Under Revision See DR 93170

Superseded by AS 3190-1994

See also Seminar papers AS 3190

Australian Standard®

Approval and test specification—Residual current devices (current-operated earth-leakage devices)

STANDARDS AUSTRALIA

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This Australian Standard was prepared by Committee EL/4, Electrical Accessories. It was approved on behalf of the Council of Standards Australia on 23 May 1990 and published on 29 June 1990.

The following interests are represented on Committee EL/4:

Australian Electrical and Electronic Manufacturers Association
Confederation of Australian Industry
Department of Public Works, N.S.W.
Electrical Contractors Association of Australia
Electricity Supply Association of Australia
Plastics Industry Association
Railways of Australia Committee
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Approval and test specification—Residual current devices (current-operated earth-leakage devices)

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electrical Accessories to supersede AS 3190—1983, *Approval and test specification for current-operated (core balance) earth-leakage devices.*

It is one of a series of Approval and Test Specifications issued by Standards Australia. These Specifications are accompanied by a general specification AS 3100, containing definitions and general requirements for electrical materials and equipment. The purpose of these Specifications is to outline conditions which must be met to secure approval for the sale and use of electrical equipment in Australia. Only safety matters and related conditions are covered.

This Standard was revised to incorporate Amendment No. 1, April 1985 (which affected Clauses 2.3, 3 and 4.2 and Appendix C) and introduces other technical and editorial changes such as—

- Retitling and use of the generic and internationally accepted term 'residual current device' (rcd) in lieu of the former 'current-operated (core balance) earth-leakage devices', in line with current Australian and overseas practice.
- Introduction of classifications (and tests/requirements) for portable rcd's for household use, and for general industrial use.
- Introduction of tests/requirements for Class L portable rcd's for alignment with AS 3105, *Approval and test specification—Electrical portable outlet devices.*
- Alteration of some existing tests/requirements, e.g. the test facility percentage of rated residual current.
- Amendment of existing, and inclusion of new definitions and marking requirements, including user instructions.
- Introduction of tests/requirements for reliability and ageing of electronic components in line with the latest International Electrotechnical Commission (IEC) documents.
- Allowance for the future introduction (at this stage, under consideration) of tests/requirements for resistance to unwanted tripping due to impulse voltages.
- Introduction of rcd's with selective tripping time delay characteristics, via a new Type IV classification.
- Provision for tripping tests at rated and high residual currents with amended tripping times specified.

This Standard supersedes AS 3190—1983 (including Amendment No. 1, April 1985) on publication, with the exception of the indicated passages in Clauses 6.7.1 and 6.7.5. Also, it should be noted that Clauses 8.1.2 and 9.17 and Appendix D form part of this Specification 12 months from date of publication.

Attention is drawn to Appendix E which details the additional tests/requirements for approval of **portable** rcd's in New Zealand. For such compliance in New Zealand, portable rcd's are required to comply with the appropriate requirements of this Specification, except as varied by Appendix E.

It is generally accepted that Type III and Type IV rcd's (see Clause 5.1) do not provide adequate personal protection however, they are within the scope of this Specification.

Standards Australia points out that this Specification does not purport to include all the necessary provisions of a contract.

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1 SCOPE This Specification applies to residual current devices and residual current relays (of the current-operated type), with a rated residual current not exceeding 300 mA, designed for operation at low or medium voltage, having a rated load current not exceeding 100 A a.c., and intended to isolate supply or initiate a tripping signal in the event of a current flow to earth in the protected circuit, in excess of a predetermined level.

This Specification does not apply to residual current units whose design is dedicated for use with a (particular) circuit-breaker, other than a miniature overcurrent circuit-breaker as defined in Appendix A of AS 3111.

NOTE: It is intended that residual current units associated with circuit-breakers rated in excess of 100 A, either integrally or as an added unit, be covered by a separate Standard.

It is not intended that this Specification apply to residual current devices or other earth-leakage devices for the protection of Supply Authority distribution systems, or for protection of equipment in mines covered by AS 2081.

2 APPLICATION

2.1 General requirements of AS 3100 This Specification shall be read in conjunction with AS 3100, and the appropriate provisions of AS 3100 shall apply to the construction of the rcd or relay and the insulation and safeguarding of parts that normally carry current.

2.2 Specific requirements of this Specification An rcd or relay shall be deemed to comply with this Specification only if—

(a) *of Types II, III and IV,* it complies with all the appropriate requirements of this Specification and passes the relevant tests specified herein; and

(b) *of Type I,* it complies with all the appropriate requirements of this Specification and passes the relevant tests specified herein, except as varied by Appendix A.

Unless a specific requirement is stated for a portable rcd, it shall be understood that any requirement given herein for an rcd applies to a portable rcd.

2.3 Requirements of other Specifications Equipment and components incorporated in an rcd or relay which are depended upon for safety, shall comply with the appropriate requirements of any relevant Approval and Test Specification, unless such requirements are varied herein.

Portable residual current devices which incorporate a control or conditioning function shall, in addition to the requirements of this Specification, comply with the relevant requirements of AS 3197.

3 REFERENCED DOCUMENTS The documents below are referred to in this Specification.

STANDARDS

AS
1099 Basic environmental testing procedures for electrotechnology
1099.2Db Damp heat, cyclic (12 + 12 hours)
1099.3.3 Section 3—Guidance for damp heat tests

1931 High voltage testing techniques
1931.1 Part 1: General definitions, test requirements, test procedures and measuring devices

1939 Classification of degrees of protection provided by enclosures for electrical equipment

2081 Electrical equipment for coal and shale mines—Electrical protection devices

2481 All-or-nothing electrical relays (instantaneous and timing relays)

3000 SAA Wiring rules