22H/74A/FDIS	22H/82/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.

IEC 62040 consists of the following parts, under the general title *Uninterruptible power systems* (*UPS*):

Part 1-1: General and safety requirements for UPS used in operator access areas

Part 1-2: General and safety requirements for UPS used in restricted access locations

Part 2: Electromagnetic compatibility (EMC) requirements

Part 3: Method of specifying the performance and test requirements

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: https://standards.iteh.ai/catalog/standards/sist/30563a50-1047-4b7c-882a-
- withdrawn: ba063fd417f8/sist-en-62040-2-2006
- replaced by a revised edition, or
- amended.

UNINTERRUPTIBLE POWER SYSTEMS (UPS) -

Part 2: Electromagnetic compatibility (EMC) requirements

1 Scope

This part of IEC 62040 applies to UPS units intended to be installed

- as a unit or in UPS systems comprising a number of interconnected UPS and associated control/switchgear forming a single power system; and
- in any operator accessible area or in separated electrical locations, connected to lowvoltage supply networks for either industrial or residential, commercial and light industrial environments.

This part of IEC 62040 is intended as a product standard allowing the EMC conformity assessment of products of categories C1, C2 and C3 as defined in this part of IEC 62040, before placing them on the market.

Equipment of category 4 is treated as a fixed installation. Checking is generally done after installation in its final place of use. Sometimes partial checking may be done before. See Annex E

The requirements have been selected so as to ensure an adequate level of electromagnetic compatibility (EMC) for UPS at public and industrial locations. These levels cannot, however, cover extreme cases, which may occurring any location but with extremely low probability of occurrence.

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This part of IEC 62040 takes into account the differing test conditions necessary to encompass the range of physical sizes and power ratings of UPS.

A UPS unit or system shall meet the relevant requirements of this part of IEC 62040 as a stand-alone product. EMC phenomena produced by any customers' load connected to the output of the UPS equipment shall not be taken into account.

Special installation environments are not covered, nor are fault conditions of UPS taken into account.

This part of IEC 62040 does not cover d.c. supplied electronic ballast or UPS based on rotating machines.

This part of IEC 62040 states:

- EMC requirements;
- test methods;
- minimum performance levels.

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 60050-161:1990, International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility

IEC 61000-2-2:2002, Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems

IEC 61000-3-2:2000, Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current \leq 16 A per phase)

IEC 61000-4-1:2000, Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2002, *Electromagnetic compatibility (EMC)* = *Part* 4-3: *Testing and measurement techniques* – *Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4:2004, Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test https://standards.iteh.ai/catalog/standards/sist/30563a50-1047-4b7c-882a-

IEC 61000-4-5:1995, Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test

IEC 61000-4-6:2003, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances induced by radio-frequency fields*

IEC 61000-4-8:1993, Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test

IEC 62040-3:1999, Uninterruptible power systems (UPS) – Part 3: Method of specifying the performance and test requirements

CISPR 16-1-1:2003, Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus

CISPR 16-1-2:2003, Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Ancillary equipment – Conducted disturbances

CISPR 22:2005, Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement