



BSI Standards Publication

Household and similar electrical appliances — Safety

Part 1: General requirements

This is a preview of BS EN IEC 60335-1:2023+A11:2023. [Click here to purchase the full version from the ANSI store](#)

National foreword

This British Standard is the UK implementation of EN IEC 60335-1:2023+A11:2023. It is derived from IEC 60335-1:2020, incorporating Interpretation Sheet 1:2021, corrigendum December 2021 and Interpretation Sheet 2:2025. It supersedes BS EN 60335-1:2012+A16:2023, which will remain current until all the Parts 2 which are used in conjunction with it have been withdrawn. No date of withdrawal has yet been fixed.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by IEC corrigendum December 2021 is indicated in the text by AC1 AC1.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee CPL/61, Safety of household and similar electrical appliances.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
30 June 2024	Correction to Notes in Figures 2 and 4, deletion of editorial notes after Annex ZH, and addition of National Annex NA
30 November 2025	Interpretation Sheet 2:2025 added

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December 2023

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Supersedes EN 60335-1:2012; EN 60335-1:2012/A11:2014; EN 60335-1:2012/AC:2014; EN 60335-1:2012/A13:2017; EN 60335-1:2012/A1:2019; EN 60335-1:2012/A14:2019; EN 60335-1:2012/A2:2019; EN 60335-1:2012/A15:2021; EN 60335-1:2012/A16:2023

English Version

Household and similar electrical appliances - Safety - Part 1:
General requirements
(IEC 60335-1:2020 + COR1:2021)

Appareils électrodomestiques et analogues - Sécurité -
Partie 1: Exigences générales
(IEC 60335-1:2020 + COR1:2021)

Sicherheit elektrischer Geräte für den Hausgebrauch und
ähnliche Zwecke - Teil 1: Allgemeine Anforderungen
(IEC 60335-1:2020 + COR1:2021)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN IEC 60335-1:2023) consists of the text of IEC 60335-1:2020 + COR1:2021 prepared by IEC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-11-22
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) —*

*Justification for no dow:

This European Standard supersedes EN 60335-1:2012 and its amendments. However, EN 60335-1:2012 and its amendments remains valid until all the Parts 2 which are used in conjunction with it have been withdrawn. No date of withdrawal (DOW) has been given pending the updating of all Parts 2 to align with this EN IEC 60335-1:2023/A11:2023. The applicable date of withdrawal is given in each Part 2. It is intended the DOW for this Part 1 will be fixed once all the Parts 2 have been updated.

This document supersedes EN 60335-1:2012 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document is read in conjunction with EN IEC 60335-1:2023/A11:2023.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60335-1:2020 + COR1:2021 was approved by CENELEC as a European Standard without any modification.

This is a preview of BS EN IEC 60335-1:2023+A11:2023. [Click here to purchase the full version from the ANSI store](#)

This document (EN IEC 60335-1:2023/A11:2023) has been prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-11-22
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) —*

**Justification for no dow:*

This European Standard supersedes EN 60335-1:2012 and its amendments. However, EN 60335-1:2012 and its amendments remains valid until all the Parts 2 which are used in conjunction with it have been withdrawn. No date of withdrawal (DOW) has been given pending the updating of all Parts 2 to align with this EN IEC 60335-1:2023/A11:2023. The applicable date of withdrawal is given in each Part 2. It is intended the DOW for this Part 1 will be fixed once all the Parts 2 have been updated.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN-CENELEC shall not be held responsible for identifying any or all such patent rights.

This document is read in conjunction with EN IEC 60335-1:2023.

The numbering system for European clauses, subclauses, notes, tables, figures and annexes that are additional to those in the IEC standard are prefixed with the letter "Z".

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN and CENELEC websites.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC 60335-1
Edition 6.0 2020-09

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –**Part 1: General requirements****INTERPRETATION SHEET 1**

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this Interpretation Sheet is based on the following documents:

Draft	Report on voting
61/5999/DISH	61/6009/RVDISH

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

INTRODUCTION

Edition 6 of IEC 60335-1:2020 defines and introduces requirements for a detachable power supply part of an appliance. In the document, 24.2 prohibits the use of a power supply in a flexible cord.

QUESTION:

Does Subclause 24.2 prohibit the use of a detachable power supply part?

ANSWER

No, a "detachable power supply part" is a defined term and is not captured by the term "power supply" as used in Subclause 24.2.

NOTE A detachable power supply part is captured by the defined term when the output of the power supply part is detachable from the class III construction part of the appliance at:

- the power supply part, or
- the class III construction part of the appliance.

However, the supply cord (if any) does not have to be detachable from the detachable power supply part.

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—————

IEC 60335-1
Edition 6.0 2020-09

**Household and similar electrical appliances - Safety -
Part 1: General requirements**

INTERPRETATION SHEET 2

This interpretation sheet has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this interpretation sheet is based on the following documents:

DISH	Report on voting
61/7436/DISH	61/7464/RVDISH

Full information on the voting for the approval of this interpretation sheet can be found in the report on voting indicated in the above table.

—————

TC 61 interpretation sheet on: Mechanical shock and vibration testing on large metal-ion batteries of IEC 60335-1:2020

INTRODUCTION

Currently the standard mentions:

B.24.1 *The relevant standards for non-acid based electrolyte **cells** employed in **batteries** are IEC 62133-1:2017 for nickel systems and IEC 62133-2:2017 for lithium systems.*

NOTE The requirement for **cells** does not extend to the **battery** itself.

*A **battery** that uses metal-ion chemistry shall additionally be subjected to the tests of Subclauses 7.3.8.1 (vibration) and 7.3.8.2 (mechanical shock) of IEC 62133-2:2017.*

When Annex B was written for the IEC 60335-1 edition 6, the batteries foreseen were for portable applications and rather lightweight. The IEC 62133-2:2017 standard referred to is applicable to portable lithium batteries only.

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mechanical shock and vibration are not suitable.

QUESTION:

What test sequence for mechanical shock and vibration can be followed for large batteries?

ANSWER:

For practical reasons, IEC 60335-1 should follow the same differentiation as the UN 38.3 transport test or IEC 62281 standard (Safety of primary and secondary lithium cells and batteries during transport).

For larger batteries with a mass exceeding 12 kg, Subclauses 6.4.3 (Test T-3: Vibration) and 6.4.4 (Test T-4: Shock) of IEC 62281:2019, including AMD1:2021 and AMD2:2023, may be applied.

NOTE 1 The tests are technically identical to Test T.3 and Test T.4 of the UN manual of tests and criteria, section 38.3 rev.8 (2023).

NOTE 2 In accordance with Table 5 of IEC 62281:2019, testing is carried out on the battery without packaging.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 1: General 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 60335-1 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This sixth edition cancels and replaces the fifth edition published in 2010, Amendment 1:2013 and Amendment 2:2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition (minor changes are not listed):

- a) updated the text of this standard to align with the most recent editions of the dated normative references;
- b) deleted some notes and converted many other notes, in whole or in part, to normative text;
- c) changed some Annex designations from normative to informative;
- d) introduced information on Guidance documents concerning the application of the safety requirements covered by IEC 60335 series and on how to retrieve them;

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- e) clarified requirements for PELV circuits;
- f) clarification of requirements on measurement of power input and rated current when they vary throughout the operating cycle;
- g) replaced normative Annex S with the informative Annex S "Guidance for the application of this standard on measurement of power input and current based on the requirements of 10.1 and 10.2 concerning the representative period";
- h) introduced and clarified mechanical strength requirements for appliances with integral pins for insertion into socket-outlets;
- i) revised requirements for battery-operated appliances;
- j) introduced requirements for metal-ion batteries including a new Clause 12 Charging of metal-ion batteries;
- k) introduced the application of test probe 18;
- l) introduced requirements for appliances incorporating appliance outlets and socket-outlets accessible to the user;
- m) revised and clarified requirements for appliances incorporating a functional earth;
- n) introduced moisture resistance test requirements for appliances that incorporate an automatic cord reel and that have a second numeral IP rating;
- o) clarified the appliance test criteria for the moisture resistance for appliances and parts of appliances with integral pins for insertion into socket-outlets;
- p) introduced limits on the output voltage of an accessible safety extra-low voltage outlet or connector or Universal Serial Bus (USB) under abnormal operation conditions;
- q) introduced requirements to cover optical radiation hazards;
- r) introduced external communication software management items into normative Annex R;
- s) revised external communication requirements in Table R.1 and Table R.2;
- t) introduced in new normative Annex U cyber security requirements to avoid unauthorized access and the effects of transmission failures via remote communication through public networks.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
61/6012/FDIS	61/6089/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This part is to be used in conjunction with the appropriate part 2 of IEC 60335. The parts 2 contain clauses to supplement or modify the corresponding clauses in this part to provide the relevant requirements for each type of appliance.

This sixth edition of IEC 60335-1 is only to be used in conjunction with parts 2 that have been established on the basis of this edition.

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The following print types are used:

- requirements: in roman type;
- test specifications: in *italic* type;
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

- Introduction: The Part 1 standard (UL60335-1) is only used in combination with a part 2 (UL60335-2-x). National differences are specified in these standards (USA).
- 5.7: The ambient temperature is 25 °C ± 10 °C (Japan).
- 5.7: The ambient temperature is 27 °C ± 5 °C (India).
- 6.1: Class 0 appliances and class 0I appliances are not allowed (Australia, European Union, India, Israel, New Zealand, Norway, Singapore, Switzerland, United Kingdom).
- 7.12.2: The requirements for full disconnection do not apply (Japan).
- 7.12.8: The maximum inlet water pressure shall be at least 1,0 MPa (Denmark, Norway, Sweden and Finland).
- 13.2: The test circuit and some leakage current limits are different (India).
- 19.5: The test is also applicable to appliances intended to be permanently connected to fixed wiring (Norway).
- 22.2: The second paragraph of this subclause dealing with single-phase class I appliances with heating elements cannot be complied with because of the supply system (France).
- 22.2: The second paragraph of this subclause, that deals with single-phase, permanently connected class I appliances having heating elements, is not applicable due to the supply system (Norway).
- 22.2: Double-pole switches or protective devices are required (Norway).
- 25.3: A set of supply leads is not permitted (Norway, Denmark, Finland, Netherlands).
- 25.8: 0,5 mm² supply cords are not allowed for class I appliances (Australia and New Zealand).

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

The contents of the Interpretation Sheet 1 (2021-11) and the corrigendum 1 (2021-12) have been included in this copy.

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website –

www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If the functions of an appliance are covered by different parts 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

Throughout this publication, when "part 2" is mentioned, it refers to the relevant part of IEC 60335.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards.

Individual countries may wish to consider the application of this standard, as far as is reasonable, to appliances not mentioned in a part 2, and to appliances designed on new principles. In this case, consideration should be given to defining normal operation, specifying the classification of the appliance according to Clause 6 and specifying whether the appliance is operated attended or unattended. Consideration should also be given to particular categories of likely users and to related specific risks such as access to live parts, hot surfaces or hazardous moving parts.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of this standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

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An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with this standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

A11 With this European Amendment A11 the EN 60335-1:2012+A11:2014 +A13:2017+A1:2019 +A14:2019+A2:2019 +A15:2021+A16:2023 is superseded.

This European Amendment A11 supplements or modifies the corresponding clauses of the standard EN IEC 60335-1:2023 (part 1).

This part is to be used in conjunction with the appropriate part(s) 2 of EN IEC 60335. The part(s) 2 contain clauses to supplement or modify the corresponding clauses in this part to provide the relevant requirements for each type of appliance.

This part is only to be used in conjunction with part(s) 2 that have been established on the basis of this edition. The part(s) 2 indicates which edition of the Part 1 is applicable. A11

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

1 Scope

This International Standard deals with the safety of electrical appliances for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances including direct current (DC) supplied appliances and **battery-operated appliances**.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

This standard deals with the reasonably foreseeable hazards presented by appliances that are encountered by all persons. However, in general, it does not take into account:

- persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

Additional requirements may be necessary for appliances intended to be used in vehicles or on board ships or aircraft. In many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

This standard does not apply to:

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- audio, video and similar electronic apparatus (IEC 60065);
- medical electrical equipment (IEC 60601 series);
- hand-held motor-operated electric tools (IEC 60745 series);
- information technology equipment (IEC 60950-1);
- transportable motor-operated electric tools (IEC 61029 series);
- audio/video, information and communication technology equipment (IEC 62368-1);
- electric motor-operated hand-held tools, transportable tools and lawn and garden machinery (IEC 62841 series).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.