SLOVENSKI STANDARD
SIST EN IEC 62246-1-1:2018

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Nadomešča:
SIST EN 62246-1-1:2013

Stikala reed - 1-1. del: Rodovna specifikacija - Okvirna podrobna specifikacija

Reed switches - Part 1-1: Generic specification - Blank detail specification

Reedschalter - Teil 1-1: Fachgrundspezifikation - Qualitätsbewertung

Contacts à lames souples - Partie 1-1: Spécification générique - Evaluation de qualité

Ta slovenski standard je istoveten z: EN IEC 62246-1-1:2018

ICS:

29.120.40 Stikala Switches

SIST EN IEC 62246-1-1:2018 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 62246-1-1

April 2018

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Supersedes EN 62246-1-1:2013

English Version

Reed switches - Part 1-1: Generic specification - Blank detail specification (IEC 62246-1-1:2018)

Contacts à lames souples - Partie 1-1: Spécification générique - Spécification particulière-cadre (IEC 62246-1-1:2018)

Reedschalter - Teil 1-1: Fachgrundspezifikation - Vordruck für Bauartspezifikation (IEC 62246-1-1:2018)

This European Standard was approved by CENELEC on 2018-03-13. 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 94/426/FDIS, future edition 2 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 IEC 62246-1-1:2018.

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)	2018-12-13
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-03-13

This document supersedes EN 62246-1-1:2013.

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 62246-1-1:2018 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified).
IEC 60068-2-1:2007	NOTE	Harmonized as EN 60068-2-1:2007 (not modified).
IEC 60068-2-2:2007	NOTE	Harmonized as EN 60068-2-2:2007 (not modified).
IEC 60068-2-7:1983	NOTE	Harmonized as EN 60068-2-7:1993 (not modified).
IEC 60068-2-11:1981	NOTE	Harmonized as EN 60068-2-11:1999 (not modified).
IEC 60068-2-13:1983	NOTE	Harmonized as EN 60068-2-13:1999 (not modified).
IEC 60068-2-27:2008	NOTE	Harmonized as EN 60068-2-27:2009 (not modified).
IEC 60068-2-30:2005	NOTE	Harmonized as EN 60068-2-30:2005 (not modified).
IEC 60947-5-1:2017	NOTE	Harmonized as EN 60947-5-1:2017 (not modified).
IEC 60947-5-2:2007	NOTE	Harmonized as EN 60947-5-2:2007 (not modified).
IEC 60947-5-3:2013	NOTE	Harmonized as EN 60947-5-3:2013 (not modified).
IEC 61508-4:2010	NOTE	Harmonized as EN 61508-4:2010 (not modified).
IEC 61810-1:2015	NOTE	Harmonized as EN 61810-1:2015 (not modified).
IEC 61811-1	NOTE	Harmonized as EN 61811-1.
ISO 14119:2013	NOTE	Harmonized as EN ISO 14119:2013 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-6	2007	Environmental testing -- Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-11	1981	Basic environmental testing procedures - Part 2-11: 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 60068-2-17	1994	Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing	EN 60068-2-17	1994
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	2006	Environmental testing -- Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	2006
IEC 60068-2-78	2012	Environmental testing -- Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2013
IEC 60127-2	2014	Miniature fuses - Part 2: Cartridge fuse-links	EN 60127-2	2014
IEC 61373	2010	Railway applications - Rolling stock equipment - Shock and vibration tests	EN 61373	2010
IEC 61810-2	2017	Electromechanical elementary relays - Part 2: Reliability	EN 61810-2	2017
IEC 61810-2-1	2017	Electromechanical elementary relays - Part 2-1: Reliability - Procedure for the verification of B10 values	EN 61810-2-1	2017
IEC 62246-1	2015	Reed switches -- Part 1: Generic specification	EN 62246-1	2015
ISO 2859-1	1999	Sampling procedures for inspection by attributes -- Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	-	-

IEC 62246-1-1

Edition 2.0 2018-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Reed switches –
Part 1-1: Generic specification – Blank detail specification

Contacts à lames souples –
Partie 1-1: Spécification générique – Spécification particulière-cadre

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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REED SWITCHES –

Part 1-1: Generic specification – Blank detail specification

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.

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International Standard IEC 62246-1-1 has been prepared by IEC technical committee 94: All-or-nothing electrical relays.

This second edition cancels and replaces the first edition published in 2013. This edition constitutes a technical revision.

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

a) update of the scope, references and terms and definitions;

b) inclusion of guidelines for the preparation of blank detail and detail specifications;

c) update of characteristics values including functional ratings for safety;

d) update of the quality conformance inspection procedures;

e) update of typical applications.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
94/426/FDIS	94/427/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

This document is to be used in conjunction with IEC 62246-1:2015.

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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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 up to 10 mm in length and up to 2 mm in diameter.

b) Type of switching of electric circuit:
   - Closing or normally open – A type or NO;
   - Opening or normally closed – B type or NC;
   - Changeover – C type or CO.

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

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 62246-1:2015, this document selects and specifies blank detail and detail specifications including safety contact ratings and test procedures for reed switches where enhanced requirements for the verification of quality assessment specification apply.

This document 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 – Blank detail specification

1 Scope

This part of IEC 62246 which is a blank detail specification defines requirements and tests for reed switches for use in general and industrial applications.

This document is intended to be used in conjunction with IEC 62246-1:2015 and specific products standards applying as switching elements.

This document selects from IEC 62246-1:2015 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 including functional ratings for safety and tests.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60068-2-6:2007, *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 60068-2-17:1994, *Environmental testing – Part 2-17: Tests – Test Q: Sealing*

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 60068-2-78:2012, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60127-2:2014, *Miniature fuses – Part 2: Cartridge fuse-links*

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

IEC 61810-2:2017, *Electromechanical elementary relays – Part 2: Reliability*

IEC 61810-2-1:2017, *Electromechanical elementary relays – Part 2-1: Reliability – Procedure for the verification of B_{10} values*

IEC 62246-1:2015, *Reed switches – Part 1: Generic specification*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

The terms and definitions given in IEC 62246-1:2015 and the following, apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

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
type test
test of one or more reed switches made to a certain design to show that the design meets certain specifications

3.2.2
routine test
conformity test made on each reed switch during or after manufacture

3.2.3
lot-by-lot test
test carried out periodically on a sample of reed switches drawn from running production at least once a month

3.2.4
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 to verify that the level of technical performance is maintained.

Note 2 to entry: Sub-groups intervals between tests A0, A4 and B1, C1 and C4 are specified in 4.8.

3.3 inspection

3.3.1
inspection
process of measuring, examining, testing, or otherwise comparing the unit of product with the specified requirements

3.3.2
IL
inspection level
specification of lower limits for lot-by-lot test

Note 1 to entry: See ISO 2859-1:1999, Clause 9.

3.3.3
AQL
acceptance quality limit

maximum percent of defects that can be tolerance as a risk, stated for purposes of sampling inspection

Note 1 to entry: Sample inspection with associated risk tolerance is employed only where all units of product within an inspection lot is expected to completely comply with specification requirements.

3.4 safety and failure modes

3.4.1
B_{10} value
point estimate of B_{10}, the time (in number of cycles) by which 10 % of the population will have failed

Note 1 to entry: When B_{10} values are specified in the detail specifications, the electrical endurance test should measure all failures according to IEC 61810-2.

Note 2 to entry: See Clause A.3 of IEC 61810-2:2017.

3.4.2
B_{10D} value
number of cycles until 10 % of the components fail dangerously

Note 1 to entry: B_{10D} values are calculated according to IEC 61810-2-1.

3.4.3
dangerous failure
failure of an element and/or subsystem and/or system that plays a part in implementing the safety function that decreases the probability that the safety function operates correctly when required