



SLOVENSKI STANDARD

SIST EN 62246-1-1:2013

01-oktober-2013

Stikala reed - 1. del: Specifikacije ocenjevanja kakovosti

Reed switches - Part 1-1: Generic specification - Quality assessment

Reedschalter - Teil 1-1: Spezifikation für die Qualitätsbewertung

Contacts à lames souples - Partie 1-1: Spécification de l'évaluation de qualité

Ta slovenski standard je istoveten z: EN 62246-1-1:2013

[SIST EN 62246-1-1:2013](https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0c9c6ef/sist-en-62246-1-1-2013)

<https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0c9c6ef/sist-en-62246-1-1-2013>

ICS:

29.120.40 Stikala Switches

SIST EN 62246-1-1:2013 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62246-1-1:2013](https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013)

<https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62246-1-1

August 2013

ICS 29.120.70

English version

**Reed switches -
Part 1-1: Generic specification -
Quality assessment
(IEC 62246-1-1:2013)**

Contacts à lames souples -
Partie 1-1: Spécification générique -
Evaluation de qualité
(CEI 62246-1-1:2013)

Reedschalter -
Teil 1-1: Fachgrundsefizifikation –
Qualitätsbewertung
(IEC 62246-1-1:2013)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This European Standard was approved by CENELEC on 2013-06-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 94/358/FDIS, future edition 1 of IEC 62246-1-1, prepared by IEC TC 94 "All-or-nothing electrical relays" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62246-1-1:2013.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-03-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-06-28

This standard is intended to be used in conjunction with EN 62246-1:2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62246-1-1:2013 was approved by CENELEC as a European Standard without any modification. (standards.iteh.ai)

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61810-2-1:2011	NOTE Harmonised as EN 61810-2-1:2011 (not modified).
IEC 60068-2-1:2007	NOTE Harmonised as EN 60068-2-1:2007 (not modified).
IEC 60068-2-2:2007	NOTE Harmonised as EN 60068-2-2:2007 (not modified).
IEC 60068-2-7:1983+A1:1986	NOTE Harmonised as EN 60068-2-7:1993 (not modified).
IEC 60068-2-13:1983	NOTE Harmonised as EN 60068-2-13:1999 (not modified).
IEC 60068-2-17:1994	NOTE Harmonised as EN 60068-2-17:1994 (not modified).
IEC 60068-2-27:2008	NOTE Harmonised as EN 60068-2-27:2009 (not modified).
IEC 60068-2-30:2005	NOTE Harmonised as EN 60068-2-30:2005 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-6	2007	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-11 + corr. December	1981 1999	Environmental testing - Part 2: Tests - Test Ka: Salt mist	EN 60068-2-11	1999
IEC 60068-2-14	2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-20	2008	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	2008
IEC 60068-2-21 + corr. January	2006 2012	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	2006
IEC 60068-2-78	2001	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78 ¹⁾	2001
IEC 60127-2	2003	Miniature fuses - Part 2: Cartridge fuse-links	EN 60127-2	2003
IEC 61373 + corr. October	2010 2011	Railway applications - Rolling stock equipment - Shock and vibration tests	EN 61373	2010
IEC 62246-1	2011	Reed switches - Part 1: Generic specification	EN 62246-1	2011

¹⁾ EN 60068-2-78 is superseded by EN 60068-2-78:2013, which is based on IEC 60068-2-78:2012.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62246-1-1:2013](https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013)

<https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013>



IEC 62246-1-1

Edition 1.0 2013-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Reed switches – **STANDARD PREVIEW**
Part 1-1: Generic specification – Quality assessment
(standards.iten.ai)

Contacts à lames souples – **STANDARD PREVIEW**
Partie 1-1: Spécification générique – Évaluation de qualité
SIST EN 62246-1-1:2013
http://standards.iten.ai/catalog/standards/sist-en-62246-1-1-2013-4ebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE **XA**
CODE PRIX

ICS 29.120.70

ISBN 978-2-83220-818-2

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
3.1 Reed switch types	8
3.2 Tests.....	8
3.3 Abbreviations	8
4 Test schedules	9
4.1 General.....	9
4.2 Qualification approval procedures	9
4.3 Quality conformance inspection.....	9
4.4 Formation of inspection lots.....	9
4.5 Intervals between tests.....	9
4.6 Standard conditions for testing	9
4.7 Mounting of test specimens during the test.....	9
4.8 General conditions for testing.....	10
5 Characteristic values of the reed switches.....	39
5.1 Characteristics values for general data for reed switches	39
5.2 Standard test coil number for tests.....	40
5.3 Contact data.....	40
5.3.1 Contact reliability, electrical endurance, making and breaking current capacities and switching frequency.....	40
5.3.2 Static contact-circuit resistance	45
5.3.3 Mechanical endurance.....	45
5.4 Environmental data	45
6 Reliability – Failure rate data.....	46
7 Marking and documentation.....	46
7.1 Marking of the reed switch.....	46
7.2 Marking of the packaging	46
Annex A (normative) Mounting in a standard coil	47
Annex B (normative) Variants	48
Annex C (informative) Typical applications.....	49
Bibliography.....	50
Figure A.1 – Switch direction and position in a standard coil.....	47
Table 1 – Quality conformance inspection (1 of 8)	11
Table 2 – Tests for qualification approval (1 of 17).....	19
Table 3 – Qualification approval (1 of 3)	36
Table 4 – Characteristic values for general data for reed switches (1 of 2).....	39
Table 5 – Standard test coil number for tests for reed switches.....	40
Table 6 – Variant A of reed switches (1 of 3)	41
Table 7 – Variant B of heavy-duty reed switches.....	44

Table 8 – Environmental data for reed switches	45
Table 9 – Reliability data for reed switches	46

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62246-1-1:2013](https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013)

<https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

REED SWITCHES –

Part 1-1: Generic specification – Quality assessment

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62246-1-1 has been prepared by IEC Technical Committee 94: All-or-nothing electrical relays.

This first edition cancels and replaces the first edition of IEC/PAS 62246-2-1 published in 2008. It is a technical revision.

This edition includes the following significant technical changes with respect to the previous editions:

- inclusion of introduction;
- update of references, terms and definitions;
- renumbering of clauses to bring them into a more logical order;
- inclusion of the generic specifications for reed switches;
- update of typical applications.

The text of this standard is based on the following documents:

FDIS	Report on voting
94/358/FDIS	94/359/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above Table.

This standard is intended to be used in conjunction with IEC 62246-1:2011.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62246 series, published under the general title *Reed switches*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

ITEH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62246-1-1:2013](#)

<https://standards.iteh.ai/catalog/standards/sist/3c2d69c2-a7ce-40e4-aebb-7f4d0cf9c6ef/sist-en-62246-1-1-2013>

INTRODUCTION

Reed switches which are in mass production and which are widely used in practice could be classified by the following characteristics:

a) Size:

- Normal or standard reed switches with a tube more than 50 mm in length and more than 5 mm in diameter;
- Sub-miniature reed switches with a tube more than 20 mm and up to 50 mm in length and up to 5 mm in diameter;
- Miniature reed switches with a tube more than 10 mm and up to 20 mm in length and more than 2 mm and up to 5 mm in diameter;
- Micro-miniature reed switches with a tube more than 4 mm and up to 10 mm in length and more than 1,5 mm and up to 5 mm in diameter.

b) Type of switching of electric circuit:

- Closing or normally open – A type;
- Opening or normally closed – B type;
- Changeover – C type.

c) Withstand voltage level:

- Low-voltage (up to 1 000 V);
- High-voltage (more than 1 000 V).

d) Switches power:

- Low-power (up to 60 W);
- Power (100 to 1 000 W);
- High-power (more than 1 000 W).

e) Types of electric contacts:

- The tube is filled with dry air, gas mixture, vacuumized, or high pressurized.

Based on the general provisions of IEC 62246-1, this standard selects and specifies test procedures for reed switches where enhanced requirements for the verification of quality assessment specification apply.

This standard describes sampling and test schedules for qualification approval procedures, quality conformance inspection, formation of inspection lots and intervals between tests.

NOTE All type of reed switches exclude mercury reed switches.

REED SWITCHES –

Part 1-1: Generic specification – Quality assessment

1 Scope

This part of the IEC 62246 which is a quality assessment specification defines requirements and tests to reed switches for use in general and industrial applications.

This standard is intended to be used in conjunction with IEC 62246-1:2011.

This standard selects from IEC 62246-1:2011 and from other sources the appropriate test procedures to be used in detail specifications derived from this specification.

Reed switch types are specified depending on characteristic values and tests.

NOTE Mercury wetted reed switches are not covered by this standard due to their possible environmental impact.

2 Normative references

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

SIST EN 62246-1-1:2013

IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-11:1981, *Basic environmental testing procedures – Part 2-11: Tests – Test Ka: Salt mist*

IEC 60068-2-14:2009, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

IEC 60068-2-21:2006, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60127-2:2003, *Miniature fuses – Part 2: Cartridge fuse-links*

IEC 61373:2010, *Railway applications – Rolling stock equipment – Shock and vibration tests*

IEC 62246-1: 2011, *Reed switches – Part 1: Generic specification*

3 Terms and definitions

The terms and definitions given in IEC 62246-1:2011, as well as the following, apply.

3.1 Reed switch types

3.1.1 type

products having similar design features and nominal dimensions manufactured by the same techniques and falling within a range of ratings specified by the manufacturer

Note 1 to entry: Mounting accessories are ignored, provided they have no significant effect on the test results.

3.1.2 variant

variation within a type having specific characteristics

3.1.3 reed switch

assembly containing contact blades, partly or completely made of magnetic material, hermetically sealed in an envelope and controlled by means of an externally generated magnetic field (e.g. an energizing quantity applied to a coil)

3.1.4 high voltage vacuum reed switch

reed switch, in which ability to switch high voltages is achieved by a high vacuum within the hermetically sealed envelope

3.1.5 heavy-duty reed switch

reed switch, in which greater switching capacity is achieved

Note 1 to entry: Blades having additional contact tips or a contact tip and spring which separate the magnetic path and electric path are typical examples of techniques to increase switching capacity.

3.2 Tests

3.2.1 routine test

conformity test made on each reed switch during or after manufacture

3.2.2 lot-by-lot test

test carried out periodically on a sample of reed switches drawn from running production at least once a month

3.2.3 periodic test

test carried out periodically on a sample of reed switches drawn from running production at least once a year and every two years

Note 1 to entry: The results from periodic tests are used verify that the level of technical performance is maintained.

3.3 Abbreviations

3.3.1 IL inspection level

inspection level which determines the relationship between the lot or batch size and the sample size

Note 1 to entry: The size of the sample drawn from the lot is dependent on the severity of the inspection level.

3.3.2

AQL

acceptance quality level

maximum percent defective that can be considered satisfactory as a process average

4 Test schedules

4.1 General

Test procedures are referenced in the corresponding subclauses of IEC 62246-1:2011.

4.2 Qualification approval procedures

- Sampling and test schedule are specified in Table 2 and Table 3.
- The tests specified and their order is mandatory.
- Tests stated in Table 2 and 3 are mandatory for the variants except when otherwise specified.

4.3 Quality conformance inspection

An initial conformity test has to be passed and then confirmed by routine tests, lot-by-lot tests and periodic tests.

Quality conformance inspection contains the tests stated in Table 1:

- Group A: routine tests;
- Groups A and B: lot-by-lot tests;
- Group C: periodic tests.

Unless otherwise stated in this specification, all tests of Table 1 are mandatory.

Where a subgroup contains cumulative tests, the order of the tests is mandatory. Specimens that have been subjected to tests denoted as destructive (D) shall not be released for delivery. Specimens that have been subjected to tests denoted as non-destructive (ND) are permitted to be released for delivery.

4.4 Formation of inspection lots

The basis for determination of sample size for the quality conformance inspection is the reed switch quantity produced during one month.

4.5 Intervals between tests

- Subgroup A0: at shipment.
- Subgroups A4 and B1: at least once a month.
- Subgroups C1: at least once a year.
- Subgroup C4: at least once every two years.

4.6 Standard conditions for testing

If not otherwise stated, all tests shall be performed under standard conditions for testing according to 7.3 of IEC 62246-1:2011.

4.7 Mounting of test specimens during the test

The following requirement shall apply for shock and vibration tests: