

Annexe BB (normative)

Transformateurs de séparation des circuits

Les modifications suivantes à la présente norme sont applicables aux **transformateurs de séparation des circuits**.

7 Marquage et instructions

7.1 Les transformateurs de séparation des circuits pour des utilisations spécifiques doivent être marqués

- du nom, de la marque commerciale ou de la marque d'identification du fabricant ou du fournisseur responsable;
- de la référence du modèle ou du type.

17 Protection contre la surcharge des transformateurs et des circuits associés

Les transformateurs non dangereux en cas de défaillance doivent être conformes à 15.5 de l'IEC 61558-1.

L'essai est effectué sur trois transformateurs.

22 Construction

Les Paragraphes 19.1 et 19.1.2 de l'IEC 61558-2-4:2009 s'appliquent.

29 Distances dans l'air, lignes de fuite et isolation solide

29.1, 29.2 et 29.3 Les distances spécifiées aux points 2a, 2c et 3 du Tableau 13 de l'IEC 61558-1 s'appliquent.

Pour les fils de bobinage isolés conformes au Paragraphe 19.12.3 de l'IEC 61558-1, il n'y a pas d'exigences pour les **distances dans l'air** ni pour les **lignes de fuite**. De plus, pour les enroulements assurant une **isolation renforcée**, la distance spécifiée au point 2c du Tableau 13 de l'IEC 61558-1 n'est pas évaluée.

Pour les **distances dans l'air**, les **lignes de fuite** et l'**isolation solide** des **transformateurs de séparation des circuits** soumis à des tensions périodiques de fréquence supérieure à 30 kHz, les valeurs spécifiées dans l'IEC 60664-4 sont applicables, si ces valeurs sont plus grandes que les valeurs spécifiées aux points 2a, 2c et 3 du Tableau 13 de l'IEC 61558-1.

Bibliographie

La bibliographie de la Partie 1 est applicable avec l'exception suivante.

Addition:

IEC 60598-2-22, *Luminaires – Partie 2-22: Règles particulières – Luminaires pour éclairage de secours*

FINAL VERSION

VERSION FINALE

**Household and similar electrical appliances – Safety –
Part 2-29: Particular requirements for battery chargers**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-29: Exigences particulières pour les chargeurs de batterie**

This is a preview. [Click here to purchase the full publication.](#)

CONTENTS

FOREWORD	3
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 General requirement	9
5 General conditions for the tests	9
6 Classification	9
7 Marking and instructions	10
8 Protection against access to live parts	12
9 Starting of motor-operated appliances	12
10 Power input and current	12
11 Heating	12
12 Void	13
13 Leakage current and electric strength at operating temperature	13
14 Transient overvoltages	13
15 Moisture resistance	13
16 Leakage current and electric strength	13
17 Overload protection of transformers and associated circuits	13
18 Endurance	13
19 Abnormal operation	13
20 Stability and mechanical hazards	14
21 Mechanical strength	14
22 Construction	15
23 Internal wiring	15
24 Components	15
25 Supply connection and external flexible cords	15
26 Terminals for external conductors	16
27 Provision for earthing	16
28 Screws and connections	16
29 Clearances, creepage distances and solid insulation	16
30 Resistance to heat and fire	17
31 Resistance to rusting	17
32 Radiation, toxicity and similar hazards	17
Annexes	18
Annex A (informative) Routine tests	18
Annex AA (normative) Battery chargers for use by children	19
Annex BB (normative) Isolating transformers	23
Bibliography	24
Figure 101 – Circuit for testing battery chargers	17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-29: Particular requirements for battery chargers

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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

DISCLAIMER

This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of IEC 60335-2-29 bears the edition number 5.1. It consists of the fifth edition (2016-06) [documents 61/5142/FDIS and 61/5173/RVD] and its amendment 1 (2019-03) [documents 61/5760/FDIS and 61/5799/RVD]. The technical content is identical to the base edition and its amendment.

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This fifth edition constitutes a technical revision.

The principal changes in this edition as compared with the fourth edition of IEC 60335-2-29 are as follows (minor changes are not listed):

- Revised the drop test to refer to IEC 60068-2-31 (21.101);
- Requirements for supply cords on battery chargers used at low temperatures (25.7);
- Requirements for battery chargers having an output voltage exceeding SELV have been added (1, 3.2.2, 3.4.3, 10.101, 24.4, 25.5, 25.7, 25.8, 25.15, 26.5);
- A classification for battery chargers used outdoors has been added (6.2, 29.2);
- Some notes in Clause 1, Subclauses 7.1 and 22.102, Figure 101 and Annex AA 11.8 have been converted to normative text.

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for battery chargers.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 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 the base publication and its amendment 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.

NOTE 4 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 standard 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.

- 3.1.9: The artificial load may not be used (USA).
- 11.2: The appliance is not placed in a test corner (USA).
- 21.101: The drop test is carried out differently on outdoor direct plug-in battery chargers (USA).
- 21.102: The test is different (USA).
- 22.26: Basic insulation is allowed between live parts and SELV circuits (USA).
- Annex AA, 11.8: Higher temperature rises are allowed (USA).
- Annex AA, Clause 17: Higher temperature rises are allowed (USA).
- Annex AA, 19.13: Higher temperature rises are allowed (USA).

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.

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 an appliance within the scope of this standard also incorporates functions that are covered by another part 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.

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 and generic standards 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. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

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

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 the standard.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-29: Particular requirements for battery chargers

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric battery chargers for household and similar use having an output not exceeding 250 V ripple-free direct current, their **rated voltage** being not more than 250 V.

Battery chargers intended for charging batteries in a household end use application outside the scope of the IEC 60335 series of standards are within the scope of this standard.

Requirements for battery chargers for use by children at least 8 years old without supervision are given in Annex AA.

Battery chargers not intended for normal household use, but which nevertheless may be a source of danger to the public, such as battery chargers intended for use in garages, shops, light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. 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.

NOTE 101 Attention is drawn to the fact that

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

NOTE 102 This standard does not apply to

- built-in battery chargers, except those for installing in caravans and similar vehicles;
- battery chargers that are part of an appliance, the battery of which is not accessible to the user;
- battery chargers intended exclusively for industrial purposes;
- battery chargers intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- battery chargers for emergency lighting (IEC 60598-2-22);
- supply units for electronic equipment.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 61558-2-4:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers*

IEC 61558-2-7:2007, *Safety of power transformers, power supplies, reactors and similar products – Part 2-7: Particular requirements and tests for transformers and power supplies for toys*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.1 Addition:

Note 1 to entry: The **rated voltage** is the rated input voltage.

3.1.6 Addition:

Note 2 to entry: The **rated current** is the rated input current.

3.1.9 Replacement:

normal operation

operation of the appliance under the following conditions:

Battery chargers for charging lead-acid batteries, and other battery chargers having a **rated DC output current** not exceeding 20 A, are connected to the circuit of Figure 101. The variable resistor is adjusted so that the current in the circuit is the **rated DC output current** when the battery charger is supplied at **rated voltage**.

When the charging current is controlled by the state of charge of the battery, the variable resistor and the capacitor are replaced by a discharged battery of the type and having the largest capacity specified in the instructions.

Other battery chargers are connected to a discharged battery of the type and having the largest capacity specified in the instructions.

3.1.101

rated DC output voltage

output voltage assigned to the battery charger by the manufacturer

3.1.102

rated DC output current

output current assigned to the battery charger by the manufacturer

3.2 Definitions relating to means of connection

3.2.2 Addition:

Output flexible cords are not considered to be interconnection cords.