AS 60947.4.2—2004
IEC 60947-4-2 Ed.2.1(2002)

AS 60947.4.2—2004

Australian Standard™

Low-voltage switchgear and controlgear

Part 4.2: Contactors and motor-starters—A.C. semiconductor motor controllers and starters

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL-006, Industrial Switchgear and Controlgear. It was approved on behalf of the Council of Standards Australia on 22 July 2004.
This Standard was published on 23 September 2004.

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
Electricity Supply Association of Australia
Engineers Australia
National Electrical and Communications Association
National Electrical Switchboard Manufacturers Association
Testing Interests (Australia)

This Standard was issued in draft form for comment as DR 04163.

Australian Standard™

Low-voltage switchgear and controlgear

Part 4.2: Contactors and motor-starters—A.C. semiconductor motor controllers and starters

Originated as AS 1202.5—1985.
Previous edition AS/NZS 3947.4.2:2000.
Revised and redesignated as AS 60947.4.2—2004.

Published by Standards Australia International Ltd GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6259 X

PREFACE

This Standard was prepared by the Standards Australia Committee EL-006, Industrial Switchgear and Controlgear to supersede AS 3947.4.2—1997.

The objective of this Standard is to provide characteristics, constructional and performance requirements and tests to verify performance for a.c. semiconductor motor controllers and starters for rated voltage up to 1000 V a.c.

This Standard is Part 4.2 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
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 (this Standard)
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 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 Consolidated Edition 2.1(2002) of IEC 60947-4-2, *Low-voltage swtichgear and controlgear,* Part 4-2: *Contactors and motor-starters—AC semiconductor motor controllers and starters* which includes Edition 2.0 (1999) of IEC 60947-4-2, its Amendment 1 (2001) and its Corrigendum (2002-03).

This Standard covers low-voltage a.c. semiconductor motor controllers and starters, that have many capabilities and features beyond the simple starting and stopping of an induction motor, such as controlled starting and stopping, manoeuvring and controlled running.

The generic term, controller, is used in this Standard wherever the unique features of the power semiconductor switching elements are the most significant points of interest. The generic term, starter, is used wherever the consequences of operating the power semi-conductor switching elements, together with suitable overload protective means are the most significant points of interest. Specific designations (for example form 1, form HxB) are used wherever the unique features of various configurations comprise significant points of interest.

The provisions of the general rules dealt with in 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, or annex A of Part 1.

This Standard differs from AS/NZS 3947.4.2:2000 in the following:

(a) Includes requirements and tests for bypassed controllers.

(b) Utilization categories have been revised.

(c) Temperature rise requirements and tests have been expanded.

(d) Ratio of power frequency recovery voltage to rated operational voltage for overload capability tests is now 1.05.

(e) Requirements for making and breaking capacities for devices in the main circuit have been expanded.

(f) Tests for performance under short-circuit conditions have been revised

(g) Normative Annex I giving a modified test circuit for short-circuit testing and informative Annex J giving a flowchart for constructing bypassed semiconductor controllers tests have been added.

A reference to an International Standard identified in the Normative References Clause and the Bibliography by strikethrough (~~example~~) is replaced by a reference to the Australian or Australian/New Zealand Standard(s) listed immediately thereafter and identified by shading (example). Where the struck-through referenced document and the referenced Australian or Australian/New Zealand Standard are identical, this is indicated in parenthesis after the title of the latter.