AS 62271.100—2005

Australian Standard™

High-voltage switchgear and controlgear
Part 100: High-voltage alternating-current circuit-breakers
(IEC 62271-100, Ed. 1.1 (2003) MOD)

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL-007, Power Switchgear. It was approved on behalf of the Council of Standards Australia on 15 March 2005. This Standard was published on 27 May 2005.

The following are represented on Committee EL-007:

Australian British Chamber of Commerce
Australian Electrical and Electronic Manufacturers Association
Energy Networks Association
Engineers Australia
Testing interests (Australia)

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-007, Power Switchgear to supersede AS 2006—1986.

The objective of this Standard is to provide requirements for a.c circuit breakers designed for indoor and outdoor service for operation on systems with frequencies up to 60 Hz and voltages higher than 1000 V.

This Standard is an adoption with national modifications and has been reproduced from IEC 62271-100, Ed. 1.1 (2003), *High-voltage switchgear and controlgear – Part 100: High-voltage alternating-current circuit-breakers*, and has been varied as indicated to take account of Australian conditions.

Variations to IEC 62271-100, Ed. 1.1 (2003) are indicated at the appropriate place throughout this standard. Strikethrough (~~example~~) identifies IEC text, tables and figures which, for the purposes of this Australian Standard, are deleted. Where text, tables or figures 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.

Common numbering of standards falling under the responsibility of EL-007

In accordance with the decision taken by the committee EL-007 a common numbering system will be established in order to align the numbering of Australian Standards falling under the responsibility of EL-007 with IEC standards. All high-voltage switchgear and controlgear Standards will, at their next revision (or as equivalent Standards become available in IEC), become parts of the AS 62271 (High-voltage switchgear and controlgear) series. The table below gives the relationship between future numbering and existing Standard numbers. Standards current at the time of publication of this Standard are marked with an asterick (*).

AS 62271 Series	High-voltage switchgear and controlgear	Old AS Number
1	Common specifications	*AS 2650
100*	High-voltage alternating current circuit-breakers	AS 2006
102*	Alternating current disconnectors and earthing switches	AS 1306
103	Switches for rated voltages above 1 kV and less than 52 kV	*AS/NZS 60265.1
104	Switches for rated voltages of 52 kV and above	*AS 60265.2
106	Alternating current contactors and contactor based motor-starters	*AS 2024
110	Inductive load switching	*AS 4372
200*	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	AS 2086
201	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV up to and including 38 kV	*AS 2264
202	High-voltage/low voltage prefabricated substations	*AS 61330
203*	Gas-insulated metal enclosed switchgear for rated voltages above 52 kV	AS 2263
301*	Dimensional standardization of terminals	AS 2395

AS 62271 Series	High-voltage switchgear and controlgear	Old AS Number
303	Use and handling of sulphur hexafluoride (SF_6) in high-voltage switchgear and controlgear	*AS 2791
304	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	*AS 4243

This Standard differs from the Standard it supersedes in the following major areas:

(a) Representation of TRV (clause 4.102.2) items a), b) and c) of have been replaced.

(b) Standard values of TRV related to the rated short-circuit breaking current (clause 4.102.3) in the second paragraph has been replaced.

(c) Tables 1b and 1c have been updated and an additional table 1d has been added.

(d) Table 2 has been replaced.

(e) Transient recovery voltage (TRV) for breaking tests (the clause and its subclauses 6.104.5.1 through 6.104.5.5) have been replaced.

(f) Table 14 has been replaced by tables 14a and 14b.

(g) Basic short-circuit test-duties (subclauses 6.106.1 through 6.106.4) have been updated.

(h) Table 16 'TRV parameters for single-phase and double earth fault test' has been replaced.

(i) Figures 10, 39, 41, 42 and 43 have been updated.

(j) Appendices are now called Annexes in keeping with the latest style.

(k) Annex ZA 'Items subject to agreement between the manufacturer and user' has been added.

(l) References have been updated.

This Standard shall be read in conjunction with AS 2650, which is applicable unless otherwise specified in this Standard. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in AS 2650. Amendments to these clauses and subclauses are given under the same references whilst additional subclauses are numbered from 101.

Australian variations include calculations for a short-line fault test; and an Australian Annex ZA listing items to be agreed between the purchaser and the user.

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

(i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(ii) In the source text 'this international standard' should read 'this Australian Standard'.

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

(iv) Any French text on figures should be ignored.

The terms 'normative' and 'informative' are used 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.

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Any table, figure or text of the international standard that is struck through is not part of this standard. Any Australian table, figure or text that is added is part of this standard and is identified by shading.

1 General

1.1 Scope

This International Standard is applicable to a.c. circuit-breakers designed for indoor or outdoor installation and for operation at frequencies of 50 Hz and 60 Hz on systems having voltages above 1 000 V.

It is only applicable to three-pole circuit-breakers for use in three-phase systems and single-pole circuit-breakers for use in single-phase systems. Two-pole circuit-breakers for use in single-phase systems and application at frequencies lower than 50 Hz are subject to agreement between manufacturer and user.

This standard is also applicable to the operating devices of circuit-breakers and to their auxiliary equipment. However, a circuit-breaker with a closing mechanism for dependent manual operation is not covered by this standard, as a rated short-circuit making-current cannot be specified, and such dependent manual operation may be objectionable because of safety considerations.

This standard does not cover circuit-breakers intended for use on motive power units of electrical traction equipment; these are covered by IEC 60077 [4][1)].

Generator circuit-breakers installed between generator and step-up transformer are not within the scope of this standard.

Switching of inductive loads is covered by IEC 61233.

Circuit-breakers with an intentional non-simultaneity between the poles, with the exception of circuit-breakers providing single-pole auto-reclosing, are not within the scope of this standard.

This standard does not cover self-tripping circuit-breakers with mechanical tripping devices or devices which cannot be made inoperative.

By-pass circuit-breakers installed in parallel with line series capacitors and their protective equipment are not within the scope of this standard, these are covered by IEC 60143-2 [6].

NOTE Tests to prove the performance under abnormal conditions should be subject to agreement between manufacturer and user. Such abnormal conditions are, for instance, cases where the voltage is higher than the rated voltage of the circuit-breaker, conditions which may occur due to sudden loss of load on long lines or cables.

1) Figures in square brackets refer to the bibliography.