

# Australian/New Zealand Standard™

## Power transformers

### Part 1: General (IEC 60076-1, Ed. 3.0 (2011) MOD)



## **AS/NZS 60076.1:2014**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-008, Power Transformers. It was approved on behalf of the Council of Standards Australia on 9 May 2014 and on behalf of the Council of Standards New Zealand on 7 February 2014.

This Standard was published on 10 June 2014.

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The following are represented on Committee EL-008:

Australasian Railway Association  
Australian Chamber of Commerce and Industry  
Australian Industry Group  
Department of Industry  
Electricity Engineers Association, New Zealand  
Energy Efficiency and Conservation Authority of New Zealand  
Energy Networks Association  
Engineers Australia  
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### Part 1: General (IEC 60076-1, Ed. 3.0 (2011) MOD)

Originated in Australia as part of AS C61—1931.  
Previous edition AS 60076.1—2005.  
Jointly revised and designated as AS/NZS 60076.1:2014.

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-008, Power Transformers, to supersede AS 60076.1—2005, *Power transformers, Part 1: General (IEC 60076-1, Ed. 2.1 (2000) MOD)*.

The objective of this Standard is to provide manufacturers, suppliers, test laboratories, purchasers and users of power transformers with general requirements for three-phase and single-phase transformers. The exceptions are some small and special purpose transformers.

This Standard is an adoption with national modifications. It has been reproduced from IEC 60076-1, Ed. 3.0 (2011), *Power transformers, Part 1: General*, and has been varied as indicated to take account of Australian/New Zealand conditions.

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

- (a) Addition of a definition of harmonic content.
- (b) Addition of a subclause on transport.
- (c) Addition of functional method of specification.
- (d) Addition of connection symbols for single-phase transformers.
- (e) Addition of safety and environmental requirements.
- (f) Addition of requirements for liquid preservation systems.
- (g) Addition of a clause on DC currents.
- (h) Addition of vacuum, pressure and leak tests on tanks.
- (i) The requirements formerly in Annex A are now incorporated in the text and Annex A is now an informative checklist.
- (j) Informative annexes have been added on facilities for condition monitoring and environmental and safety considerations.

This Standard is structured as follows:

- (i) Preface.
- (ii) IEC 60076-1, Ed. 3.0 (2011) (unedited from the contents page to the final clause of the source document).
- (iii) Appendix ZZ—(Australian/New Zealand) variations to the source document.
- (iv) Appendices ZA and ZB—for Australia/New Zealand.

This Standard is Part 1 of the AS/NZS 60076 series which is progressively replacing the AS 2374 series. This series will consist of adoptions, with national modifications when necessary, of the IEC 60076 series on power transformers.

The variations listed in Appendix ZZ address issues, including the following:

- (A) Definition and details of T-T connected transformers.
- (B) Clarification to the type testing scope for Australian/New Zealand conditions.
- (C) Clarification of the scope and limitations for sound level to ensure consistency with AS/NZS 60076.10, which includes the required maximum sound levels.
- (D) Additional items to appear on the rating plate to suit Australian/New Zealand conditions and practices.
- (E) Additional safety considerations to suit Australian/New Zealand conditions and practices.
- (F) Additional special information items for order/enquiry to suit Australian/New Zealand conditions and practices.

The variations described in Appendix ZZ form the Australian/New Zealand variations for the purposes of the IEC CB Scheme for recognition of testing to standards for safety of electrical equipment.

Table 6.1 of AS 2067 (minimum values for separating outdoor transformers) was consulted during the preparation of this Standard, with respect to liquid volumes contained in outdoor transformers.

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

- (1) In the source text ‘this part of IEC 60076’ should read ‘this Australian/New Zealand Standard’.
- (2) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>	<i>Australian/New Zealand Standard</i>
IEC	AS/NZS
60076 Power transformers	60076 Power transformers
60076-2 Part 2: Temperature rise for liquid-immersed transformers	60076.2 Part 2: Temperature rise for liquid-immersed transformers
60076-3 Part 3: Insulation levels, dielectric tests and external clearances in air	60076.3 Part 3: Insulation levels, dielectric tests and external clearances in air (IEC 60076-3, Ed. 2 (2000) MOD)
60076-5 Part 5: Ability to withstand short circuit	60076.5 Part 5: Ability to withstand short circuit (IEC 60076-5, Ed. 3.0 (2006) MOD)
60076-6 Part 6: Reactors	60076.6 Part 6: Reactors
60076-7 Part 7: Loading guide for oil-immersed power transformers	60076.7 Part 7: Loading guide for oil-immersed power transformers
	AS
60076-8 Part 8: Application guide	2374.8 Part 8: Application guide
	AS/NZS
60076-10 Part 10: Determination of sound levels	60076.10 Part 10: Determination of sound levels
	AS
60076-11 Part 11: Dry-type transformers	60076.11 Part 11: Dry-type transformers
	AS/NZS
60137 Insulated bushings for alternating voltages above 1 000 V	60137 Insulated bushings for alternating voltages above 1000 V (IEC 60137, Ed. 5.0 (2003) MOD)
	AS
60214 Tap-changers	60214 Tap-changers
60214-1 Part 1: Performance requirements and test methods	60214.1 Part 1: Performance requirements and test methods
	1767 Insulating liquids
60296 Fluids for electrotechnical applications—Unused mineral insulating oils for transformers and switchgear	1767.1 Part 1: Specification for unused mineral insulating oils for transformers and switchgear

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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

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