



SLOVENSKI STANDARD
SIST EN 60255-23:2001
01-september-2001

Electrical relays - Part 23: Contact performance

Electrical relays -- Part 23: Contact performance

Elektrische Relais -- Teil 23: Kontaktverhalten

Relais lectriques -- Partie 23: Caractristiques fonctionnelles des contacts

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Ta slovenski standard je istoveten z: EN 60255-23:1996

[SIST EN 60255-23:2001](https://standards.iteh.ai/catalog/standards/sist/386dc3aa-b1d9-4c03-8981-afe957a230d2/sist-en-60255-23-2001)

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ICS:

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Descriptors: Electrical relays, contact performance

English version

Electrical relays
Part 23: Contact performance
(IEC 255-23:1994)

Relais électriques
Partie 23: Caractéristiques
fonctionnelles des contacts
(CEI 255-23:1994)

Elektrische Relais
Teil 23: Kontaktverhalten
(IEC 255-23:1994)

This European Standard was approved by CENELEC on 1996-07-02. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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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 the International Standard IEC 255-23:1994, prepared by IEC TC 94, All-or-nothing electrical relays, was submitted to the formal vote and was approved by CENELEC as EN 60255-23 on 1996-07-02 without any modification.

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) 1997-06-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1997-06-01

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

Endorsement notice

The text of the International Standard IEC 255-23:1994 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 50(191)	1990	International Electrotechnical Vocabulary (IEV) Chapter 191: Dependability and quality of service	-	-
IEC 50(446)	1977	Chapter 446: Electrical relays	-	-
IEC 50(531)	1974	Chapter 531: Electronic tubes	-	-
IEC 85	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990
IEC 255-1-00	1975	Electrical relays Part 1: All-or-nothing electrical relays	-	-
IEC 255-3	1989	Part 3: Single input energizing quantity measuring relays with dependent or independent time	-	-
IEC 255-5	1977	Part 5: Insulation tests for electrical relays	-	-
IEC 255-7	1991	Part 7: Test and measurement procedures for electromechanical all-or-nothing relays	-	-
IEC 255-14	1981	Part 14: Endurance test for electrical relay contacts - Preferred values of contact loads	-	-
IEC 255-15	1981	Part 15: Endurance tests for electrical relay contacts - Specification for the characteristics of test equipment	-	-
IEC 255-19	1983	Part 19: Sectional specification: Electromechanical all-or-nothing relays of assessed quality	-	-
IEC 255-19-1	1983	Part 19: Blank detail specification: Electromechanical all-or-nothing relays of assessed quality - Test schedules 1, 2 and 3	-	-

<u>Publication</u>	<u>Année</u>	<u>Titre</u>	<u>EN/HD</u>	<u>Année</u>
IEC 410	1973	Sampling plans and procedures for inspection by attributes	-	-
IEC 605-6	1986	Equipment reliability testing Part 6: Tests for the validity of a constant failure rate assumption	-	-
IEC 664-1 (mod)	1992	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	HD 625.1 S1	1996
CCITT Vol. IX	1989	Protection against interference - Series K Recommendations - Recommendation K.17: Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference	-	-

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NORME
INTERNATIONALE
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STANDARD

CEI
IEC
255-23

Première édition
First edition
1994-10

Relais électriques –

Partie 23:
Caractéristiques fonctionnelles des contacts

Electrical relays –

Part 23:
Contact performance

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL RELAYS –

Part 23: Contact performance

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 cooperation 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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, 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.

International Standard IEC 255-23 has been prepared by IEC technical committee 94: All-or-nothing electrical relays.

This standard cancels and replaces IEC 255-0-20 published in 1974 and constitutes a technical revision.

The text of this standard is based on IEC 255-0-20 and on the following documents:

DIS	Report on voting
41A(CO)32*	94(CO)1

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

Annexes A to E form an integral part of this standard.

* Sub-committee 41A has been transformed into technical committee 94.

ELECTRICAL RELAYS –

Part 23: Contact performance

1 General

1.1 *Scope and object*

This International Standard is applicable to contact assemblies of relays within the scope of the IEC. It covers basic considerations which are, in general, common to all types of relays covered by IEC 255, but supplementary requirements may be necessitated by specific designs or application.

It applies only to relays in a new condition.

The object of this standard is to state, for relay contact assemblies:

- definitions of terms used;
- preferred rated values;
- preferred test conditions;
- basic criteria of contact failure;
- assessment of performance data;
- presentation of performance data.

1.2 *Normative references*

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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IEC 50(191): 1990, *International Electrotechnical Vocabulary (IEV) – Chapter 191: Dependability and quality of service* (standards.iteh.ai)

IEC 50(446): 1983, *International Electrotechnical Vocabulary (IEV) – Chapter 446: Electrical relays* (standards.iteh.ai/catalog/standards/sist/386dc3aa-b1d9-4c03-8981-afe957a230d2/sist-en-60255-23-2001)

IEC 50(531): 1974, *International Electrotechnical Vocabulary (IEV) – Chapter 531: Electronic tubes*

IEC 85: 1984, *Thermal evaluation and classification of electrical insulation*

IEC 255-1-00: 1975, *Electrical relays – All-or-nothing electrical relays*

IEC 255-3: 1989, *Electrical relays – Part 3: Single input energizing quantity measuring relays with dependent or independent time*

IEC 255-5: 1977, *Electrical relays – Part 5: Insulation tests for electrical relays*

IEC 255-7: 1991, *Electrical relays – Part 7: Test and measurement procedures for electro-mechanical all-or-nothing relays*

IEC 255-14: 1981, *Electrical relays – Part 14: Endurance tests for electrical relay contacts – Preferred values for contact loads*

IEC 255-15: 1981, *Electrical relays – Part 15: Endurance tests for electrical relay contacts – Specification for the characteristics of test equipment*

IEC 255-19: 1983, *Electrical relays – Part 19: Electromechanical all-or-nothing relays of assessed quality*

IEC 255-19-1: 1983, *Electrical relays – Part 19: Blank detail specification: Electro-mechanical all-or-nothing relays of assessed quality – Test schedules 1, 2 and 3*

IEC 410: 1973, *Sampling plans and procedures for inspection by attributes*

IEC 605-6: 1986, *Equipment reliability testing – Part 6: Tests for the validity of a constant failure rate assumption*

IEC 664-1: 1992, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

CCITT, Vol. IX: 1989, *Protection against interference – Series K Recommendations – Recommendation K.17: Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference*

2 Definitions

For the purpose of this International Standard, the following definitions shall apply.

NOTE – For definitions of general terms not defined in this standard, reference should be made to the other parts of IEC 255 and to IEC 50.

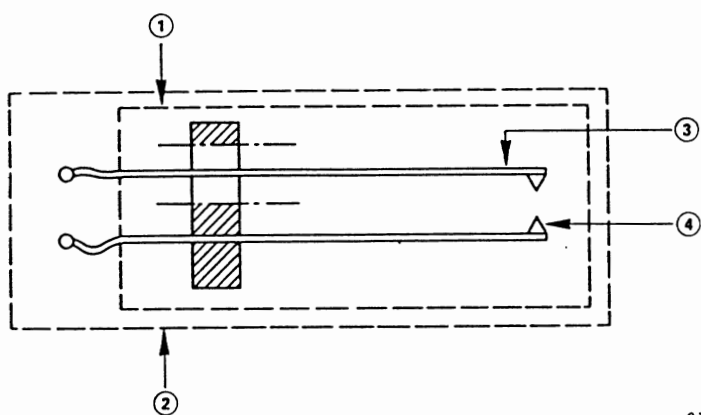
2.1 contact circuit (see 2, figure 1): The whole of the electrically conductive parts of a relay which are intended to be connected to a given external circuit which is to be closed or opened by the relay. [IEV 446-16-02 modified]

NOTE – A change-over contact involves two contact circuits.
<https://standards.iteh.ai/catalog/standards/sist/386dc3aa-b1d9-4c03-8981-afe957a230d2/sist-en-60255-23-2001>

2.2 contact assembly (see 1, figure 1): An assembly of contact members, with their insulation, which close or open their contact circuit by their relative movement. [IEV 446-16-03]

2.3 contact member (see 3, figure 1): A conductive part of a contact assembly which is electrically isolated from other such parts when the contact circuit is open. [IEV 446-16-04]

2.4 contact tip, contact point (see 4, figure 1): A conductive part of a contact member designed to co-act with another to close the contact circuit. [IEV 446-16-05 modified]



039/77

- ① Contact assembly
- ② Contact circuit
- ③ Contact member
- ④ Contact tip (contact point)

Figure 1 – Example explaining the terms 2.1 to 2.4

2.5 make contact: A contact which is open when the relay is in its unenergized condition and which is closed when the relay is in an energized condition.

2.6 break contact: A contact which is closed when the relay is in its unenergized condition and which is open when the relay is in an energized condition.

2.7 contact gap: The gap between the contact tips, under specified conditions, when the contact circuit is open.

2.8 contact force: The force which two contact tips exert against each other in the closed position under specified conditions.

2.9 limiting continuous current of a contact circuit*: The highest value of current (r.m.s. if a.c.) which a previously closed contact circuit is capable of carrying continuously under specified conditions.

2.10 limiting short-time current of a contact circuit*: The highest value of current which a previously closed contact circuit is capable of carrying for a specified short period under specified conditions. (standards.iteh.ai)

2.11 limiting making capacity*: The highest value of current which a contact assembly is capable of making under specified conditions.

2.12 limiting breaking capacity*: The highest value of current which a contact assembly is capable of breaking under specified conditions.

2.13 limiting cycling capacity*: The highest value of current which an output circuit is capable of making and breaking successively under specified conditions (voltage, number of cycles, power factor, time constant, etc.). [IEV 446-16-21]

* The limiting values (see 2.9, 2.10, 2.11, 2.12 and 2.13) may be greater than the corresponding rated values.

2.14 bounce: A phenomenon which may occur while a contact circuit is making or breaking and which is characterized by the contact tips successively touching and separating before reaching their final condition. [IEV 446-16-22]

2.15 bounce time: For a contact which is closing (opening) its circuit, the time interval between the instant when the contact circuit first closes (opens) and the instant when the circuit is finally closed (opened). [IEV 446-17-13]

2.16 contact follow; contact over-travel: The further specified movement of the contact tips when making and after they have just touched and while they are travelling in the same direction as the moving contact member. [IEV 446-16-08]

2.17 contact wipe: When a contact is making, the relative rubbing movement of contact tips after they have just touched. [IEV 446-16-09]

The following definitions apply to all-or-nothing relays.

2.18 relay reliability: The probability that a relay can perform a required function under given conditions for a given time interval or number of operations.

NOTE – It is generally assumed that the all-or-nothing relay is able to perform this required function in its initial condition.

2.19 mean operating time between failures MTBF (abbreviation): The expectation of the operating time between failures. [IEV 191-12-09]

2.20 cycle-related mean operating time between failures (MTBF_c)*: MTBF_c equals the cycle-related mean value μ of the failure distribution.

NOTE – MTBF_c is often used in place of MTBF to define the number of cycles between failures in place of the operating time between failures.

2.21 relay failure rate* λ (symbol): The number of failures relative to the time of service of the relay.

NOTE – λ is the reciprocal of MTBF.

2.22 cycle-related failure rate* λ_c (symbol): λ_c is the reciprocal of MTBF_c: $\lambda_c = \frac{1}{\text{MTBF}_c}$

2.23 electrical endurance: The number of cycles until failure, under specified electrical loading and other operating conditions.

NOTE – Electrical endurance is preferably stated at confidence level of 60 % or 90 %.

2.24 relay endurance test: A test carried out over a number of operations to investigate how the properties of a relay are affected by the application of stated stresses.

* Terms and definitions are given for restricted use as explained in annex E.