AS/NZS IEC 60947.5.4:2015
IEC 60947-5-4, Ed. 2.0 (2002)

AS/NZS IEC 60947.5.4:2015

Australian/New Zealand Standard™

Low-voltage switchgear and controlgear

Part 5.4: Control circuit devices and switching elements—Method of assessing the performance of low-energy contacts—Special tests

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 4 June 2015 and on behalf of the Council of Standards New Zealand on 29 May 2015.
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The following are represented on Committee EL-006:

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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

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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 propose a method of assessing the performances of low energy contacts giving—

(a) useful definitions;

(b) general principles of test methods which are to monitor and record the behaviour of contacts at each operation;

(c) functional bases for the definition of general testing equipment;

(d) preferred test values;

(e) particular conditions for testing contacts intended for specific applications (such as switching of PC inputs);

(f) information to be given in the test report; and

(g) interpretation and presentation of the test results.

This Standard is identical with, and has been reproduced from, IEC 60947-5-4, Ed. 2.0 (2002), *Low-voltage switchgear and controlgear*, Part 5-4: *Control circuit devices and switching elements—Method of assessing the performance of low-energy contacts—Special tests*.

The principle difference between this and the previous edition, is that this is a joint Australian/New Zealand Standard.

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	
60068	Environmental testing	60068	Environmental testing
60068-1	Part 1: General and guidance Amendment 1 (1992)	60068.1	Part 1: General and guidance Amendment 1 (1992)
60068-2	Part 2: Tests (series)	60068.2	Part 2: Tests (series)
		AS/NZS IEC	
60947	Low-voltage switchgear and controlgear	60947	Low-voltage switchgear and controlgear
60947-1	Part 1: General rules Amendment 1 (2000) Amendment 2 (2001)	60947.1	Part 1: General rules
60947-5-1	Part 5-1: Control circuit devices and switching elements—Electromechanical control circuit devices Amendment 1:1991 Amendment 2:1999	60947.5.1	Part 5.1: Control circuit devices and switching elements—Electromechanical control circuit devices

IEC		AS IEC	
61131	Programmable controllers	61131	Programmable controllers
61131-2	Part 2: Equipment requirements and tests	61131.2	Part 2: Equipment requirements and tests

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

The term ‘normative’ has been used in this Standard to define the application of the annex to which it applies. A ‘normative’ annex is an integral part of a Standard.

CONTENTS

INTRODUCTION

Control switches may not be suitable for use at very low voltages and therefore it is recommended to seek the advice of the manufacturer concerning any application with a low value of operational voltage, for example, below 100 V a.c. or d.c. (see IEC 60947-5-1, note 2 of 4.3.1.1).

However, the development of electronic systems and programmable controllers in industrial processes increases the use of switching elements in low-voltage circuit control.

It is thus necessary to define how predictional behaviour of contacts in this area should be established (with an acceptable confidence level), by using precise conventional testing methods, down to specified values (such as 24 V, 1 mA; 5 V, 10 mA).

AUSTRALIAN/NEW ZEALAND STANDARD

Low-voltage switchgear and controlgear

Part 5.4:
Control circuit devices and switching elements—Method of assessing the performance of low-energy contacts—Special tests

1 Scope and object

This part of IEC 60947 applies to separable contacts used in the utilization area considered, such as switching elements for control circuits.

This standard takes into consideration two rated voltage areas:

a) above (and including) 10 V (typically 24 V) where contacts are used for switching loads with possible electrical erosion, such as programmable controller inputs;
b) below 10 V (typically 5 V) with negligible electrical erosion, such as electronic circuits.

This standard does not apply to contacts used in the very low energy area of measurement, for example, sensor or thermocouple systems.

The object of this standard is to propose a method of assessing the performances of low energy contacts giving

– useful definitions;
– general principles of test methods which are to monitor and record the behaviour of contacts at each operation;
– functional bases for the definition of a general testing equipment;
– preferred test values;
– particular conditions for testing contacts intended for specific applications (such as switching of PC inputs);
– information to be given in the test report;
– interpretation and presentation of the rest results.

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 60068-1:1988, *Environmental testing – Part 1: General and guidance*
Amendment 1 (1992)

IEC 60068-2 (all parts), *Environmental testing – Part 2: Tests*

IEC 60605-6:1997, *Equipment reliability testing – Part 6: Tests for the validity of the constant failure rate or constant failure intensity assumptions*