AS/NZS 60335.1:2022

Australian/New Zealand Standard™

Household and similar electrical appliances — Safety

Part 1: General requirements (IEC 60335-1 Ed 6, MOD)

AS/NZS 60335.1:2022

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-002, Safety of Household and Similar Electrical Appliances and Small Power Transformers and Power Supplies. It was approved on behalf of the Council of Standards Australia on 8 June 2022 and by the New Zealand Standards Approval Board on 1 June 2022.

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The following are represented on Committee EL-002:

Association of Accredited Certification Bodies
Australian Industry Group
Australian Retailers Association
Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
Business New Zealand
Consumer Electronic Suppliers Association, Australia
Consumers' Federation of Australia
Electrical Regulatory Authorities Council, Australia
Electrical consultants
Engineers Australia
JAS-ANZ
New Zealand Electric Fence Energizer Manufacturers' Standards Group
Testing Interests New Zealand
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Part 1: General requirements (IEC 60335-1 Ed 6, MOD)

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 60335.1:2022

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

Foreword

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002 - Safety of Household and Similar Electrical Appliances and Small Power Transformers to supersede AS/NZS 60335.1:2020 and its amendments. However, AS/NZS 60335.1:2020 and its amendments remain valid until all the parts 2 that are used in conjunction with it have been withdrawn. No date of withdrawal of AS/NZS 60335.1:2020 and its amendments (dow) has therefore been fixed. Regulatory authorities that reference this Standard in regulation may apply these requirements at a different time. Users of this Standard should consult with these authorities to confirm their requirements.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with safety requirements designed to give the user protection against hazards that might occur during normal operation and abnormal operation of the appliance and which may be used as the basis for approval for sale or for connection to the electricity supply mains in Australia and New Zealand.

The text of IEC 60335-1 Ed 6, prepared by IEC Technical Committee TC 61, was submitted to the Standards Australia/Standards New Zealand Combined Procedure (dual public comment and committee vote) for adoption of the IEC standard as a Standards Australia/Standards New Zealand joint standard.

The principal changes in this edition as compared with the 2020 edition of AS/NZS 60335.1 are as follows (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;

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.

This Standard is an adoption with national modifications of the sixth edition of IEC 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements.* It has been varied as indicated to take account of Australian and New Zealand conditions.

The 2022 edition of AS/NZS 60335.1 is only to be used in conjunction with the appropriate Part 2 of AS/NZS 60335 based on this edition. 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.

NOTE 1 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.;

– subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

NOTE 2 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.

p NOTE 3 In this document, p is used in the margin to indicate instructions for preparing a consolidated version.

The essential safety requirements in AS/NZS 3820[1] that could be applicable to household and similar electrical appliances are covered by this standard taken in conjunction with any other relevant requirements affecting safety.

The national variations to IEC 60335-1 Ed 6 form the Australian and New Zealand national variations for purposes of the IECEE scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

[1] AS/NZS 3820 *Essential safety requirements for electrical equipment*

The text of the International Standard IEC 60335-1 Ed 6 was approved as a joint Australia/New Zealand Standard with the agreed national variations as given below.

AUSTRALIAN NATIONAL VARIATIONS

CLAUSE

p 5.2 *Add* the following variation:

If the tests of AZ.22.201 need to be performed they are carried out on separate appliances, the number of appliances is that required by AS/NZS 3112.

p 5.8.1 *Replace* with the following variation:

5.8.1 *Appliances for AC only are tested with AC at 50 Hz, and those for AC and DC are tested at AC 50 Hz or DC whichever is the more unfavourable supply.*

p AU.5.201 After Clause 5.19 *add* the following variation:

AU.5.201 *For appliances, other than **class III appliances**, that are intended for connection to the supply mains*

- *for single phase appliances, if marked with a **rated voltage** of either "230 V" or "240 V" test:*
  - *at the multiplication factor (of less than 1) × 230 V; and*
  - *at the multiplication factor (of greater than 1) × 240 V;*
- *for multi-phase appliances, if marked with a **rated voltage** of either "400 V" or "415 V" test:*
  - *at the multiplication factor (of less than 1) × 400 V; and*
  - *at the multiplication factor (of greater than 1) × 415 V;*
- *If marked with a **rated voltage range** then test:*
  - *at the multiplication factor (of less than 1) × the lower extremity of the **rated voltage range**; and*
  - *at the multiplication factor (of greater than 1) × the higher extremity of the **rated voltage range**; or*
  - *at the worst case voltage within the **rated voltage range**.*

NOTE 1 Example of calculation

The appliance is marked with a **rated current** or **rated power input** at 230 V only and so will need a calculation to determine the rated values at the upper value of **rated voltage** of 240V. If the appliance is marked with a **rated voltage** of 230 V and a **rated current** "A" or a **rated power input** "P", then for the upper limit voltage testing at 240V it will be tested as if it is marked with a **rated voltage** of 240 V and a **rated current** of A × (240/230) or a **rated power input** of P × $(240/230)^2$.

The appliance is marked with a **rated current** or **rated power input** at 240 V only and so will need a calculation to determine the rated values at the lower value of **rated voltage** of 230 V. If the appliance is marked with a **rated voltage** of 240 V and a **rated current** "A" or a **rated power input** "P", then for the lower limit voltage testing at 230 V it will be tested as if it is marked with a **rated voltage** of 230 V and a **rated current** of A × (230/240) or a **rated power input** of P × $(230/240)^2$.

p 6.1 *Replace* the requirement with the following variation:

Appliances shall be of one of the following classes with respect to protection against electric shock:

class I, **class II**, **class III**.

p 7.1 After the first paragraph of the requirement *insert* the following variation:

Appliances intended for connection to the supply mains, other than **class III appliances**, shall be marked with

– a **rated voltage** of at least:

- 230 V for single-phase appliances;
- 400 V for multi-phase appliances.

or

– a **rated voltage range** that includes:

- 230 V for single-phase appliances;
- 400 V for multi-phase appliances.

p 7.8 *Replace* the first dashed item of the requirement with the following variation:

– in **class I appliances** incorporating tubular sheathed or embedded heating elements or appliance outlets complying with the standard sheets in IEC 60320-3 accessible to the user or socket-outlets accessible to the user the terminal for the neutral conductor shall be indicated by the letter N;

p 7.13 *Replace* the requirement with the following variation:

Instructions and other text required by this standard shall be written in English.

p 22.2 *Add* the following variation:

For appliances used in a system with polarized plugs intended for connection to polarized socket-outlets, single-pole **protective devices** that disconnect heating elements from the supply mains in single-phase, **class I appliances** shall be connected to the line (active) conductor.

p 22.3 *Replace* the text with the following variation:

VOID

p 22.61 *Add* the following variation:

The socket outlets shall

– comply with AS/NZS 3112;

– accept a 3-pin, flat-pin plug as described in Figure 2.1(a1) of AS/NZS 3112.

p 22.62 After Clause 22.62 *add* the following variation:

AZ.22.201 Appliances having integral pins for insertion into socket-outlets shall comply with the appropriate requirements of AS/NZS 3112.

Compliance is checked as specified in Appendix J of AS/NZS 3112

p 24.1 Before Note 1, *insert* the following variation.

NOTE 201 The relevant IEC standard may be replaced with the relevant Australia/New Zealand standard where applicable.

p 24.1.7 *Add the following variation to the test specification:*

Telecommunication interface circuitry must comply with the Telecom Labelling Notice issued under the Telecommunications Act instead of IEC 62151.

NOTE 201 The Telecommunications Act is administered by the Australian Media and Communications Authority.

p 25.1 After the requirement *insert* the following variation.

Supply cords for single-phase appliances having a rating including but not exceeding 20 A, other than those intended to be permanently connected to fixed wiring, shall be fitted with an appropriate plug complying with:

– AS/NZS 3112, household appliances; or

– AS/NZS 3112, AS/NZS 3123 or IEC 60309 for commercial and industrial appliances.

p Table 11 In footnote *a insert* the following variation:

However, they cannot be used in **class I appliances**.

p 30.1 *Insert* the following variation.

For circuit breakers used for compliance with 22.61, the test on external parts and parts supporting **live parts** is carried out at a temperature of 40 °C ± 2 °C plus the maximum temperature rise determined during the test of Clause 11 but it shall be at least 160 °C.

NEW ZEALAND NATIONAL VARIATIONS

p 5.2 *Add* the following variation:

If the tests of AZ.22.201 need to be performed they are carried out on separate appliances, the number of appliances is that required by AS/NZS 3112.

p 5.8.1 *Replace* with the following variation:

5.8.1 *Appliances for AC only are tested with AC at 50 Hz, and those for AC and DC are tested at AC 50 Hz or DC whichever is the more unfavourable supply.*

p NZ.5.201 After Clause 5.19 *add* the following variation:

NZ.5.201 *For appliances, other than **Class III appliances**, that are intended for connection to the low voltage supply mains, and having more than one **rated voltage** or **rated voltage range**, all tests shall be carried out at a **rated voltage** of 230 V (single phase) or 400 V (multi-phase).*

p 6.1 *Replace* the requirement with the following variation:

Appliances shall be of one of the following classes with respect to protection against electric shock:

class I, **class II**, **class III**.

p 7.1 After the first paragraph of the requirement *insert* the following variation:

Appliances intended for connection to the supply mains, other than **class III appliances**, shall be marked with

– a **rated voltage** of:

- 230 V for single-phase appliances;
- 400 V for multi-phase appliances.

or

– a **rated voltage range** that includes:

- 230 V for single-phase appliances;
- 400 V for multi-phase appliances.

p 7.8 *Replace* the first dashed item of the requirement with the following variation:

– in **class I appliances** incorporating tubular sheathed or embedded heating elements or appliance outlets complying with the standard sheets in IEC 60320-3 accessible to the user or socket-outlets accessible to the user the terminal for the neutral conductor shall be indicated by the letter N;

p 7.13 *Replace* the requirement with the following variation:

Instructions and other text required by this standard shall be written in English.

p 22.2 *Add* the following variation:

For appliances used in a system with polarized plugs intended for connection to polarized socket-outlets, single-pole **protective devices** that disconnect heating elements from the supply mains in single-phase, **class I appliances** shall be connected to the line (active) conductor.

p 22.3 *Replace* the text with the following variation:

VOID

p 22.61 *Add* the following variation:

The socket-outlets shall

– comply with AS/NZS 3112;
– accept a 3-pin, flat-pin plug as described in Figure 2.1(a1) of AS/NZS 3112.

p 22.62 After Clause 22.62 *add* the following variations:

AZ.22.201 Appliances having integral pins for insertion into socket-outlets shall comply with the appropriate requirements of AS/NZS 3112.

Compliance is checked as specified in Appendix J of AS/NZS 3112

p 24.1 Before Note 1, *insert* the following variation.

NOTE 201 The relevant IEC standard may be replaced with the relevant Australia/New Zealand standard where applicable.

p 25.1 After the requirement *insert* the following variation.

Supply cords for single-phase appliances having a rating including but not exceeding 20 A, other than those intended to be permanently connected to fixed wiring, shall be fitted with an appropriate plug complying with:

– AS/NZS 3112, household appliances; or

– AS/NZS 3112, AS/NZS 3123 or IEC 60309-1 for commercial and industrial appliances.

p Table 11 In footnote *a insert* the following variation:

However, they cannot be used in **class I appliances**.