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AS/NZS IEC 60947.5.9:2015

Australian/New Zealand Standard™

# Low-voltage switchgear and controlgear

# Part 5.9: Control circuit devices and switching elements—Flow rate switches


This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-006, Industrial Switchgear and Controlgear. It was approved on behalf of the Council of Standards Australia on 27 May 2015 and on behalf of the Council of Standards New Zealand on 29 May 2015.
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# Part 5.9: Control circuit devices and switching elements—Flow rate switches

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# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-006, Industrial Switchgear and Controlgear.

The objective of this Standard is to state for flow rate switches—

(a) definitions;

(b) classifications;

(c) characteristics;

(d) product information;

(e) normal service, mounting and transport conditions;

(f) constructional and performance requirements; and

(g) tests to verify rated characteristics.

This Standard is identical with, and has been reproduced from, IEC 60947-5-9, Ed. 1.0 (2006), *Low-voltage switchgear and controlgear*, Part 5.9: *Control circuit devices and switching elements—Flow rate switches*.

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

(i) In the source text 'this part of IEC 60947' should read 'this Australian/New Zealand Standard'.

(ii) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

| *Reference to International Standard* | | *Australian/New Zealand Standard* | |
|---|---|---|---|
| IEC | | AS/NZS IEC | |
| 60947 | Low-voltage switchgear and controlgear | 60947 | Low-voltage switchgear and controlgear |
| 60947-1 | Part 1: General rules | 60947.1 | Part 1: General rules |
| 60947-5-2 | Part 5-2: Control circuit devices and switching elements—Proximity switches<br>Amendment 1 (1999)<br>Amendment 2 (2003) | 60947.5.2 | Part 5.2: Control circuit devices and switching elements—Proximity switches |
| | | AS/NZS | |
| 61000 | Electromagnetic compatibility (EMC) | 61000 | Electromagnetic compatibility (EMC) |
| 61000-3-2 | Part 3-2: Limits—Limits for harmonic current emissions (equipment input current ≤16 A per phase) | 61000.3.2 | Part 3.2: Limits—Limits for harmonic current emissions (equipment input current ≤16 A per phase) |

| IEC | | AS/NZS | |
|---|---|---|---|
| 61000-3-3 | Part 3-3: Limits—<br>Section 3: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤16 A per phase and not subject to conditional connection<br>Amendment 1 (2001)<br>Amendment 2 (2005) | 61000.3.3 | Part 3.3: Limits—<br>Section 3: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤16 A per phase and not subject to conditional connection |
| | | AS/NZS IEC | |
| 61000-4-2 | Part 4-2: Testing and measurement techniques—Electrostatic discharge immunity test<br>Amendment 1 (1998)<br>Amendment 2 (2000) | 61000.4.2 | Part 4.2: Testing and measurement techniques—Electrostatic discharge immunity test |
| 61000-4-3 | Part 4-3: Testing and measurement techniques—Radiated, radio-frequency, electromagnetic field immunity test | 61000.4.3 | Part 4.3: Testing and measurement techniques—Radiated, radio-frequency, electromagnetic field immunity test |
| 61000-4-4 | Part 4-4: Testing and measurement techniques—Electrical fast transient/burst immunity test | 61000.4.4 | Part 4.4: Testing and measurement techniques—Electrical fast transient/burst immunity test |
| 61000-4-6 | Part 4-6: Testing and measurement techniques—Immunity to conducted disturbances, induced by radio-frequency fields<br>Amendment 1 (2004)<br>Amendment 2 (2006) | 61000.4.6 | Part 4.6: Testing and measurement techniques—Immunity to conducted disturbances, induced by radio-frequency fields |
| | | AS/NZS | |
| 61000-4-8 | Part 4-8: Testing and measurement techniques—Power frequency magnetic field immunity test<br>Amendment 1 (2000) | 61000.4.8 | Part 4.8: Testing and measurement techniques—Power frequency magnetic field immunity test |
| 61000-4-11 | Part 4-11: Testing and measurement techniques—Voltage dips, short interruptions and voltage variations immunity tests | 61000.4.11 | Part 4.11: Testing and measurement techniques—Voltage dips, short interruptions and voltage variations immunity tests |
| 61000-4-13 | Part 4-13: Testing and measurement techniques—Harmonics and interharmonics including mains signalling at a.c. power port, low-frequency immunity tests | 61000.4.13 | Part 4.13: Testing and measurement techniques—Harmonics and interharmonics including mains signalling at a.c. power port, low-frequency immunity tests |
| IEC | | AS/NZS | |
| 61558-2-6 | Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers | 61558.2.6 | Part 2.6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers (IEC 61558-2-6 Ed 2, MOD) |

| | | | |
|---|---|---|---|
| CISPR | | AS/NZS CISPR | |
| 11 | Industrial, scientific and medical (ISM) radio-frequency equipment—Electromagnetic Radio-frequency disturbance characteristics—Limits and methods of measurement Amendment 1:2004 | 11 | Industrial, scientific and medical (ISM) radio-frequency equipment—Electromagnetic Radio-frequency disturbance characteristics—Limits and methods of measurement |

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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AUSTRALIAN/NEW ZEALAND STANDARD

# Low-voltage switchgear and controlgear

## Part 5.9:
## Control circuit devices and switching elements—Flow rate switches

### 1 General

#### 1.1 Scope and object

This part of IEC 60947 applies to flow rate switches that sense the rate of flow of a gas, a liquid or a granular solid. These switches change their output state if a pre-set value for the speed of flow is exceeded.

These flow rate switches are self-contained, have semiconductor switching element(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 does not specify the additional measures that are necessary for flow rate switches used in conjunction with explosive sensing materials and/or in an explosive location.

This standard is not intended to cover devices with analogue outputs.

The object of this standard is to state for flow rate switches:

– definitions;
– classifications;
– 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.

IEC 60446:1999, *Basic and safety principles for man-machine interface, marking and identification – Identification of conductors by colours or numerals*

IEC 60947-1:2004, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60947-5-2:1997, *Low-voltage switchgear and controlgear – Part 5-2: Control circuit devices and switching elements – Proximity switches*
Amendment 1 (1999)
Amendment 2 (2003)