Australian Standard™

Low-voltage switchgear and controlgear

Part 2: Circuit-breakers

STANDARDS AUSTRALIA

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The following are represented on Committee EL-006:

Australasian Railway Association
Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Bureau of Steel Manufacturers of Australia
Electrical Contractors Association of New Zealand
Electricity Supply Association of Australia
Independent Electrical Switchboard Manufacturers Association
Institution of Engineers Australia
Ministry of Economic Development New Zealand
National Electrical and Communications Association
Testing Interests (Australia)
WorkCover New South Wales

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-006, Industrial Switchgear and Controlgear to supersede AS/NZS 3947.2:2002.

The objective of this Standard, in addition to that stated in Clause 1, is to bring Australian requirements into line with Edition 3.0 (2003-04) of IEC 60947-2.

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

AS 60947	Low-voltage switchgear and controlgear	
AS 60947.1*	Part 1:	General rules
AS 60947.2*	Part 2:	Circuit-breakers (this Standard)
AS 60947.3	Part 3:	Switches, disconnectors, switch-disconnectors and fuse-combination units
AS 60947.3 Supp1	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 60947.4.1*	Part 4.1:	Contactors and motor-starters—Electromechanical contactors and motor-starters
AS 60947.4.2*	Part 4.2:	Contactors and motor-starters—A.C. semiconductor motor controllers and starters
AS 60947.4.3	Part 4.3:	Contactors and motor-starters—A.C. semiconductor controllers and contactors for non-motor loads
AS 60947.5.1*	Part 5.1:	Control circuit devices and switching elements—Electro-mechanical control circuit devices
AS 60947.5.2*	Part 5.2:	Control circuit devices and switching elements—Proximity switches
AS 60947.5.3	Part 5.3:	Control circuit devices and switching elements—Requirements for proximity devices with defined behaviour under fault conditions
AS 60947.5.4*	Part 5.4:	Control circuit devices and switching elements—Methods of assessing the performance of low-energy contacts–Special tests
AS 60947.5.5	Part 5.5:	Control circuit devices and switching elements—Electrical emergency stop devices with mechanical latching function
AS 60947.5.6	Part 5.6:	Control circuit devices and switching elements—D.C. interface for proximity sensors and switching amplifiers (NAMUR)
AS 60947.5.7*	Part 5.7:	Control circuit devices and switching elements—Requirements for proximity devices with analogue output
AS 60947.6.1	Part 6.1:	Multiple function equipment—Automatic transfer switching equipment
AS 60947.6.2*	Part 6.2:	Multiple function equipment—Control and protective switching devices (or equipment) (CPS)
AS 60947.7.1*	Part 7.1:	Ancillary equipment—Terminal blocks for copper conductors
AS 60947.7.2*	Part 7.2:	Ancillary equipment—Protective conductor terminal blocks for copper conductors

AS 60947.7.3*	Part 7.3:	Ancillary equipment—Safety requirements for terminal blocks for the reception of cartridge fuse-links
AS 60947.8*	Part 8:	Control units for built-in thermal protection for rotating machines

It is the intention of the Standards Australia Committee to align the numbering of this series of Standards with that of the corresponding IEC 60947 series of Standards.

Standards from the list above that are marked with an asterisk (*) are, at the time of publication of this document, available as a part of the AS 60947 series of Standards.

Standards that are not so marked remain as AS(/NZS) 3947 series Standards. Following the next amendment or revision of the corresponding IEC Standard, each of these Standards remaining in the AS(/NZS) 3947 series will be revised and renumbered as a part of the AS 60947 series.

This Standard is identical with, and has been reproduced from IEC 60947-2, Ed.3(2003), *Low voltage switchgear and controlgear—Part 2: Circuit-breakers*.

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, on which date AS 2184—1985 will be withdrawn.

However for the regulatory purpose of approval renewal to AS 3111, a test report conforming to the appropriate requirements of AS 2184 is an accepted alternative to the requirement of test sequence III, I_{cu} stated in this Standard.

This Standard differs from AS/NZS 3947.2:2002 in the following areas:

(a) References listed in Clause 1.2 *Normative references* have been updated.

(b) Clause 5.2 *Marking* has been updated.

(c) Clause 7.1 *Constructional requirements* has been revised.

(d) Clause 7.1.6 *Additional requirements for circuit-breakers provided with a neutral pole* has been added.

(e) Tests of Clauses 8.3.3, 8.3.4, 8.3.5 and 8.3.6 have been added.

(f) Annex B *Circuit-breakers incorporating residual current protection* has been updated.

(g) Annex F *Additional test for circuit-breakers with electronic over-current protection* has been rewritten.

(h) In Annex J *Electromagnetic compatibility (EMC)—Requirements and tests for circuit-breakers*, Table J1 has been revised.

(i) Annex L *Circuit-breakers not fulfilling requirements for overcurrent protection* has been added.

(k) Annex M has been added.

(l) Annex N 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 Australian 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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1 General

The provisions of the general rules dealt with in ~~IEC 60947-1~~ AS 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, 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.

The requirements and test methods for electromagnetic compatibility of circuit-breakers are contained in annex J.

The requirements for circuit-breakers not fulfilling the requirements for overcurrent protection are contained in annex

The requirements for modular residual current devices (without integral current breaking device) are contained in annex M.

The requirements and test methods for electromagnetic compatibility of circuit-breaker auxiliaries are contained in annex N.

Supplementary requirements for circuit-breakers used as direct-on-line starters are given in ~~IEC 60947-4-1~~ AS 60947.4.1 (hereinafter referred to as Part 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.