

AS 1029.2—1982

Australian Standard<sup>®</sup>

---

## **Low voltage contactors**

### **Part 2: Semiconductor (solid state) (up to and including 1000 V a.c. and 1500 V d.c.)**

---

[Title allocated by Defence Cataloguing Authority:  
CONTACTOR, SEMICONDUCTOR (SOLID STATE)  
UP TO 1000 V A.C. or 1500 D.C.)]

Represented on the committee which was responsible for the preparation of this standard were the following:

Australian Electrical and Electronic Manufacturers Association  
Australian-British Trade Association  
Bureau of Steel Manufacturers of Australia  
Confederation of Australian Industry  
Department of Defence  
Department of Productivity  
Department of Public Works, N.S.W.  
Electricity Supply Association of Australia  
Institution of Engineers Australia  
Metropolitan Water Sewerage and Drainage Board, N.S.W.  
Railways of Australia Committee  
State Rail Authority of New South Wales  
Testing authorities

---

This Standard prepared by Committee EL/6, Industrial Switchgear and Controlgear, was approved on behalf of the Council of the Standards Association of Australia on 9 December 1981, and was published on 19 April 1982.

---

**Review of Australian Standards.** To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

---

*This standard was issued in draft form for comment as DR 80133.*

AS 1029.2—1982

Australian Standard<sup>®</sup>

---

**LOW VOLTAGE CONTACTROS**

**Part 2: SEMICONDUCTOR (SOLID  
STATE) (up to and including  
1000 V a.c. and 1500 V d.c.)**

---

First published . . . . . 1982
--------------------------------

PUBLISHED BY STANDARDS AUSTRALIA  
(STANDARDS ASSOCIATION OF AUSTRALIA)  
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 7262 2457 X

## PREFACE

This standard was prepared by a subcommittee of the Association's Committee on Industrial Switchgear and Controlgear. It is Part 2 of a two-part standard for low voltage contactors.

The Parts of the standard are as follows:

Part 1—Electromechanical (up to and including 1000 V a.c.)

Part 2—Semiconductor (Solid State) (up to and including 1000 V a.c. and 1500 V d.c.)

Part 1 covers many requirements common to all contactors and is referred to extensively herein.

This standard is based on IEC document 17B(Central Office) 115 and acknowledgment is made of the assistance received therefrom. However, it differs from the IEC document in some technical respects and to indicate these differences a rule is shown in the margin alongside the affected clause, table or part thereof.

The standard was originally based on IEC document 17B(Central Office)106. Proposals for the showering arc test for external electrical influences in IEC document 17B(Central Office) 115, not included in this standard as they are still under consideration. However, provision has been made in Clause 8.3.6.3 and Appendix F for the showering arc test.

Attention is drawn to the notes to Clause 4.3.9 concerning protection of semiconductor contactors from voltage transients and external electrical influences.

This standard may require reference to the following publications:

- |         |  |
|---------|--|
| AS 1023 | Thermal Protection of Electric Motors<br>Part 1—Built-in Thermal Detectors and Associated Control Units<br>Part 2—Thermal Overload Protective Devices<br>Part 3—Inherent Overheat Protectors |
| AS 1029 | Low Voltage Contactors<br>Part 1—Electromechanical Contactors (Up to and Including 1000 V a.c.)  |
| AS 1136 | Switchgear and Controlgear Assemblies for Voltages Up to 1000 V a.c.   |
| AS 1202 | A.C. Motor Starters (Up to and Including 1000 V)   |

- |          |   |
|----------|---|
|          | Part 1—Direct-on-line (Full Voltage) Starters   |
| AS 1930  | Circuit-breakers for Distribution Circuits (Up to and Including 1000 V a.c. and 1200 V d.c.)  |
| AS 1931  | High Voltage Testing Techniques<br>Part 1—General Definitions, Test Requirements, Test Procedures and Measuring Devices<br>Part 2—Application Guide for Measuring Devices   |
| AS 1939  | Classification of Degrees of Protection Provided by Enclosures for Electrical Equipment   |
| AS 2005  | Fuses with Enclosed Fuse-links (up to and including 1000 V a.c. and 1500 V d.c.)<br>Part 1—General Requirements<br>Part 2—Fuses for Industrial Application<br>Part 3—Fuses for Household and Similar Applications |
| AS 2184  | Moulded-case Circuit-breakers (Up to and Including 600 V a.c. and 250 V d.c.) (Interrupting Rating 10 kA and More)  |
| AS 2279  | Disturbances in Mains Supply Networks<br>Part 1—Limitation of Harmonics Caused by Household and Similar Electrical Appliances<br>Part 2—Limitation of Harmonics Caused by Industrial Equipment                    |
| AS 3100  | Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment   |
| AS 3111  | Approval and Test Specification for Miniature Overcurrent Circuit-breakers  |
| SAA MP19 | Report on Preferred Numbers and Their Use   |
| IEC 65   | Safety Requirements for Mains Operated Electronic and Related Apparatus for Household and Similar General Use   |

## © Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

## CONTENTS

	<i>Page</i>		<i>Page</i>
SECTION 1. SCOPE AND GENERAL		SECTION 6. CONDITIONS FOR OPERATION IN SERVICE	
1.1 Scope . . . . .	4	6.1 Normal Service Conditions . . . . .	15
1.2 Objects . . . . .	4	6.2 Shape and Symmetry of Voltages . .	15
1.3 Safety Requirements . . . . .	4	6.3 Non-standard Conditions . . . . .	15
SECTION 2. DEFINITIONS		SECTION 7. CONDITIONS FOR CONSTRUCTION	
2.0 Application of Section . . . . .	5	7.1 Mechanical Design . . . . .	16
2.1 Definitions Concerning Switching Devices . . . . .	5	7.2 Enclosures . . . . .	16
2.2 Definitions Concerning States, Control and Auxiliary Circuits of a Semiconductor (Solid State) Con- tactor . . . . .	5	7.3 Temperature Rise . . . . .	16
		7.4 Dielectric Properties . . . . .	16
		7.5 Limits of Operation . . . . .	16
		7.6 Terminals . . . . .	16
SECTION 3. CLASSIFICATION		SECTION 8. TESTS	
3.1 Grouping of Semiconductor Con- tactors According to Cooling System	7	8.1 Testing . . . . .	18
3.2 Distinction According to Degree of Protection Provided by the Enclosure	7	8.2 Verification of the Characteristics of Contactors . . . . .	18
		8.3 Type Tests . . . . .	18
		8.4 Routine Tests . . . . .	21
		8.5 Special Tests . . . . .	21
SECTION 4. CHARACTERISTICS OF SEMI- CONDUCTOR CONTACTORS		APPENDICES	
4.1 Summary of Characteristics . . . . .	8	A Information to be Given by the User when Conditions for Operation in Service Differ from the Standard	25
4.2 Type of Semiconductor Contactor . .	8	B Clearances and Creepage Distances for Low Voltage Contactors . . . . .	25
4.3 Rated Values . . . . .	8	C Coordination with Short-circuit Protective Devices . . . . .	25
4.4 Control Circuits Characteristics . .	11	D Conventional Test Circuit for Veri- fication of Making and Breaking Capacities . . . . .	26
4.5 Auxiliary Circuits . . . . .	12	E Method of Presenting a Load Dia- gram . . . . .	27
4.6 Coordination with Short-circuit Protective Devices . . . . .	12	F Test Equipment and Circuits for the External Electrical Influences Test for Showering Arcs . . . . .	30
SECTION 5. MARKING			
5.1 General . . . . .	14		
5.2 Essential Markings . . . . .	14		
5.3 Other Markings . . . . .	14		
5.4 Terminals for External Conductors	14		

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-