AS/NZS 61008.1:2011

Australian/New Zealand Standard™

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)

Part 1: General rules
(IEC 61008-1, Ed. 3.0 (2010) MOD)

STANDARDS Australia

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Australian/New Zealand Standard™

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)

Part 1: General rules (IEC 61008-1, Ed. 3.0 (2010) MOD)

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-004, Electrical Accessories, to supersede AS/NZS 61008.1:2004, *Residual current operated circuit-breakers without overcurrent protect for household and similar uses (RCCBs)*—Part 1: *General rules* (IEC 61008-1, Ed.2.1 (2002) MOD).

The objective of this Standard is to provide Australian and New Zealand electrical industries, manufacturers and regulatory bodies with safety requirements for residual current-operated circuit-breakers without integral overcurrent protection for household and similar uses, and which may be used as the basis for approval for sale or for connection to supply in Australia and New Zealand.

This Standard is an adoption with national modifications and has been reproduced from IEC 61008-1 Ed. 3.0 (2010)), *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)—Part 1: General rules* and has been varied as indicated to take account of Australian/New Zealand conditions. The modifications are specified in Appendix ZZ for the IEC CB scheme.

This Standard will exist in parallel with AS/NZS 3190, *Approval and test specification—Residual current devices (current-operated earth-leakage devices)* and any revisions thereof. Both this Standard and AS/NZS 3190 are acceptable for RCCBs. For other RCD devices refer to AS/NZS 3190.

The essential safety requirements in AS/NZS 3820, *Essential safety requirements for electrical equipment* that could be applicable to RCCBs are covered by this Standard taken in conjunction with any other relevant requirements affecting safety.

This Standard does not purport to include all the necessary conditions of a contract.

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

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

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References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
IEC		AS	
60038	IEC standard voltages	60038	Standard voltages
60060	High-voltage test techniques	1931	High-voltage test techniques
60060-1	Part 1: General definitions and test requirements	1931.1	Part 1: General definitions and test requirements
60060-2	Part 2: Measuring systems	1931.2	Part 2: Measuring systems
60068	Environmental testing	60068	Environmental testing,
60068-2-30	Part 2-30: Tests—Test Db: Damp heat, cyclic (12 + 12 h cycle)	60068.2.30	Part 2.30: Tests—Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)
60068-3-4	Part 3-4: Supporting documentation and guidance—Damp heat tests	60068.3.4	Part 3.4: Supporting documentation and guidance—Damp heat tests

IEC		AS	
60112	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	60112	Method for the determination of the proof and the comparative tracking indices of solid insulating materials
60417	Graphical symbols for use on equipment	60417	Graphical symbols for use on equipment
		AS/NZS	
60364	Low voltage electrical installations	3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
60364-4-44	Part 4-44: Protection for safety—Protection against voltage disturbances and electromagnetic disturbances		
60364-5-53	Part 5-53: Selection and erection of electrical equipment—Isolation, switching and control		
60695	Fire Hazard testing	60695	Fire hazard testing
60695-2-10	Part 2-10: Glowing/hot-wire based test methods—Glow-wire apparatus and common test procedure	60695.2.10	Part 2.10: Glowing/hot wire based test methods—Glow-wire apparatus and common test procedure
60884	Plugs and socket-outlets for household and similar purposes	3112	Approval and test specification—Plugs and socket-outlets
60884-1	Part 1: General requirements		
61009	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)	61009	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)
61009-1	Part 1: General rules	61009.1	Part 1: General rules (IEC 61009-1, Ed.2 (2003) MOD)

Only International Standards that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex or appendix to which they apply. A ‘normative’ annex or appendix is an integral part of a Standard, whereas an ‘informative’ annex or appendix is only for information and guidance.

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FOREWORD

This edition includes the following significant technical changes with respect to the previous edition:

– complete revision of EMC sequences, including the new test T.2.6 already approved in IEC 61543;
– clarification of RCDs current/time characteristics reported in Tables 1 and 2;
– revision of test procedure for $I_{\Delta n}$ between 5 A and 200 A;
– testing procedure regarding the 6mA d.c. current superimposed to the fault current;
– improvement highlighting RCDs with multiple sensitivity;
– tests for the use of RCCBs in IT systems.

INTRODUCTION

This part includes definitions, requirements and tests, covering all types of RCCBs. For the applicability to a specific type this part applies in conjunction with the relevant part, as follows:

Part 2-1: Applicability of the general rules to RCCBs functionally independent of line voltage.

Part 2-2: Applicability of the general rules to RCCBs functionally dependent on line voltage.

AUSTRALIAN/NEW ZEALAND STANDARD

Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)

Part 1:
General rules (IEC 61008-1, Ed.3.0 (2010) MOD)

1 Scope

This International Standard applies to residual current operated circuit-breakers functionally independent of, or functionally dependent on, line voltage, for household and similar uses, not incorporating overcurrent protection (hereafter referred to as RCCBs), for rated voltages not exceeding 440 V a.c. with rated frequencies of 50 Hz, 60 Hz or 50/60 Hz and rated currents not exceeding 125 A, intended principally for protection against shock hazard.

These devices are intended to protect persons against indirect contact, the exposed conductive parts of the installation being connected to an appropriate earth electrode. They may be used to provide protection against fire hazards due to a persistent earth fault current, without the operation of the overcurrent protective device.

RCCBs having a rated residual operating current not exceeding 30 mA are also used as a means for additional protection in case of failure of the protective means against electric shock.

This standard applies to devices performing simultaneously the functions of detection of the residual current, of comparison of the value of this current with the residual operating value and of opening of the protected circuit when the residual current exceeds this value.

NOTE 1 The requirements for RCCBs are in line with the general requirements of IEC 60755. RCCBs are essentially intended to be operated by uninstructed persons and designed not to require maintenance. They may be submitted for certification purposes.

NOTE 2 Installation and application rules of RCCBs are given in the IEC 60364 series.

They are intended for use in an environment with pollution degree 2.

They are suitable for isolation.

RCCBs complying with this standard, with the exception of those with an uninterrupted neutral, are suitable for use in IT systems.

Special precautions (e.g. lightning arresters) may be necessary when excessive overvoltages are likely to occur on the supply side (for example in the case of supply through overhead lines) (see IEC 60364-4-44).

RCCBs of the general type are resistant to unwanted tripping including the case where surge voltages (as a result of switching transients or induced by lightning) cause loading currents in the installation without occurrence of flashover.

RCCBs of type S are considered to be sufficient proof against unwanted tripping even if the surge voltage causes a flashover and a follow-on current occurs.

NOTE 3 Surge arresters installed downstream of the general type of RCCBs and connected in common mode may cause unwanted tripping.

NOTE 4 For RCCBs having a degree of protection higher than IP20 special constructions may be required.

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