

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-114: Particular requirements for Personal-e-Transporters

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-114: Exigences particulières pour les engins de déplacement personnel
motorisés



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motorisés**

INTERNATIONAL
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COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-114: Particular requirements for Personal-e-Transporters**

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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IEC 60335-2-114 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This second edition cancels and replaces the first edition published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) alignment with IEC 60335-1:2020;
- b) change of title of the standard to reflect the expanded scope;
- c) expansion of the scope to include a variety of Personal e-Transporters;
- d) introduction of UV testing for markings on Personal e-Transporters for shared use in a public space (7.14);
- e) introduction of test probe 19 (8.1.1, 20.2, B.22.3, B.22.4).

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

Draft	Report on voting
61/6676/FDIS	61/6752/RVD

Full information on the voting for its approval 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 was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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 Personal-e-Transporters.

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 this document will remain unchanged until the stability date indicated on the IEC website under 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 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 below.

- This standard is not applicable, instead EN 17128 applies for this kind of appliances (Germany).

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[IEC 60335-2-114:2022](https://standards.iteh.ai/catalog/standards/sist/ef53d427-70b1-4f95-a4e2-6b99aed07fee/iec-60335-2-114-2022)

<https://standards.iteh.ai/catalog/standards/sist/ef53d427-70b1-4f95-a4e2-6b99aed07fee/iec-60335-2-114-2022>

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

<https://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 only covers the electrical safety of Personal-e-Transporters 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 such appliances.

Other safety aspects of Personal-e-Transporters are covered by the standards developed by IEC TC 125.

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 can 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 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.

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.

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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-114: Particular requirements for Personal-e-Transporters

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the electrical safety of **Personal e-Transporters** used in the private or public areas.

The device can have one or more wheels, self-balancing provisions, provisions for the transport of cargo and can be for private, commercial, shared use or for hire.

Examples of devices that are within the scope of this standard are

- self-balancing transport devices with or without a seat (also known as hover boards);
- electric scooters without a seat including scooters with detachable seats;
- electric mono-wheels with or without a seat;
- electric skateboards.

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);
- electric mopeds with a seat;
- electric bicycles;
- electric motorcycles;
- devices exclusively intended for use by people with a physical disability such as electrically powered wheel chairs;
- devices with hybrid power mode such as **Personal e-Transporters** incorporating a small internal combustion motor where the internal combustion motor is the primary power source;
- ride-on or walk-behind commercial floor treatment machines (IEC 60335-2-72).

NOTE 101 An electric scooter with a seat is classified as an electric moped and an electric moped without a seat is classified as an electric scooter.

As far as is practicable, this standard deals with the common electrical safety hazards presented by **Personal e-Transporters** that are encountered by all users. 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;

- safety of riding/driving the device including aspects such as maximum attainable speed, stability, acceleration, braking, visibility, ergonomics, and reliability of driving controls such as acceleration or braking controls.

Attention is drawn to the fact that

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

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-5:2018, *Environmental testing – Part 2-5: Tests – Test S: Simulated solar radiation at ground level and guidance for solar radiation testing and weathering*

IEC 60068-2-64, *Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance*

IEC 61558-2 (all parts), *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-x: Particular requirements and tests*

IEC 62133-2, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

Addition:

For the purposes of this standard, the terms and definitions given in IEC 62133-2 also apply.

3.5 Definitions relating to types of appliances

3.5.101

Personal e-Transporter

PeT

electrically powered transport device which is used on the road, public spaces or private spaces where the speed control and/or the steering control is electrical/ electronic

Note 1 to entry: If the **functional part** is intended to carry persons, it can also include one or more compartments intended to carry cargo.

Note 2 to entry: The **functional part** has one or more wheels and is powered by rechargeable **batteries** with one or more motors to drive one or more wheels.

Note 3 to entry: The **functional part** can incorporate the **battery** charging circuitry and other supply unit circuitry.

3.6 Definitions relating to parts of an appliance

3.6.7 *Replace the term definition by the following:*

part of the appliance the output of which is intended to be detachable from its **functional part**

3.6.9 Addition

Note 101 to entry: The term **battery** as used throughout this document means secondary **battery**.

3.6.101

functional part

part of an appliance that performs its function while operating on **battery** power

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.10 Addition:

*The **functional part** is tested connected to its **detachable power supply part** taking into account the instructions provided with the appliance.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 Addition:

The **functional part** shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.14 Addition:

Markings on **PeTs** intended for shared outdoor use in public areas shall remain legible after being exposed to solar radiation.

This requirement does not apply to markings that are moulded in, engraved, or stamped and either raised above or have a depth below the surface of at least 0,25 mm and laser engraved markings.

Compliance is checked by the test of IEC 60068-2-5 procedure Sb 1 using a xenon-arc lamp as the radiation source.

The test conditions shall be as specified in IEC 60068-2-5:2018, Table 5. Both the narrowband irradiance level and the black panel temperature shall be controlled. The test shall be in cycles for a total duration of 515 h.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 Addition:

In addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied as specified for test probe 18.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.2 Addition:

The PeT is placed on the floor of the test corner and away from the walls.

12 Charging of metal-ion batteries

This clause of Part 1 is applicable

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable.

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable.

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 Not applicable.

20.2 *Addition:*

In addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied as specified for test probe 18.

21 Mechanical strength

This clause of Part 1 is applicable.

22 Construction

This clause of Part 1 is applicable except as follows.

22.56 *Modification:*

Except for **PeTs** for shared use in public areas, the **detachable power supply part** shall be provided with the **functional part**.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.