

Australian/New Zealand Standard™

**Low-voltage switchgear and controlgear
Part 2: Circuit-breakers**

AS/NZS 3947.2:2002

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-006, Industrial Switchgear and Controlgear. It was approved on behalf of the Council of Standards Australia on 24 September 2002 and on behalf of the Council of Standards New Zealand on 17 September 2002. It was published on 7 November 2002.

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Australian/New Zealand Standard™

Low-voltage switchgear and controlgear Part 2: Circuit-breakers

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-006, Industrial Switchgear and Controlgear to supersede AS 3947.2—1997 and its Amendment 1:2001.

The objective of this Standard, in addition to that stated in Clause 1, is to bring Australian and New Zealand requirements into line with Consolidated edition 2.2 (2001-10) of IEC 60947-2.

This Standard is Part 2 of a series which, when complete, will consist of the following:

AS/(NZS) 3947	Low-voltage switchgear and controlgear
AS/NZS 3947.1	Part 1: General rules
AS/NZS 3947.2	Part 2: Circuit-breakers (This Standard)
AS/NZS 3947.3	Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units
AS/NZS 3947.3 Supp 1	Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units, Supplement 1: Fuse-switch-disconnectors and switch-disconnectors for use with low-voltage aerial bundled cables
AS/NZS 3947.4.1	Part 4.1: Contactors and motor-starters—Electromechanical contactors and motor-starters
AS/NZS 3947.4.2	Part 4.2: Contactors and motor-starters—A.C. semiconductor motor controllers and starters
AS/NZS 3947.4.3	Part 4.3: Contactors and motor-starters—A.C. semiconductor controllers and contactors for non-motor loads
AS/NZS 3947.5.1	Part 5.1: Control circuit devices and switching elements—Electromechanical control circuit devices
AS/NZS 3947.5.2	Part 5.2: Control circuit devices and switching elements—Proximity switches
AS/NZS 3947.5.3	Part 5.3: Control circuit devices and switching elements—Requirements for proximity devices with defined behaviour under fault conditions
AS/NZS 3947.5.4	Part 5.4: Control circuit devices and switching elements—Methods of assessing the performance of low-energy contacts—Special tests
AS/NZS 3947.5.5	Part 5.5: Control circuit devices and switching elements—Electrical emergency stop devices with mechanical latching function
AS/NZS 3947.5.6	Part 5.6: Control circuit devices and switching elements—D.C. interface for proximity sensors and switching amplifiers (NAMUR)
AS/NZS 3947.6.1	Part 6.1: Multiple function equipment—Automatic transfer switching equipment
AS/NZS 3947.6.2	Part 6.2: Multiple function equipment—Control and protective switching devices (or equipment) (CPS)
AS/NZS 3947.7.1	Part 7.1: Ancillary equipment—Terminal blocks for copper conductors
AS 3947.7.2	Part 7.2: Ancillary equipment—Protective conductor terminal blocks for copper conductors
AS/NZS 3947.7.3	Part 7.3: Ancillary equipment—Safety requirements for terminal blocks for the reception of cartridge fuse-links

This Standard is identical with and has been reproduced from IEC 60947-2:2001, *Low-voltage switchgear and controlgear—Part 2: Circuit-breakers* which incorporates IEC 60947-2:1995 and its Amendment 1:1997 and Amendment 2:2001.

AS 2184—1985 *Low-voltage switchgear and controlgear—Moulded-case circuit-breakers for rated voltages up to and including 600 V a.c. and 250 V d.c.* will be replaced by this Standard on 5 June 2007 to allow manufacturers to adapt their range of circuit-breakers to comply with this Standard.

The provisions of AS/NZS 3947.1, *General rules* are applicable to this Standard where specifically called for. Clauses and Subclauses thus applicable, as well as tables, figures, and annexes are identified by reference to IEC 60947-1, for example Subclause 1.2.3 of IEC 60947-1, table 4 of IEC 60947-1 or annex A of IEC 60947-1. IEC 60947-1 is also referred to as Part 1.

This Standard differs from AS 3947.2-1997 in the following areas:

- (a) The Standard has been redesignated as a joint Australian/New Zealand Standard.
- (b) References listed in Clause 1.2 *Normative references* have been updated.
- (c) Clause 5.2 *Marking* has been updated.
- (d) Clause 7.1 *Constructional requirements* has been revised.
- (e) Clause 7.1.6 *Additional requirements for circuit-breakers provided with a neutral pole* has been added.
- (f) Tests of Clauses 8.3.3, 8.3.4, 8.3.5 and 8.3.6 have been added.
- (g) Annex B *Circuit-breakers incorporating residual current protection* has been updated.
- (h) Annex F *Additional test for circuit-breakers with electronic over-current protection* has been rewritten.
- (i) In Annex J *Electromagnetic compatibility (EMC)—Requirements and tests for circuit-breakers*, Table J1 has been revised.
- (j) Annex L *Circuit-breakers not fulfilling requirements for overcurrent protection* has been added.

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 Australia/New Zealand Standard’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

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.

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NOTES

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Australia/New Zealand Standard**Low-voltage switchgear and controlgear
Part 2: Circuit-breakers**

Any IEC table, figure or passage of text that is struck-through is not part of this Standard. Any Australia/New Zealand table, figure or passage of text that is added (and identified by shading) is part of this Standard.

1 General

The provisions of the general rules dealt with in IEC 60947-1 (hereinafter referred to as Part 1) are applicable to this standard, where specifically called for. Clauses and subclauses, tables, figures and appendices of the general rules thus applicable are identified by reference to Part 1, for example, 1.2.3 of Part 1, table 4 of Part 1, or annex A of Part 1.

1.1 Scope and object

This standard applies to circuit-breakers, the main contacts of which are intended to be connected to circuits, the rated voltage of which does not exceed 1 000 V a.c. or 1 500 V d.c.; it also contains additional requirements for integrally fused circuit-breakers.

It applies whatever the rated currents, the method of construction or the proposed applications of the circuit-breakers may be.

The requirements for circuit-breakers which are also intended to provide earth-leakage protection are contained in annex B.

The additional requirements for circuit-breakers with electronic over-current protection are contained in annex F.

The additional requirements for circuit-breakers for IT systems are contained in annex H.

Supplementary requirements for circuit-breakers used as direct-on-line starters are given in IEC 60947-4-1, applicable to low-voltage contactors and starters.

The requirements for circuit-breakers for the protection of wiring installations in buildings and similar applications, and designed for use by uninstructed persons, are contained in IEC 60898.

The requirements for circuit-breakers for equipment (for example electrical appliances) are contained in IEC 60934.

For certain specific applications (for example traction, rolling mills, marine service) particular or additional requirements may be necessary.

NOTE Circuit-breakers which are dealt with in this standard may be provided with devices for automatic opening under predetermined conditions other than those of over-current and undervoltage as, for example, reversal of power or current. This standard does not deal with the verification of operation under such pre-determined conditions.