IEC 62246-1

Edition 3.0 2015-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Reed switches – Part 1: Generic specification

Contacts à lames souples – Partie 1: Spécification générique

IEC 62246-1:2015-01(en-fr)

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REED SWITCHES –

Part 1: Generic specification

FOREWORD

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

This standard cancels and replaces the second edition of IEC 62246-1 published in 2011. It constitutes a technical revision.

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

– inclusion of Introduction (same as in IEC 62246-1-1:2013);
– update of the scope, the terms and definitions, the rated values and the test and measurement procedure;
– improvement of dielectric test, electrical endurance tests covering maximum electrical endurance test and overload test;
– improvement of Table F.1 for electrical ratings based on classification;

– inclusion of new Table G.1 for horsepower ratings based on classification.

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

FDIS	Report on voting
94/377/FDIS	94/381/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62246 series can be found, under the general title *Reed Switches*, 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- withdrawn,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.

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 > 25 mm and < 50 mm in length and < 5 mm in diameter;
   - miniature reed switches with a tube > 10 mm and < 25 mm in length and > 2 mm and < 5 mm in diameter;
   - micro-miniature reed switches with a tube > 4 mm and < 10 mm in length and > 1,5 mm and < 2 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 VA);
   - power (100 to 1 000 VA);
   - high-power (more than 1 000 VA).

e) Types of electric contacts:
   - the tube is filled with dry air, gas mixture, vacuumized, or high pressurized.

This standard selects and specifies test procedures for reed switches where enhanced requirements for the verification of generic specification apply.

An international standard IEC 62246-1-1 (a quality assessment specification including information of detail specification (DS)) was published in 2013.

REED SWITCHES –

Part 1: Generic specification

1 Scope

This part of IEC 62246 which is a generic specification applies to all types of reed switches including magnetically biased reed switches of assessed quality for use in general and industrial applications.

NOTE 1 Mercury wetted reed switches are not covered by this standard due to their possible environmental impact.

It lists the tests and measurement procedures which may be selected for use in detail specifications for such reed switches.

This standard applies to reed switches which are operated by an applied magnetic field; it is not restricted to any particular type of contact load.

For elementary relays with reed switches, this standard is recommended to be used together with the standards IEC 61810-1, IEC 61811-1 as applicable.

For applications of reed switches, this standard is recommended to be used together with specific product standards.

NOTE 2 Where any discrepancies occur for any reasons, documents rank in the following order of authority:

a) the detail specification,

b) the sectional specification,

c) the generic specification,

d) any other international documents (for example, of the IEC) to which reference is made.

The same order of precedence applies to equivalent national documents.

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.

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-1:2007, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

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

IEC 60068-2-7:1983, *Basic environmental testing procedures – Part 2-7: Tests – Test Ga and guidance: Acceleration, steady state*

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

IEC 60068-2-13:1983, *Basic environmental testing procedures – Part 2-13: Tests – Test M: Low air pressure*

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

IEC 60068-2-17:1994, *Basic environmental testing procedures – 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 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-30:2005, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-78, *Basic environmental testing procedures – Part 2: Tests – Test Cab: Damp heat, steady state*

IEC 60096 (all parts), *Radio frequency cables*

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE Definitions of terms not stipulated in this standard are given in the IEC 60050 series, in particular in IEC 60050-444.

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

Note 1 to entry: For example, an energizing quantity applied to a coil.

Note 2 to entry: See Figure 1.

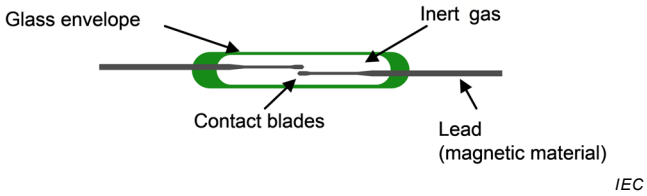

Figure 1 – Example of reed switch structure

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: See Figure 2.

Note 2 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.

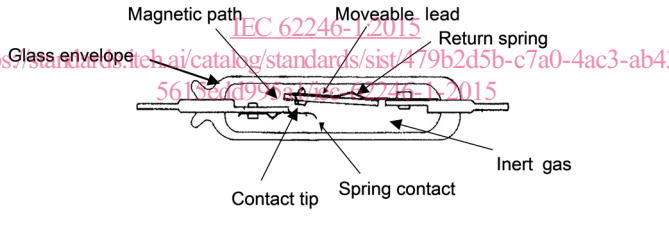

Figure 2 – Example of heavy-duty reed switch structure

3.1.6
magnetically biased reed switch
reed switch to which a biasing magnetic field is applied, determining the functional characteristics and the operate and release position

3.2 Operating values

3.2.1
preferred position
position recommended for use and in which tests are normally performed, unless otherwise specified

3.2.2
rated value
value of a quantity used for specification purpose, established for a specific set of operating conditions

3.2.3
operate position
position in which the make contact is closed and the break contact is open

3.2.4
release position
position in which the make contact is open and the break contact is closed

3.2.5
just-operate value
value of the magnetic and electro magnetic fields at which the released reed switch just operates

Note 1 to entry: See Figure 3.

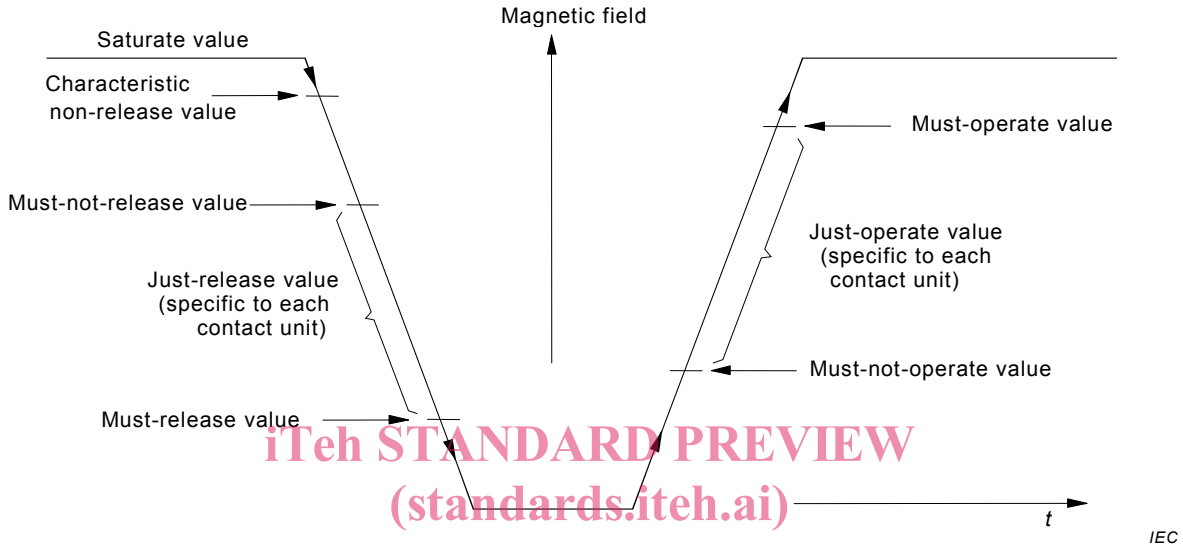

Figure 3 – Functional characteristics

3.2.6
must-operate value
stated limit of the applied magnetic field at which the reed switch operates

Note 1 to entry: See Figure 3.

3.2.7
just-release value
value of the applied magnetic field at which the operated reed switch just releases

Note 1 to entry: See Figure 3.

3.2.8
must-release value
stated limit of the applied magnetic field at which the operated reed switch releases

Note 1 to entry: See Figure 3.

3.2.9
must-not-operate value
stated limit of the applied magnetic field at which the reed switch does not operate

Note 1 to entry: See Figure 3.

3.2.10
must-not-release value
stated limit of the applied magnetic field at which the operated reed switch remains operated

Note 1 to entry: See Figure 3.