IEC 62040-4

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Uninterruptible power systems (UPS) –
Part 4: Environmental aspects – Requirements and reporting

Alimentations sans interruption (ASI) –
Partie 4: Aspects environnementaux – Exigences et déclaration

IEC 62040-4:2013

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 4: Environmental aspects – Requirements and reporting

FOREWORD

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International Standard IEC 62040-4 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/157/FDIS	22H/162/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 2.

A list of all parts in the IEC 62040 series, published under the general title *Uninterruptible power systems*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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- withdrawn,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.

INTRODUCTION

The publication of this product standard for environmental information of UPS is intended to become a reference document for regulators, manufacturers, purchasers, certifying bodies and users, so that the goal of promoting reduction of the environmental impact during a complete UPS life cycle is achieved.

This standard provides assistance to:

- determine essential environmental parts of environmental standards, regulations, code of conducts, agreements, and other requirements applicable to UPS to ensure compliance and avoid need of interpretation,
- respond to customer requirements by communicating environmental information in a standardized way,
- minimize reporting requirements by focusing on main applicable environmental requirements,
- anticipate upcoming environmental regulations and environmental programs applicable to UPS by proposing a standard that provides compliance requirements,
- standardize the transmission of environmental information in the supply chain,
- report and communicate environmental information to be used as a reference for measuring environmental progress between one generation of product and the next.

UNINTERRUPTIBLE POWER SYSTEMS (UPS) –

Part 4: Environmental aspects – Requirements and reporting

1 Scope

This part of the IEC 62040 series specifies the process and requirements to declare the environmental aspects concerning uninterruptible power systems (UPS), with the goal of promoting reduction of any adverse environmental impact during a complete UPS life cycle. This product standard is harmonized with the applicable generic and horizontal environmental standards and contains additional details relevant to UPS.

This standard applies to movable, stationary and fixed UPS that deliver single or three-phase fixed frequency a.c. output voltage not exceeding 1 000 V a.c. and that present, generally through a d.c. link, an energy storage system and specified in IEC 62040 product standards for UPS (Part 1: Safety, Part 2: EMC and Part 3: Test and performance).

The following applications are excluded from the scope:

- conventional a.c. input and output distribution boards;
- d.c. distribution boards and their associated switches (e.g. switches for batteries, rectifier output or inverter input);
- stand-alone static transfer systems (STS) specified in IEC 62310 product standards for STS (Part 1: Safety, Part 2: EMC and Part 3: Test and performance);
- systems wherein the output voltage is derived from a rotating machine.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62040-3:2011, *Uninterruptible power systems (UPS) – Part 3: Method of specifying the performance and test requirements*

IEC 62474:2012, *Material Declaration for Products of and for the Electrotechnical Industry* (available at http://std.iec.ch/iec62474)

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1
end of life
life cycle stage of a product starting when it is removed from its intended use phase

3.2
end of life treatment
any operations after a waste has been handed over to a facility for recovery or preparation for disposal

Note 1 to entry: This includes dismantling, material separation and disposal.

3.3
use phase
life cycle stage of a product starting when it has been put into service and finishing at end of life

3.4
recycling
processing of waste materials for the original purpose or for other purposes, excluding energy recovery

[SOURCE: ISO 15270:2008,3.30, modified]

3.5
environment
surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation

[SOURCE: ISO 14001:2004, 3.5]

3.6
environmental aspect
element of an organization's activities, products or services that can interact with the environment

[SOURCE: ISO 14001:2004, 3.6]

3.7
environmental impact
any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects

[SOURCE: ISO 14001:2004, 3.17]

3.8
environmental management system
part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedure, processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

[SOURCE: ISO 14001:2004, 3.8, modified]

3.9
life cycle
consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal

[SOURCE: ISO 14040:2006,3.1]

3.10
life cycle assessment
LCA
compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

[SOURCE: ISO 14040:2006, 3.2]

3.11
substance
chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition

[SOURCE: United Nations' Globally Harmonized System of Classification and Labeling (GHS):2011, modified]

3.12
hazardous substances
substance or preparation that can adversely impact the environment with immediate or retarded effect

Note 1 to entry: This definition also applies to preparation.

[SOURCE: IEC Guide 109:2003, 3.6, modified]

3.13
material
substance or mixture within a product or product part

3.14
mixture
solution composed of two or more substances in which they do not react

3.15
uninterruptible power system
UPS
combination of convertors, switches and energy storage devices (such as batteries), constituting a power system for maintaining continuity of load power in case of input power failure

[SOURCE: IEC 62040-3:2011, 3.1.1]

3.16
raw material
primary or secondary material that is used to manufacture a product

Note 1 to entry: Primary raw material includes commercially produced virgin materials, such as iron ore and wood pulp, used for the manufacturing of products. Secondary raw material includes recycled materials used in the manufacture.

[SOURCE: ISO 14040:2006, 3.15]

3.17
waste
substances or objects which the holder intends or is required to dispose of

Note 1 to entry: Definition obtained from the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (22 March 1989), but is not limited to hazardous waste in this International Standard.

3.18
greenhouse gas
GHG
gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere, and clouds

Note 1 to entry: GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6).

[SOURCE: ISO 14064-1:2006, 2.1]

3.19

greenhouse gas emission

total mass of a GHG released to the atmosphere over a specified period of time

[SOURCE: ISO 14064-1:2006, 2-5]

3.20

packaging

material that is used to protect or contain a product during transportation, storage, marketing or use

Note 1 to entry: For the purposes of this International Standard, the term "packaging" also includes any item that is physically attached to, or included with, a product or its container for the purpose of marketing the product or communicating information about the product.

[SOURCE: ISO 14021:1999, 3.1.10]

3.21

acoustic noise

unintentional and undesirable sound

3.22

representative UPS

UPS within a range where the information declared for that UPS applies to all the UPS of the range

3.23

component

part that comes from a manufacturing facility and which can be an amalgam of various manufacturing processes and of raw materials

3.24

recyclability rate

sum of recyclable masses of all parts divided by the total mass multiplied by 100 %

3.25

eco-solutions

products or services allowing reduction of environmental impacts of a system in which they are a component

[SOURCE: IEC/PAS 62545:2008, 3.1.16]

4 Process of declaring the environmental aspects of a UPS

4.1 General

The process of declaring the environmental aspects of a UPS consists of identifying those aspects arising when UPS compliance is verified against the requirements specified in Clause 5. The environmental aspects shall be assessed for the representative UPS when applicable and otherwise for each UPS.

NOTE The reporting procedure detailed in this standard is aligned with IEC/PAS 62545.

4.2 Outcome

The outcome of the process is the identification of the environmental impact during a complete UPS life cycle. Compliance with each requirement shall be reported – refer to Annex A and to Annex B.

5 Requirements

5.1 General

This clause specifies the requirements concerning environmental aspects applying to UPS covered by this standard. The environmental aspects are classified as listed in Table 1.

Table 1 – Classification of environmental aspects

Environmental aspects			Suggested format of declaration (clause of annex)
Clause		Classification	
5.2	Essential	Mandatory	A.2
5.3.2	Additional	Voluntary	B.2

5.2 Essential requirements

5.2.1 General

The following subclauses represent the essential requirements.

5.2.2 Information about the producer

The following information shall be declared by the UPS manufacturer:

- location of manufacturing plant(s),
- certification status of manufacturing plant(s) in regard to applicable environmental management system, e.g. ISO 14001, EMAS etc.

5.2.3 Description of the product and its packaging

The following information shall be declared by the UPS manufacturer:

- model (manufacturer’s reference and, if model is a representative UPS, the range of UPS),
- UPS configuration (see Annex A of IEC 62040-3:2011),
- UPS performance classification (see 5.3.4. of IEC 62040-3:2011),
- product dimensions,
- mass without energy storage system e.g. batteries,
- mass of energy storage system if incorporated in the UPS,
- mass and material(s) of packaging (e.g. cardboard, plastic, wood, metal):
  - product packaging: first layer of packaging in contact with the product;
  - group packaging: packaging gathering several products into a single package, if applicable;
  - transportation packaging: packaging used for transportation if different from product or group packaging.

NOTE Further information can be found in Table D.1, of IEC 62040-3:2011.