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Elektromehanski osnovni releji - 1. del: Splošne zahteve (IEC 61810-1:2008)

Electromechanical elementary relays - Part 1: General requirements

Elektromechanische Elementarrelais (elektromechanische Schaltrelais ohne festgelegtes Zeitverhalten) - Teil 1: Allgemeine Anforderungen

Relais électromécaniques élémentaires - Partie 1: Exigences générales

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NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61810-1

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English version

**Electromechanical elementary relays -
Part 1: General requirements
(IEC 61810-1:2008)**

Relais électromécaniques élémentaires -
Partie 1: Exigences générales
(CEI 61810-1:2008)

Elektromechanische Elementarrelais -
Teil 1: Allgemeine Anforderungen
(IEC 61810-1:2008)

This European Standard was approved by CENELEC on 2008-05-01. 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 two official versions (English and 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 94/267/FDIS, future edition 3 of IEC 61810-1, 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 61810-1 on 2008-05-01.

This European Standard supersedes EN 61810-1:2004.

The relevant modifications compared to EN 61810-1:2004 are:

- update of references;
- renumbering of clauses to bring them into a more logical order;
- inclusion of contact load categories (same as in EN 61810-2 and EN 61810-7);
- clarifications concerning electrical endurance (Clause 11);
- inclusion of provisions for insulation coordination in accordance with the basic safety standards EN 60664-3, EN 60664-4 and EN 60664-5 (Clause 13);
- renumbering of all annexes in the order they are referenced in the body of the standard;
- inclusion of new Annex C (normative) for the test set-up, and new Annex D (informative) for special loads (based upon similar annexes in EN 61810-2 and EN 61810-7);
- improvement of Annex B covering inductive contact loads.

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) 2009-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61810-1:2008 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 60335-1 + A1	NOTE	Harmonized as EN 60335-1:2002 (modified) + A1:2004 (not modified) .
IEC 60695-11-5	NOTE	Harmonized as EN 60695-11-5:2005 (not modified).
IEC 60730-1 + A1	NOTE	Harmonized as EN 60730-1:1995 (modified) + A1:1997 (modified).
IEC 60947-5-1	NOTE	Harmonized as EN 60947-5-1:2004 (not modified).
IEC 60950-1	NOTE	Harmonized as EN 60950-1:2006 (modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

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 60038 (mod)	1983	IEC standard voltages ¹⁾	HD 472 S1	1989
-	-		+ corr. February	2002
-	-		A1	1995
A1	1994			
A2	1997			
IEC 60050	Series	International Electrotechnical Vocabulary (IEV)	-	-
IEC 60068-2-2	2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007
IEC 60068-2-17	1994	Environmental testing - Part 2: Tests - Test Q: Sealing	EN 60068-2-17	1994
IEC 60068-2-20 + A2	1979 1987	Environmental testing - Part 2: Tests - Test T: Soldering	HD 323.2.20 S3	1988
IEC 60085	2004	Electrical insulation - Thermal classification	EN 60085 ²⁾	2004
IEC 60112	2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
IEC 60364-4-44	2007	Low voltage electrical installations - Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances	-	-
IEC 60417	Data-base	Graphical symbols for use on equipment	-	-
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 60664-3	2003	Insulation coordination for equipment within low-voltage systems - Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2003
IEC 60664-4	2005	Insulation coordination for equipment within low-voltage systems - Part 4: Consideration of high-frequency voltage stress	EN 60664-4 + corr. October	2006 2006

¹⁾ The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

²⁾ EN 60085 is superseded by EN 60085:2008, which is based on IEC 60085:2007.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60664-5	2007	Insulation coordination for equipment within low-voltage systems - Part 5: Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm	EN 60664-5	2007
IEC 60695-2-10	2000	Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure	EN 60695-2-10	2001
IEC 60695-2-11	2000	Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001
IEC 60695-2-12	2000	Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability test method for materials	EN 60695-2-12	2001
IEC 60695-2-13	2000	Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignitability test method for materials	EN 60695-2-13	2001
IEC 60695-10-2	2003	Fire hazard testing - Part 10-2: Abnormal heat - Ball pressure test	EN 60695-10-2	2003
IEC 60721-3-3 A1 A2	1994 1995 1996	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 3: Stationary use at weatherprotected locations	EN 60721-3-3 - A2	1995 - 1997
IEC 60999-1	1999	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units - Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm ² up to 35 mm ² (included)	EN 60999-1	2000
IEC 61210 (mod)	1993	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements	EN 61210	1995
IEC 61760-1	2006	Surface mounting technology - Part 1: Standard method for the specification of surface mounting components (SMDs)	EN 61760-1	2006
IEC 61984	2001	Connectors - Safety requirements and tests	EN 61984	2001



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INTERNATIONAL STANDARD

Electromechanical elementary relays –
Part 1: General requirements

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE **XB**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMECHANICAL ELEMENTARY RELAYS –**Part 1: General requirements**

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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- 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.

International Standard IEC 61810-1 has been prepared by IEC technical committee 94: All-or-nothing electrical relays.

This third edition cancels and replaces the second edition published in 2003. This edition constitutes a technical revision.

The relevant modifications are:

- update of references;
- renumbering of clauses to bring them into a more logical order;
- inclusion of contact load categories (same as in IEC 61810-2 and IEC 61810-7);
- clarifications concerning electrical endurance (Clause 11);
- inclusion of provisions for insulation coordination in accordance with the basic safety standards IEC 60664-3, IEC 60664-4 and IEC 60664-5 (Clause 13);
- renumbering of all annexes in the order they are referenced in the body of the standard;
- inclusion of new Annex C (normative) for the test set-up, and new Annex D (informative) for special loads (based upon similar annexes in IEC 61810-2 and IEC 61810-7);

– improvement of Annex B covering inductive contact loads.

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

FDIS	Report on voting
94/267/FDIS	94/269/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 IEC 61810 series, published under the general title *Electromechanical elementary relays* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

A bilingual version of this document may be issued at a later date.

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ELECTROMECHANICAL ELEMENTARY RELAYS –

Part 1: General requirements

1 Scope

This part of IEC 61810 applies to electromechanical elementary relays (non-specified time all-or-nothing relays) for incorporation into equipment. It defines the basic functional requirements and safety-related aspects for applications in all areas of electrical engineering or electronics, such as:

- general industrial equipment,
- electrical facilities,
- electrical machines,
- electrical appliances for household and similar use,
- information technology and business equipment,
- building automation equipment,
- automation equipment,
- electrical installation equipment,
- medical equipment,
- control equipment,
- telecommunications,
- vehicles,
- transportation (e.g. railways).

Compliance with the requirements of this standard is verified by the type tests indicated.

In case the application of a relay determines additional requirements exceeding those specified in this standard, the relay should be assessed in line with this application in accordance with the relevant IEC standard(s) (e.g. IEC 60730-1, IEC 60335-1, IEC 60950-1).

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 60038:1983, *IEC standard voltages*
Amendment 1 (1994)
Amendment 2 (1997)

IEC 60050, *International Electrotechnical Vocabulary*

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

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

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

IEC 60085:2004, *Electrical insulation – Thermal classification*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60364-4-44:2007, *Low voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60417:2007, *Graphical symbols for use on equipment*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2003, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60664-5:2007, *Insulation coordination for equipment within low-voltage systems – Part 5: Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm*

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-12:2000, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability test method for materials*

IEC 60695-2-13:2000, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignitability test method for materials*

IEC 60695-10-2:2003, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*

IEC 60721-3-3:2002, *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weatherprotected locations*

Amendment 1 (1995)

Amendment 2 (1996)

IEC 60999-1:1999, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 61210:1993, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 61760-1:2006, *Surface mounting technology – Part 1: Standard method for the specification of surface mounting components (SMDs)*

IEC 61984:2001, *Connectors – Safety requirements and tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050, in particular IEC 60050-444 and the following apply.

An alphabetical list of terms can be found at the end of this standard.

NOTE In the text of this standard, the term *relay* is used instead of *elementary relay* to improve the readability.

3.1 Definitions related to general terms

3.1.1

marking

identification of a relay which, when completely given to the manufacturer of this relay, allows the unambiguous indication of its electrical, mechanical, dimensional and functional parameters

EXAMPLE Through the indication of the trade mark and the type designation on the relay, all relay-specific data can be derived from the type code.

3.1.2

intended use

use of a relay for the purpose for which it was made, and in the manner intended by the manufacturer

3.1.3

relay technology categories

categorization of relays, based upon environmental protection

NOTE Six categories are in use (RT 0 to RT V).

[IEV 444-01-11, modified]

3.1.4

pulse width modulation

PWM

pulse time modulation in which the pulse duration varies in accordance with a given function of the value of the modulating signal

[IEV 702-06-57]

3.2 Definitions of relay types

3.2.1

electrical relay

device designed to produce sudden and predetermined changes in one or more output circuits when certain conditions are fulfilled in the electric input circuits controlling the device

[IEV 444-01-01]

NOTE 1 For the purpose of this standard, output circuits are contact circuits.

NOTE 2 For the purpose of this standard, the term "coil" is used to denote "input circuit", although other types of input circuits are possible.

3.2.2

all-or-nothing relay

electrical relay, which is intended to be energized by a quantity, the value of which is either within its operative range or effectively zero

NOTE "All-or-nothing relays" include both "elementary relays" and "time relays".

[IEV 444-01-02]

3.2.3

elementary relay

all-or-nothing relay which operates and releases without any intentional time delay

[IEV 444-01-03, modified]

3.2.4

electromechanical relay

electrical relay in which the intended response results mainly from the movement of mechanical elements

[IEV 444-01-04]