SVENSK STANDARD SS-EN 62040-3

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2001-09-28	1	1 (1+107)	SEK Område 22

Svenska Elektriska Kommissionen, SEK

Utrustning för avbrottsfri elförsörjning (UPS) – Del 3: Egenskaper och provning

Uninterruptible power systems (UPS) –
Part 3: Method of specifying the performance and test requirements

Som svensk standard gäller europastandarden EN 62040-3:2001. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62040-3:2001.

Nationellt förord

Europastandarden EN 62040-3:2001

består av:

– **europastandardens ikraftsättningsdokument,** utarbetad inom CENELEC
– **IEC 62040-3, First edition, 1999 - Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare utgiven svensk standard SS-ENV 50091-3, utgåva 1, 1998 och SS-ENV 50091-3 C1, utgåva 1, 1999, gäller ej fr o m 2001-09-28.

ICS 29.200

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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EUROPEAN STANDARD **EN 62040-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM June 2001

ICS 29.200 Supersedes ENV 50091-3:1998

English version

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

Alimentations sans interruption (ASI)
Partie 3: Méthode de spécification des performances et procédures d'essai
(CEI 62040-3:1999, modifiée)

Unterbrechungsfreie Stromversorgungssysteme
Teil 3: Methoden zum Festlegen der Leistungs- und Prüfungsanforderungen
(IEC 62040-3:1999, modifiziert)

This European Standard was approved by CENELEC on 2000-08-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 62040-3:2001 E

Foreword

In 1998 IEC circulated under the reference 22B/119/FDIS the future IEC 62040-3 which has received a positive vote. The draft had a strong similarity with the ENV 50091-3 standard but as several differences were remaining, the draft had to be analysed and no CENELEC/IEC parallel vote was launched at that time. After analysis of those differences by the WG4 of CLC/TC 22X, a list of common modifications was established, mainly to be coherent with the other existing standards on UPS (Uninterruptible Power Systems): EN 50091-1-1 and EN 50091-1-2 concerning safety and EN 50091-2 concerning EMC. These modifications were therefore much more editorial than technical. Consequently, in order to minimise the period of time during which there are two different standards at IEC and CENELEC, CLC/TC 22X proposed to launch directly a UAP to the National Comittees on the text of IEC 62040-3:1999 prepared by SC 22B, Semiconductor converters, of IEC TC 22, Power electronics, together with the common modifications prepared by the Technical Committee CENELEC TC 22X, Power electronics. This text was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 62040-3 on 2000-08-01.

This European Standard supersedes ENV 50091-3:1998 and its corrigendum March 1999.

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)	2001-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2003-08-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes E, F, G and ZA are normative and annexes A, B, C, D, H and I are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62040-3:1999 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

Publication	Year	Title	EN/HD	Year
IEC 60050-101	1998	International Electrotechnical Vocabulary (IEV) Part 101: Mathematics	-	-
IEC 60050-131	1978	Chapter 131: Electric and magnetic circuits	-	-
IEC 60050-151	1978	Chapter 151: Electrical and magnetic devices	-	-
IEC 60050-161	1990	Chapter 161: Electromagnetic compatibility	-	-
IEC 60050-351	1975	Chapter 351: Automatic control	-	-
IEC 60050-441	1984	Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60050-486	1991	Chapter 486: Secondary cells and batteries	-	-
IEC 60050-551	1998	Part 551: Power electronics	-	-
IEC 60050-826	1982	Chapter 826: Electrical installations of buildings	HD 384.2 S2 [1)]	2001
IEC 60068-2-1	1990	Environmental testing Part 2: Tests - Tests A: Cold	EN 60068-2-1	1993
IEC 60068-2-2	1974	Part 2: Tests - Test B: Dry heat	EN 60068-2-2 [2)]	1993
IEC 60068-2-27	1987	Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 60068-2-32	1975	Part 2: Tests - Test Ed: Free fall	EN 60068-2-32 [3)]	1993

[1)] HD 384.2 S2 includes A1:1990 + A2:1995 + A3:1999.
[2)] EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2.
[3)] EN 60068-2-32 includes A2:1990 to IEC 60068-2-32.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-48	1982	Part 2: Tests – Guidance on the application of the tests of IEC 60068 to simulate the effects of storage	EN 60068-2-48	1999
IEC 60068-2-56	1988	Part 2: Tests - Test Cb: Damp heat, steady state, primarily for equipment	HD 323.2.56 S1	1990
IEC 60146-1-1	1991	Semiconductor convertors - General requirements and line commutated convertors Part 1-1: Specifications of basic requirements	EN 60146-1-1	1993
A1	1996		A1	1997
IEC 60146-1-2	1991	Part 1-2: Application guide	-	-
IEC 60146-2	1974 [4)]	Part 2: Semiconductor self-commutated converters	-	-
IEC 60309	Series	Plugs, socket-outlets and couplers for industrial purposes	EN 60309	Series
IEC 60364-4 (mod)	Series	Electrical installations of buildings Part 4: Protection for safety	HD 384.4	Series
IEC 60417-1	1998	Graphical symbols for use on equipment Part 1: Overview and application	EN 60417-1	1999
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
IEC 60950 (mod)	1991	Safety of information technology equipment	EN 60950 [5)]	1992
IEC 60990	1990 [6)]	Methods of measurement of touch-current and protective conductor current	-	-
IEC 61000-2-2 (mod)	1990	Electromagnetic compatibility (EMC) Part 2: Environment -- Section 2: Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems	ENV 61000-2-2	1993
IEC 61140	1997	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2001

[4)] IEC 60146-2:1999 is harmonized as EN 60146-2:2000.
[5)] EN 60950:1992 is superseded by EN 60950:2000, which is based on IEC 60950:1999, mod.
[6)] IEC 60990:1999 is harmonized as EN 60990:1999.

Publication	Year	Title	EN/HD	Year
IEC 62040-2 [7)]	1999	Uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements	-	-
ISO 7000	1989	Graphical symbols for use on equipment - Index and synopsis	-	-
ISO 7779	1999	Acoustics Measurement of airborne noise emitted by information technology and telecommunications equipment	-	-

[7)] EN 50091-2:1995 applies instead.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62040-3 has been prepared by subcommittee 22B: Semiconductor converters, of IEC technical committee 22: Power electronics.

This standard cancels and replaces the first edition of IEC 60146-4 published in 1986 as well as IEC 60146-5 (1988), and constitutes a technical revision.

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

FDIS	Report on voting
22B/119/FDIS	22B/122/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.

Annexes E, F and G form an integral part of this standard.

Annexes A, B, C, D, H and I are for information only.

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 3: Method of specifying the performance and test requirements

1 Scope and object

This standard applies to electronic indirect a.c. converter systems with electrical energy storage means in the d.c. link. The primary function of the uninterruptible power system (UPS) covered by this standard is to ensure continuity of an alternating power source. The uninterruptible power system may also serve to improve the quality of the power source by keeping it within specified characteristics.

A variety of uninterruptible power systems have been developed to meet consumers' requirements for continuity and quality of power for different types of loads over a wide range of power, from less than 100 W to several megawatts. Refer to annexes A and B for information on some of the types available.

This standard applies to electronic uninterruptible power systems (UPS):

a) delivering single- or three-phase fixed frequency a.c. output voltage;

b) with energy storage device in the d.c. link if not otherwise specified;

c) with rated voltage not exceeding 1 000 V a.c.;

d) movable, stationary and/or fixed equipment.

This standard also includes the method of specifying all power switches that form integral parts of a UPS and are associated with its output.

Included are interrupters, bypass switches, isolating switches, load transfer switches and tie switches. These switches interact with other functional units of the UPS to maintain continuity of load power.

This standard does not refer to conventional mains distribution boards, rectifier input switches or d.c. switches (for example for batteries, rectifier output or inverter input, etc.), or UPS based on rotating machines.

NOTE 1 – This standard recognizes that the major market usage with the UPS ratings within its scope is in conjunction with information technology equipment.

Under current technology, the majority of UPS load equipment employs power supplies which present a non-linear load to the UPS and can be tolerant of non-sinusoidal voltage waveforms for a limited time duration. UPS output ratings are specified to be compatible with non-linear loading and linear loading, subject to manufacturers' declaration if different.

References within this standard to linear loading are retained for test method reasons, or validation of manufacturers' additional declaration.

NOTE 2 – For use of UPS with a non-sinusoidal output voltage waveform, beyond the stored-energy time recommended in this standard, the agreement of the load equipment manufacturer should be sought.

NOTE 3 – For UPS output frequencies other than 50 Hz or 60 Hz, performance specification is subject to agreement between manufacturer and purchaser.

This standard is intended to define a complete uninterruptible power system in terms of its performance and not individual UPS functional units. The individual UPS functional units are dealt with in the IEC publications referred to in the bibliography given in annex I, which apply in so far as they are not in contradiction with this standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 62040. For dated references, subsequent amendments to, or revision of, any of these publications do not apply. However, parties to agreements based on this part of IEC 62040 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050-101:1998, *International Electrotechnical Vocabulary (IEV) – Part 101: Mathematics*

IEC 60050(131):1978, *International Electrotechnical Vocabulary (IEV) – Chapter 131: Electric and magnetic circuits*

IEC 60050(151):1978, *International Electrotechnical Vocabulary (IEV) – Chapter 151: Electrical and magnetic devices*

IEC 60050(161):1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*
Amendment 1 (1997)

IEC 60050(351):1975, *International Electrotechnical Vocabulary (IEV) – Chapter 351: Automatic control*

IEC 60050(441):1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*

IEC 60050(486):1991, *International Electrotechnical Vocabulary (IEV) – Chapter 486: Secondary cells and batteries*

IEC 60050(551):1998, *International Electrotechnical Vocabulary (IEV) – Chapter 551: Power electronics*

IEC 60050(826):1982, *International Electrotechnical Vocabulary (IEV) – Chapter 826: Electrical installations of buildings*

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests. Tests A: Cold*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests. Tests B: Dry heat*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests. Test Ea and guidance: Shock*

IEC 60068-2-32:1975, *Environmental testing – Part 2: Tests. Test Ed: Free fall (Procedure 1)*