AS 62271.100:2019

Australian STANDARD®

High-voltage switchgear and controlgear

Part 100: Alternating-current circuit-breakers (IEC 62271-100:2008+AMD1:2012+AMD2:2017 CSV (ED. 2.2)/COR1:2018, MOD)

STANDARDS Australia

AS 62271.100:2019

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Australian Industry Group
Energy Networks Australia
Engineers Australia
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Part 100: Alternating-current circuit-breakers (IEC 62271-100:2008+AMD1:2012+AMD2:2017 CSV (ED. 2.2)/COR1:2018, MOD)

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Preface

This Standard was prepared by the Standards Australia Committee EL-007, Power Switchgear, to supersede AS 62271.100—2008, *High-voltage switchgear and controlgear, Part 100: High-voltage alternating-current circuit-breakers (IEC 62271-100, Ed. 1.2 (2006) MOD)*.

The objective of this Standard is to specify the applications of 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.

This Standard is only applicable to the following:

(a) Three-pole circuit-breakers for use in three-phase systems and single-pole circuit-breakers for use in single-phase systems.

(b) Operating devices of circuit-breakers and to their auxiliary equipment.

(c) Direct testing.

(d) Rules for circuit-breakers with an intentional non-simultaneity between the poles.

(e) Circuit-breakers providing single-pole auto-reclosing.

This Standard does not cover the following:

(i) Circuit-breaker with a closing mechanism for dependent manual operation.

(ii) Circuit-breakers intended for use on motive power units of electrical traction equipment.

(iii) Generator circuit-breakers installed between generator and step-up transformer.

(iv) Self-tripping circuit-breakers with tripping devices that cannot be made inoperative during testing.

(v) Circuit-breakers installed as by-pass switches in parallel with line series capacitors and their protective equipment.

This Standard is an adoption with national modifications, and has been reproduced from, IEC 62271-100:2008+AMD1:2012+AMD2:2017 CSV (ED. 2.2), *High-voltage switchgear and controlgear — Part 100: Alternating-current circuit-breakers* and its Corrigendum 1 (2018). The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to IEC 62271-100:2008+AMD1:2012+AMD2:2017 CSV (ED. 2.2)/COR1: 2018 for the application of this Standard in Australia.

As this document has been reproduced from an International Standard, the following applies:

(A) In the source text “this part of IEC 62271” should read “this Australian Standard”.

(B) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 100: Alternating-current circuit-breakers

FOREWORD

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DISCLAIMER
This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of IEC 62271-100 bears the edition number 2.2. It consists of the second edition (2008-04) [documents 17A/815/FDIS and 17A/822/RVD], its amendment 1 (2012-09) [documents 17A/1009/FDIS and 17A/1019/RVD] and its amendment 2 (2017-06) [documents 17A/1135/FDIS and 17A/1139/RVD]. The technical content is identical to the base edition and its amendments.

This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.

International Standard IEC 62271-100 has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

The main changes with respect to the previous edition are listed below:

– the introduction of harmonised (IEC and IEEE) TRV waveshapes for rated voltages of 100 kV and above (amendment 1 to the first edition);
– the introduction of cable and line systems with their associated TRVs for rated voltages below 100 kV (amendment 2 to the first edition);
– the inclusion of IEC 61633 and IEC 62271-308.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard shall be read in conjunction with IEC 62271-1, first edition, published in 2007, to which it refers and 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 IEC 62271-1. Amendments to these clauses and subclauses are given under the same references whilst additional subclauses are numbered from 101.

A list of all parts of IEC 62271 series, under the general title *High-voltage switchgear and controlgear* can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The contents of the corrigenda of Amendment 1 (2012-12) and Amendment 2 (2018-01) have been included in this copy.

IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

INTRODUCTION to the Amendment 2

This amendment includes the following significant technical changes:

the rated TRV has been replaced by a rated first-pole-to-clear factor;

- the rated time quantities have been moved to Clause 5 (Design and construction) and are no longer ratings. The determination of the break time has been moved to IEC 62271-306;
- the number of test specimens has been removed;
- new test procedure for test-duty T100a;
- TRVs for circuit-breakers having a rated voltage of 52 kV and below used in effectively earthed neutral systems have been added;
- 6.111 (capacitive current switching) has been rewritten;
- a number of informative annexes have been moved to IEC TR 62271-306.

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 100: Alternating-current circuit-breakers

1 General

1.1 Scope

This part of IEC 62271 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 only covers direct testing.

Rules for circuit-breakers with an intentional non-simultaneity between the poles are under consideration; circuit-breakers providing single-pole auto-reclosing are within the scope of this standard.

NOTE 1 Circuit-breakers with an intentional non-simultaneity between the poles may, in some instances, be tested in accordance with this standard. For example, mechanically staggered pole designs can be tested according to this standard using three-phase direct tests. For synthetic testing, determining the most appropriate tests, particularly in respect to test current, recovery voltage and transient recovery voltage, is subject to agreement between manufacturer and user.

This standard does not cover circuit-breakers intended for use on motive power units of electrical traction equipment; these are covered by IEC 60077 [1][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 62271-110.

This standard does not cover self-tripping circuit-breakers with tripping devices that cannot be made inoperative during testing.

Circuit-breakers installed as by-pass switches in parallel with line series capacitors and their protective equipment are not within the scope of this standard. These are covered by IEC 62271-109 [2] and IEC 60143-2 [3].

NOTE 2 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.

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1 Figures in square brackets refer to the bibliography.