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AS 60947.5.2—2004

Australian Standard™

Low-voltage switchgear and controlgear

Part 5.2: Control circuit devices and switching elements—Proximity switches

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.
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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
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Australian Standard™

Low-voltage switchgear and controlgear

Part 5.2: Control circuit devices and switching elements—Proximity switches

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-006, Industrial Switchgear and Controlgear to supersede AS/NZS 3947.5.2:2000.

The objective of this Standard, apart from that stated in Clause 1.1, is to bring Australian requirements into line with Edition 2.2 of IEC 60947-5-2.

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
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 (this Standard)
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 2.2 (2004-01) of IEC 60947-5-2, Ed.2.2(2004), *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements—Proximity switches* which includes its Amendment 1:1999 and Amendment 2:2003.

This Standard differs from AS/NZS 3947.5.2:2000 in the following areas:

(a) Normative references have been updated.

(b) New definitions/requirements and tests have been added for direct and indirect operated proximity switches, neutral density filters, operating range and types D, R and T photoelectric proximity switches.

(c) The definition for non-mechanical magnetic proximity switch has been updated.

(d) EMC requirements and tests have been updated.

(e) Requirements for the carrying out of the test for verifying dielectric properties have been extended to all proximity switches except those class II switches insulated by encapsulation.

(f) Figure D4 for 8 mm ϕ, 4-pin integral connectors for d.c. proximity switches has been updated.

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

(i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(ii) In the source text ‘this international standard’ should read ‘this Australian Standard’.

(iii) A full point should be substituted for a comma when referring to a decimal marker.

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1 General

The provisions of the General Rules in Part 1 (~~IEC 60947-1~~ AS 60947.1) are applicable to this standard, where specifically called for. General Rules clauses and subclauses thus applicable, as well as tables, figures and appendices, are identified by references to Part 1, e.g. subclause 7.1.9.3 of Part 1 or annex C of Part 1.

Clauses 1 to 8 contain the general requirements. Specific requirements for the various types of proximity switches are given in annex A.

1.1 Scope and object

This part of ~~IEC 60947~~ AS 60947 applies to inductive and capacitive proximity switches that sense the presence of metallic and/or non-metallic objects, ultrasonic proximity switches that sense the presence of sound reflecting objects, photoelectric proximity switches that sense the presence of objects and non-mechanical magnetic proximity switches that sense the presence of objects with a magnetic field.

These proximity switches are self-contained, have semiconductor switching elements(s) and are intended to be connected to circuits, the rated voltage of which does not exceed 250 V 50 Hz/60 Hz a.c. or 300 V d.c. This Standard is not intended to cover proximity switches with analogue outputs.

The object of this standard is to state for proximity switches:

– definitions;
– classification;
– characteristics;
– product information;
– normal service, mounting and transport conditions;
– constructional and performance requirements;
– tests to verify rated characteristics.

1.2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

References to international standards that are struck through in this clause are replaced by references to Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is identified as such.