Australian Standard™

Power transformers

Part 8: Application guide

Standards Australia

This Australian Standard was prepared by Committee EL/8, Power Transformers. It was approved on behalf of the Council of Standards Australia on 10 April 2000 and published on 5 June 2000.

The following interests are represented on Committee EL/8:

Australasian Railway Association

Australian Chamber of Commerce and Industry

Australian Electrical and Electronic Manufacturers Association

Australian Institute of Petroleum

Electric Energy Society of Australia

Electricity Supply Association of Australia

Institution of Engineers Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee EL/8, Power transformers, to supersede AS 2421—1981, *Guide to the selection and use of power transformers*.

The objective of this Standard is to provide owners and intending purchasers of transformers with guidance relating to the appropriate application of various types of transformers complying with the AS 2374 series of Standards in order to facilitate the matching of appropriate transformers with applications.

This Standard is a modified adoption of International Standard IEC 60076-8:1997, Power transformers—Application guide. The international committee responsible for this Standard is Technical Committee 14, Power Transformers.

As per the World Trade Organisation's Agreement on Technical Barriers to Trade, modifications for the prevention of deceptive practices have been made to IEC 60076-8 and indicated at appropriate places throughout this Standard.

Strikethrough (~~example~~) identifies IEC tables, figures and passages of text which, for the purposes of this Australian Standard, are deleted. Where Australian tables, figures or 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.

In January 1997, the IEC commenced numbering its Standards from 60000 by adding 60000 to the number of each existing Standard. This coordinates IEC numbering with ISO numbering. During the transition period an IEC Standard might be identified by its new number or its old number (for example, IEC 60050 or IEC 50).

In this Standard, the following print types are used:

– requirements proper: in arial type;

– *test specifications: in italic type;*

– explanatory matter: in smaller arial type.

A reference to an International Standard identified in the Normative References Clause by strikethrough (~~example~~) is replaced by a reference to the Australian or Australian/New Zealand Standard(s) listed immediately thereafter and identified by shading (example). Where the struck-through referenced document and the referenced Australian or Australian/New Zealand Standard are identical, this is indicated in parenthesis after the title of the latter.

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 Standard'.

(c) A full point should be substituted for a comma when referring to A decimal marker.

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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Any IEC table, figure or passage of text that is struckthrough is not part of this Standard. Any Australian table, figure or passage of text that is added (and identified by shading) is part of this Standard.

1 General

1.1 Scope and object

This Standard applies to power transformers complying with the series of publications IEC 60076.

It is intended to provide information to users about:

– certain fundamental service characteristics of different transformer connections and magnetic circuit designs, with particular reference to zero-sequence phenomena;

– system fault currents in transformers with YNynd and similar connections;

– parallel operation of transformers, calculation of voltage drop or rise under load, and calculation of load loss for three-winding load combinations;

– selection of rated quantities and tapping quantities at the time of purchase, based on prospective loading cases;

– application of transformers of conventional design to convertor loading;

– measuring technique and accuracy in loss measurement.

Part of the information is of a general nature and applicable to all sizes of power transformers. Several chapters, however, deal with aspects and problems which are of the interest only for the specification and utilization of large high-voltage units.

The recommendations are not mandatory and do not in themselves constitute specification requirements.

Information concerning loadability of power transformers is given in IEC 60354, for oil-immersed transformers, and IEC 60905, for dry-type transformers.

Guidance for impulse testing of power transformers is given in IEC 60722.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.