

Australian/New Zealand Standard™

Low-voltage switchgear and controlgear

**Part 3: Switches, disconnectors,
switch-disconnectors and fuse-
combination units**



Standards Australia



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Australian/New Zealand Standard™

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Part 3: Switches, disconnectors, switch-disconnectors and fuse- combination units

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-006, Industrial Switchgear and Controlgear to supersede AS 3947.3—1994 and its Amendment 1:1995.

The objective of this Standard is to specify the characteristics of the equipment, the condition with which the equipment shall comply, the tests for confirming that these conditions have been met, the methods to be adopted for these tests and the information to be marked on the equipment or made available by the manufacturer.

This Standard is Part 3 of a series which, when complete, will consist of the following:

AS/(NZS) 3947	Low-voltage switchgear and controlgear
AS/NZS 3947.1	Part 1: General rules
AS 3947.2	Part 2: Circuit-breakers
AS/NZS 3947.3	Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (this Standard)
AS/NZS 3947.3 Suppl	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/NZS 3947.4.1	Part 4.1: Contactors and motor-starters—Electromechanical contactors and motor-starters
AS/NZS 3947.4.2	Part 4.2: Contactors and motor-starters—A.C. semiconductor motor controllers and starters
AS/NZS 3947.4.3	Part 4.3: Contactors and motor-starters—A.C. semiconductor controllers and contactors for non-motor loads
AS/NZS 3947.5.1	Part 5.1: Control circuit devices and switching elements—Electromechanical control circuit devices
AS/NZS 3947.5.2	Part 5.2: Control circuit devices and switching elements—Proximity switches
AS/NZS 3947.5.3	Part 5.3: Control circuit devices and switching elements—Requirements for proximity devices with defined behaviour under fault conditions
AS/NZS 3947.5.4	Part 5.4: Control circuit devices and switching elements—Methods of assessing the performance of low-energy contacts—Special tests
AS/NZS 3947.5.5	Part 5.5: Control circuit devices and switching elements—Electrical emergency stop devices with mechanical latching function
AS/NZS 3947.5.6	Part 5.6: Control circuit devices and switching elements—D.C. interface for proximity sensors and switching amplifiers (NAMUR)
AS/NZS 3947.6.1	Part 6.1: Multiple function equipment—Automatic transfer switching equipment
AS/NZS 3947.6.2	Part 6.2: Multiple function equipment—Control and protective switching devices (or equipment) (CPS)
AS/NZS 3947.7.1	Part 7.1: Ancillary equipment—Terminal blocks for copper conductors
AS 3947.7.2	Part 7.2: Ancillary equipment—Protective conductor terminal blocks for copper conductors
AS/NZS 3947.7.3	Part 7.3: Ancillary equipment—Safety requirements for terminal blocks for the reception of cartridge fuse-links

This Standard is identical in technical content with and has been reproduced from IEC 60947-3:1999 + Corrigendum:1999 + Amendment 1:2001, *Low-voltage switchgear and controlgear—Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*.

Changes required by the Corrigendum and Amendment 1 to IEC have been indicated by a margin bar against each clause, figure, table or annex affected.

This Standard differs from AS 3947.3—1994, incorporating its Amendment 1:1995, in the following areas:

- a) The Australian variation to Clause 7.2.2, adding an extra row to Table 2 of AS/NZS 3947.1 to limit the temperature rise of the fuse contact for fuse-combination units to 80K has been deleted and replaced by the added overload current requirements and tests.
- b) Requirements for resistance of materials to abnormal heat and fire have been added.
- c) Requirements for direction of movement for actuators of devices have been added.
- d) Additional construction requirements for equipment suitable for isolation have been varied.
- e) Requirements and tests for dielectric properties have been varied to add requirements and tests for impulse withstand voltage and power frequency withstand voltage.
- f) Requirements and tests for dependent and independent power operation have been added.
- g) Requirements and tests for switching overvoltages have been deleted.
- h) Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers have been added.
- i) Supplementary requirements for equipment provided with means for padlocking in the open position have been added.
- j) Requirements and simplified tests for equipment having the same fundamental design have been added.
- k) Overload requirements and tests (new Test Sequence V) for equipment incorporating fuses have been added.
- l) Requirements and tests for Electromagnetic Compatibility have been added.
- m) Appendix B of AS 3947.3:1994 relating to creepage and clearance distances has been deleted.

A reference to an International Standard identified in the Normative References Clause 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.

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/New Zealand 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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Any IEC table, figure or passage of text that is struck-through is not part of this Standard. Any Australian/New Zealand table, figure or passage of text that is added (and identified by shading) is part of this Standard.

1 General

The provisions of the general rules dealt with in IEC 60947-1 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 IEC 60947-1, e.g., 4.3.4.1 of IEC 60947-1, table 4 IEC 60947-1, or annex A of IEC 60947-1.

1.1 Scope and object

This standard applies to switches, disconnectors, switch-disconnectors and fuse-combination units to be used in distribution circuits and motor circuits of which the rated voltage does not exceed 1 000 V a.c. or 1 500 V d.c.

The manufacturer shall specify the type, ratings and characteristics according to the relevant standard of any incorporated fuses.

This standard does not apply to equipment coming within the scope of IEC 60947-2, IEC 60947-4-1 and IEC 60947-5-1; however, when switches and fuse-combination units coming into the scope of this standard are normally used to start, accelerate and/or stop an individual motor they shall also comply with the additional requirements given in annex A.

Auxiliary switches fitted to equipment within the scope of this standard shall comply with the requirements of IEC 60947-5-1.

This standard does not include the additional requirements necessary for electrical apparatus for explosive gas atmospheres.

NOTE 1 – Depending on its design, a switch (or disconnector) can be referred to as "a rotary switch (disconnector)", "cam-operated switch (disconnector)", "knife-switch (disconnector)", etc.

~~NOTE 2 – If they are not manually operated, switches and disconnectors may have to comply with additional requirements.~~

NOTE 2 – In this standard, the word "switch" also applies to the apparatus referred to in French as "commutateurs", intended to modify the connections between several circuits and *inter alia* to substitute a part of a circuit for another.

NOTE 3 – In general, throughout this standard switches, disconnectors, switch-disconnectors and fuse-combination units will be referred to as "equipment".

The object of this standard is to state

- a) the characteristics of the equipment;