

INTERNATIONAL STANDARD

IEC
62040-1-1

First edition
2002-08

Uninterruptible power systems (UPS) –

Part 1-1:

General and safety requirements for UPS used in operator access areas

Alimentations sans interruption (ASI) –

Partie 1-1.

*Prescriptions générales et règles de sécurité
pour les ASI utilisées dans des locaux
accessibles aux opérateurs*



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UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

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

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.
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- 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 62040-1-1 has been prepared by subcommittee 22H: Uninterruptible power systems (UPS), of IEC technical committee 22: Power electronic systems and equipment.

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

FDIS	Report on voting
22H/22/FDIS	22H/24/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annexes L, M and N form an integral part of this standard.

Annexes H and X are for information only.

In this standard, the following print types are used:

- Requirements proper and normative annexes: in roman type;
- *Compliance statements and test specifications: in italic type;*
- Notes and other informative matter: in smaller roman type;
- Normative conditions within tables: in smaller roman type;
- Terms that are defined in clause 3: **bold**.

The committee has decided that this publication remains valid until 2006. At this date, in accordance with the committee's decision, the publication will be

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- withdrawn;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

The contents of the corrigendum of December 2002 have been included in this copy.

Withdrawn

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

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

1 Scope and specific applications

1.1 Scope

This standard applies to electronic **uninterruptible power systems (UPS)** with an electrical energy storage device in the d.c. link. It is to be used with IEC 60950-1 which is referred to in this standard as "RD".

When any item is referred to by the phrase "The definitions or the provisions of item/RD apply", this phrase is intended to mean that the definitions or provisions in that item of IEC 60950-1 apply, except any which are clearly inapplicable to uninterruptible power systems. National requirements additional to those in IEC 60950-1 apply and are found as notes under relevant clauses of the RD.

The primary function of the **UPS** covered by this standard is to ensure continuity of an alternating power source. The **UPS** may also serve to improve the quality of the power source by keeping it within specified characteristics.

This standard is applicable to **UPS** which are movable, stationary, fixed or for building-in, for use on low-voltage distribution systems and intended to be installed in any **operator** accessible area. It specifies requirements to ensure safety for the **operator** and layman who may come into contact with the equipment and, where specifically stated, for the **service person**.

This standard is intended to ensure the safety of installed **UPS**, both as a single **UPS** unit or as a system of interconnected **UPS** units, subject to installing, operating and maintaining the **UPS** in the manner prescribed by the manufacturer.

This standard does not cover d.c. supplied electronic ballasts (IEC 60924 and IEC 60925), **UPS** intended to be installed in separated electrical locations and **UPS** based on rotating machines.

The relevant general and safety requirements for **UPS** installed in restricted access locations are given in IEC 62040-1-2; electromagnetic compatibility (EMC) requirements and definitions are given in IEC 62040-2.

1.2 Specific applications

Even if this standard does not cover all types of **UPS**, it may be taken as a guide for such equipment. Requirements additional to those specified in this standard may be necessary for specific applications, for example:

- **UPS** intended for operation while exposed, for example, to extremes of temperature; to excessive dust, moisture, or vibration; to flammable gases; to corrosive or explosive atmospheres;
- electromedical applications with the **UPS** located within 1,5 m from the patient contact area;
- for **UPS** subject to transient overvoltages exceeding those for Overvoltage Category II according to IEC 60664, additional protection might be necessary in the mains supply to the **UPS**;

- **UPS** intended for use where ingress of water and foreign objects are possible, additional requirements may be necessary; for guidance on such requirements and for relevant testing, see annex H;
- **UPS** with trapezoidal output waveforms and long run times (greater than 30 min) in addition to complying with 5.3.12 of IEC 62040-3 are subject to voltage distortion tests for the purpose of load compatibility.

NOTE For **UPS** intended to be used in vehicles, on board ships or aircraft, in tropical countries, or on elevations greater than 1 000 m, different requirements may be necessary.

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 60417 (all parts), *Graphical symbols for use on equipment*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC/TR 60755:1983, *General requirements for residual current operated protective devices*
Amendment 1 (1988)
Amendment 2 (1992)

IEC 60950-1:2001, *Information technology equipment – Safety – Part 1: General requirements*

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 61008-1:1996, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*

IEC 61009-1:1996, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – Part 1: General rules*

IEC 62040-1-2, *Uninterruptible power systems (UPS) – Part 1-2: General and safety requirements for UPS used in restricted access locations*¹⁾

IEC 62040-2:1999, *Uninterruptible power systems (UPS) – Part 2: Electromagnetic compatibility (EMC) requirements*

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

¹⁾ To be published.