
Reed contacts unit - Part 1: Generic specification

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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English version

Reed contacts unit
Part 1: Generic specification
(IEC 62246-1:2002)

Contacts à lames souples
en enceinte scellée
Partie 1: Spécification générique
(CEI 62246-1:2002)

Reedkontakt-Einheiten
Teil 1: Fachgrundspezifikation
(IEC 62246-1:2002)

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This European Standard was approved by CENELEC on 2002-07-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 94/156/FDIS, future edition 1 of IEC 62246-1, prepared by IEC TC 94, All-or-nothing electrical relays, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62246-1 on 2002-07-01.

This European Standard supersedes EN 119000:1996.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-07-01

Annexes designated "normative" are part of the body of the standard. In this standard, annexes A, B and ZA are normative. Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62246-1:2002 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60027	Series	Letter symbols to be used in electrical technology	HD 245	Series
IEC 60050	Series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60068-1 + corr. October + A1	1988 1988 1992	Environmental testing Part 1: General and guidance	EN 60068-1	1994
IEC 60068-2-1 A1 A2	1990 1993 1994	Part 2: Tests – Tests A: Cold	EN 60068-2-1 A1 A2	1993 1993 1994
IEC 60068-2-2 A1 A2	1974 1993 1994	Tests B: Dry heat	EN 60068-2-2 ¹⁾ A1 A2	1993 1993 1994
IEC 60068-2-3	1969	Test Ca: Damp heat, steady state	HD 323.2.3 S2 ²⁾	1987
IEC 60068-2-6 + corr. March	1995 1995	Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-7 + A1	1983 1986	Test Ga and guidance: Acceleration, steady state	EN 60068-2-7	1993
IEC 60068-2-11	1981	Test Ka: Salt mist	EN 60068-2-11	1999
IEC 60068-2-13	1983	Test M: Low air pressure	EN 60068-2-13	1999
IEC 60068-2-14 + A1	1984 1986	Test N: Change of temperature	EN 60068-2-14	1999
IEC 60068-2-17	1994	Test Q: Sealing	EN 60068-2-17	1994

¹⁾ EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2.

²⁾ HD 323.2.3 S2 includes A1:1984 to IEC 60068-2-3.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-20 + A2	1979 1987	Test T: Soldering	HD 323.2.20 S3	1988
IEC 60068-2-21	1999	Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	1999
IEC 60068-2-27	1987	Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 60068-2-29 + corr.	1987	Test Eb and guidance: Bump	EN 60068-2-29	1993
IEC 60068-2-30 + A1	1980 1985	Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	EN 60068-2-30	1999
IEC 60096	Series	Radio-frequency cables	-	-
IEC 60317-1	1990	Specifications for particular types of winding wires Part 1: Polyvinyl acetal enamelled round copper wire, class 105	EN 60317-1	1994
A1	1997		A1	1997
A2	1997		A2	1998
IEC 60410	1973	Sampling plans and procedures for inspection by attributes	-	-
IEC 60617	Series	Graphical symbols for diagrams	EN 60417	Series
IEC 61810-1	1998	Electromechanical non-specified time all-or-nothing relays Part 1: General requirements	EN 61810-1	1998
IEC 61811-1	1999	Electromechanical non-specified time all-or-nothing relays of assessed quality Part 1: Generic specification	EN 61811-1	1999
ISO 1000	- ³⁾	SI units and recommendations for the use of their multiples and of certain other units	-	-
ITU-T Recommendation K.17	1988	Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference	-	-
IEC QC 001002	- ³⁾	IEC Quality Assessment System for Electronic Components (IECQ) - Rules of Procedure	-	-

³⁾ Undated reference.

INTERNATIONAL STANDARD

IEC 62246-1

First edition
2002-04

Reed contact units –

Part 1: Generic specification

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Contacts à lames souples en enceinte scellée –
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Partie 1:
Spécification générique

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

REED CONTACT UNITS –

Part 1: Generic specification

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

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

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

FDIS	Report on voting
94/156/FDIS	94/164/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 cancels and replaces IEC 60255-9 (1979).

The detail specifications (DS), the sectional specifications (SS) and the blank detail specifications (BDS) are not yet available and will be developed as the need arises.

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

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

REED CONTACT UNITS –

Part 1: Generic specification**1 General****1.1 Scope**

This part of IEC 62246 which is the generic specification applies to dry and mercury wetted reed contact units of assessed quality. It lists the tests and measurement procedures which may be selected for use in detail specifications for such units. This standard also specifies the quality assessment procedures to be followed.

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

NOTE 1 Since tests using a standard coil and standard resistive loads are the easiest to specify and to define, this standard is currently restricted to tests of this type.

NOTE 2 For elementary relays with reed contact units, this standard is recommended to be used together with the standards IEC 61810-1 and IEC 61811-1 as applicable.

Where in this part of IEC 62246 the term “detail specification” is used, this either has the meaning defined in A.7 of QC 001001 for application within the IECQ system, or it means any appropriate document, for example manufacturer’s data sheet, test specification, customer detail specification.

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 60027, *Letter symbols to be used in electrical terminology*

IEC 60050, *International Electrotechnical Vocabulary (IEV)*

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

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests – Tests A: Cold*
Amendment 1(1993)
Amendment 2(1994)

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*
Amendment 1(1993)
Amendment 2(1994)

IEC 60068-2-3:1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-7:1983, *Environmental testing – Part 2: Tests – Test Ga: Acceleration, steady state*
Amendment 1(1986)

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

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

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*
Amendment 1(1986)

IEC 60068-2-17:1994, *Basic environmental testing procedures – Part 2: Tests – Test Q: Sealing*

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests – Test T: Soldering*
Amendment 2(1987)

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60068-2-29:1987, *Environmental testing – Part 2: Tests – Test Eb and guidance: Bump*

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)*
Amendment 1(1985)

IEC 60096 (series), *Radio-frequency cables*
SIST EN 62246-1:2003
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IEC 60317-1:1990, *Specifications for particular types of winding wires – Part 1: Polyvinyl acetal enamelled round copper wire, class 105*
Amendment 1(1997)
Amendment 2(1997)

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60617, *Graphical symbols for diagrams*

IEC 61810-1:1998, *Electromechanical non-specified time all-or-nothing relays – Part 1: General requirements*

IEC 61811-1:1999, *Electromechanical non-specified time all-or-nothing relays of assessed quality – Part 1: Generic specification*

ISO 1000, *SI units and recommendation for the use of their multiples and of certain other units*

ITU-T Recommendation K.17:1988, *Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference*

QC 001002, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of Procedure*

1.3 Units, symbols and terminology

Units, graphical symbols, letter symbols and terminology shall, whenever possible, be taken from the following documents:

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units*

IEC 60027, *Letter symbols to be used in electrical technology*

IEC 60050, *International electrotechnical vocabulary*

IEC 60617, *Graphical symbols for diagrams*

Any other units, symbols and terminology specific to one of the components covered by the generic specification, shall be taken from the relevant IEC or ISO documents, listed under 1.2.

The following additional terminology is also applicable.

1.3.1

reed contact unit

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

1.3.2

mercury wetted contact unit (standards.iteh.ai)

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

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1.3.3

contact blade

metal blade providing either the functions of the electric or magnetic circuit or both functions combined as in the case of dry and wetted reed contact units.

For mercury wetted contact units: metal blade providing either the functions of the electric circuit through mercury or the magnetic circuit, or both functions combined

1.3.4

biasing magnetic field

continuous magnetic field intended to determine the operate and the release position of the contact, which can be adjusted to form a monostable or bistable contact unit

NOTE For bistable contact units, operate and release conditions have to be defined by the manufacturer in the detail specification with reference to applied magnetic field polarity.

1.3.5

applied magnetic field

externally generated field (for example by a test coil) intended to change the position of the contact

1.3.6

contact unit, mechanically biased

contact unit where the biasing, to determine the operate and release positions, is achieved mechanically

1.3.7

magnetically biased contact unit

contact unit to which a biasing magnetic field is applied, determining the functional characteristics and the operate and release position

1.3.8**make contact (Form A contact)**

means that a reed contact unit is open when there is no applied magnetic field. This is a normally open contact

1.3.9**break contact (Form B contact)**

means that a reed contact unit is closed when there is no applied magnetic field. This is a normally closed contact

1.3.10**change-over reed contact unit**

contains a make contact and a break contact within its envelope, one contact blade being common

a) change-over break-before-make reed contact unit (Form C contact)

Change-over reed contact unit, one contact circuit of which breaks before the other makes.

b) change-over make-before-break reed contact unit (Form D contact)

Change-over reed contact unit, one contact circuit of which makes before the other breaks.

c) change-over reed contact unit with unspecified switching sequence (Form A and Form B contacts)

Change-over reed contact unit where the switching sequence can be either make-before-break or break-before-make.

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1.3.11**type**

type comprises products having similar design features manufactured by the same techniques and falling within the manufacturer's usual range of ratings for these products

NOTE Mounting accessories are ignored, provided they have no significant effect on the test results.

1.3.12**variant**

variation within a type having specific nominal dimensions and characteristics

1.3.13**rated value**

value assigned by the manufacturer to a given characteristic of the reed contact unit

1.3.14**operate position**

position where the make contact is closed and the break contact is open.

1.3.15**release position**

position where the make contact is open and the break contact is closed

1.3.16**to operate**

reed contact unit operates when it changes from the release position to the operate position

1.3.17**to release**

reed contact unit releases when it changes from the operate position to the release position

1.3.18**just-operate value**

value of the magnetic field at which the released reed contact unit just operates (see figure 1)

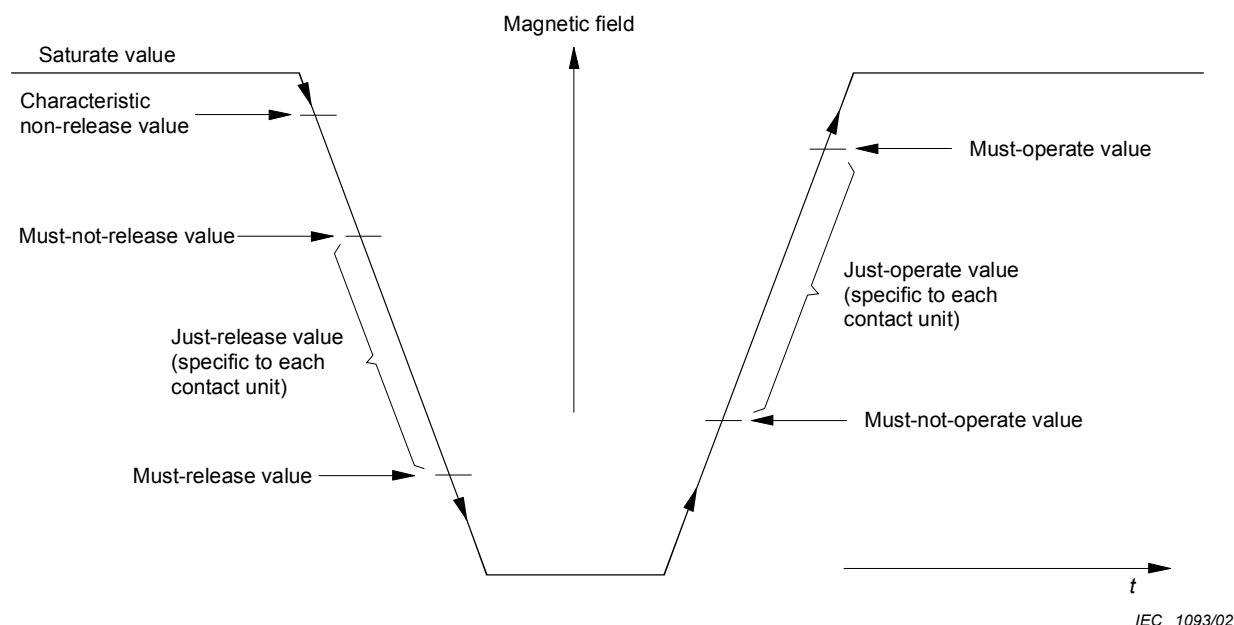


Figure 1 – Functional characteristics
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1.3.19**must-operate value**

stated limit of the applied magnetic field at which the reed contact unit operates (see figure 1)

1.3.20**just-release value**

value of the applied magnetic field at which the operated reed contact unit just releases (see figure 1)

1.3.21**must-release value**

stated limit of the applied magnetic field at which the operated reed contact unit releases (see figure 1)

1.3.22**must-not-operate value**

stated limit of the applied magnetic field at which the reed contact unit does not operate (see figure 1)

1.3.23**must-not-release value**

stated limit of the applied magnetic field at which the operated reed contact unit remains operated (see figure 1)

1.3.24**characteristic non-release value**

stated value of the applied magnetic field above which the operated reed contact unit fulfils specified qualities, for example contact resistance, noise characteristics, etc. (see figure 1)