

Australian/New Zealand Standard™

Safety of power transformers, power supply units and similar

Part 1: General requirements and tests (IEC 61558-1 Ed 1.1, MOD)



AS/NZS 61558.1:2000

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. It was approved on behalf of the Council of Standards Australia on 19 October 2000 and on behalf of the Council of Standards New Zealand on 27 October 2000.

This Standard was published on 27 December 2000.

The following are represented on Committee EL-002:

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Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Canterbury Manufacturers Association New Zealand
Consumer Electronic Suppliers Association, Australia
Electrical regulatory authorities, Australia
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Safety of power transformers, power supply units and similar

Part 1: General requirements and tests (IEC 61558-1 Ed 1.1, MOD)

Originated, in part, in Australia as AS C126—1939.
Second edition C126—1958.
Revised and redesignated AS 3126—1981 (withdrawn 1989).
Originated, in part, in Australia as AS C167—1962.
Revised and redesignated AS 3167—1981 (withdrawn 1987).
AS 3126—1981 and AS 3167—1981 were revised and redesignated AS 3108.1-1984,
AS 3108.2—1984 and AS 3108.3—1984.
First published in New Zealand as NZS/AS 3108:1990.
Jointly revised and redesignated AS/NZS 3108:1994.
Jointly revised and redesignated, in part, as AS/NZS 61558.1:2000.
Reissued incorporating Amendment No. 1 (November 2001).
Reissued incorporating Amendment No. 2 (May 2004).
Reissued incorporating Amendment No. 3 (October 2004).
Reissued incorporating Amendment No. 4 (November 2005).
Reissued incorporating Amendment No. 5 (October 2006).
Reissued incorporating Amendment No. 6 (November 2007).

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Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 3685 8

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STANDARDS AUSTRALIA / STANDARDS NEW ZEALAND

SAFETY OF POWER TRANSFORMERS, POWER SUPPLY UNITS AND SIMILAR PRODUCTS –

Part 1: General requirements and tests

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 Chapter 1 General requirements of AS/NZS 3108:1994, *Approval and test specification—Particular requirements for isolating transformers and safety isolating transformers*, two years from publication of the relevant Part 2. During this period it is anticipated that regulatory authorities will approve power transformers and power supplies to either Standard.

A6 | This Standard incorporates Amendment No. 1 (November 2001), Amendment No. 2 (May 2004), Amendment No. 3 (October 2004), Amendment No. 4 (November 2005), Amendment No. 5 (October 2006) and Amendment No. 6 (November 2007). The changes required by the amendments are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected. Where an application date other than immediate is applicable to an amendment the date of application (DOA) is indicated by the marginal bar against the part affected.

The objective of this Standard is to provide manufacturers and regulatory bodies with minimum safety requirements, designed to give user protection against hazards that might occur during normal operation and abnormal operation of power transformers, power supplies or similar and which may be used as the basis for approval for sale or for connection to supply in Australia and New Zealand.

This Standard forms the first edition of AS/NZS 61558, *Safety of power transformers, power supplies and similar, Part 1: General requirements and tests*. This Standard has been varied as indicated to take account of Australian and New Zealand conditions. This Standard, referred to as Part 1, is to be used in conjunction with the appropriate Part 2, which contains clauses that supplement or modify the corresponding clauses in Part 1, to provide the relevant requirements for each type of product.

This Standard is an adoption with national modifications and contains the full text of IEC 61558-1, *Safety of power transformers, power supply units and similar — Part 1: General requirements and tests* Edition 1.1 and its Interpretation sheet IS 01 (December 2003).

Where a particular subclause of part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this Standard states "addition", "modification" or "replacement", the relevant text in part 1 is to be adapted accordingly.

NOTE 1 Subclauses, notes, tables and figures which are additional to those in part 1 are numbered starting from 101. Annexes, which are additional to those in part 1 are lettered AA, BB, etc.

Annex ZZ is for information only.

NOTE 2 In this Standard the following print types are used:

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

Words **in bold** in the text are defined in clause 3.

Variations to IEC 61558-1 Ed 1.1 are indicated at the appropriate places throughout this Standard. Strikethrough (~~example~~) identifies IEC tables, figures and passages of text which, for the purposes of this Standard, are deleted. Where tables, figures and passages of text are added, each is set in its proper place and identified by shading (~~example~~). Added figures are not themselves shaded but are identified by a shaded border. The variations are listed in Annex ZZ of this Standard for easy reference. The variations also form the Australian national variations for purposes of the IEC scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

Annexes A, B, C, D, E, F, G, H, J, K and ZZ form an integral part of this standard. Annexes L, M, N, P, Q, R, S, T, U and V are for information only.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex to which they apply. A 'normative' annex is an integral part of a Standard, whereas an 'informative' annex is only for information and guidance.

As this Standard is reproduced from an International Standard, the following applies:

- a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- b) In the source text 'this standard' should read 'this Australian/New Zealand Standard'.
- c) A full point should be substituted for a comma when referring to a decimal marker.
- d) French text on figures should be ignored.

The requirements in this Standard take into account, as far as possible, the standards and codes of practice that form the wiring rules in Australia and New Zealand, so that an appliance may be installed in accordance with those wiring rules.

The numbering of clauses, subclauses, notes, tables, figures and annexes follows that of IEC 61558-1 Ed 1.1. To allow for the introduction of additional material by the IEC, the numbers 1 to 100 have been reserved. Clauses numbered from 101 are used by the IEC to add to the body of the Standard by annexes. To allow for additional material to be introduced by Australia and New Zealand, the numbers 201 to 300 are used to number further clauses, subclauses, notes, tables and figures in this Standard.

This scheme has been introduced to reduce the likelihood of the IEC and Australia or New Zealand using the same clause or figure number for differing requirements. The use of the word VOID indicates that the IEC requirement is not used in Australia or New Zealand. The word is also used where the deletion of a particular requirement such as a Table would lead to the consequential renumbering of references within the body of the Standard and succeeding tables. Where Australia and New Zealand have added a requirement or made a change to a particular clause of IEC 61558-1 that clause number remains unchanged. The normative references are reformatted to indicate the Australia/New Zealand standard or Australian standard that is equivalent to the IEC standard or ISO standard to which reference is made.

STANDARDS AUSTRALIA / STANDARDS NEW ZEALAND

SAFETY OF POWER TRANSFORMERS, POWER SUPPLY UNITS AND SIMILAR PRODUCTS –

Part 1: General requirements and tests

1 Scope

1.1 This International Standard deals with all aspects of safety (such as electrical, thermal and mechanical) of:

- a) **Stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced) **isolating** and **safety isolating transformers, associated** or otherwise, having a **rated supply voltage** not exceeding 1 000 V a.c. and **rated frequency** not exceeding 1 MHz, the **rated output** not exceeding the following values.

NOTE 1 – For higher frequencies, this standard may be used as a guidance document.

For **isolating transformers**:

- 25 kVA for single-phase transformers;
- 40 kVA for polyphase transformers.

For **safety isolating transformers**:

- 10 kVA for single-phase transformers;
- 16 kVA for polyphase transformers.

The **no-load** output voltage and **rated output voltage** do not exceed:

- for **isolating transformers** 500 V a.c. or 708 V ripple free d.c.

NOTE 2 – For **isolating transformers**, the no-load **rated output voltage** may be up to 1 000 V a.c. or 1 415 V ripple free d.c. to be in accordance with the national wiring rules or for special purposes.

- for **safety isolating transformers** 50 V a.c. r.m.s. and/or 120 V ripple free d.c. between conductors or between any conductor and earth.

NOTE 3 – **Isolating** and **safety isolating transformers** are used where **double** or **reinforced insulation** between circuits is required by the installation rules or by the appliance specification (for example toys, bells, portable **tools**, handlamps).

Rated values for each type of transformer are indicated in the relevant part 2.

- b) **Stationary** or **portable**, single-phase or polyphase, air-cooled (natural or forced) **separating transformers**, auto-transformers, variable transformers and small reactors, associated or not, having a **rated supply voltage** not exceeding 1 000 V a.c., a **rated frequency** not exceeding 1 MHz, a rated no-load or load output voltage not exceeding 15 kV a.c. or d.c., and for **independent transformers** not less than 50 V a.c. and/or 120 V ripple free d.c. and a **rated output** not exceeding the following values:

- 1 kVA for single-phase transformers;
- 2 kVAR for single-phase reactors;
- 5 kVA for polyphase transformers;
- 10 kVAR for polyphase reactors;

unless otherwise specified in the relevant part 2.