SLOVENSKI STANDARD

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Conventions concerning electric and magnetic circuits (IEC 60375:2003)

ICS 17.220.01

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EUROPEAN STANDARD

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English version

Conventions concerning electric and magnetic circuits
(IEC 60375:2003)

Conventions concernant les circuits électriques et magnétiques
(CEI 60375:2003)

Vereinbarungen für Stromkreise und magnetische Kreise
(IEC 60375:2003)

This European Standard was approved by CENELEC on 2003-09-01. 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, Lithuania, 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

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Foreword

The text of document 25/261/FDIS, future edition 2 of IEC 60375, prepared by IEC TC 25, Quantities and units, and their letter symbols, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60375 on 2003-09-01.

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) 2004-06-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-09-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60375:2003 was approved by CENELEC as a European Standard without any modification.

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-121	1998	International Electrotechnical Vocabulary (IEV) Part 121: Electromagnetism	-	-
IEC 60050-131	2002	Part 131: Circuit theory	-	-
IEC 60617	Series	Graphical symbols for diagrams	EN 60617	Series

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
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Deuxième édition
Second edition
2003-06

Conventions concernant les circuits électriques et magnétiques

Conventions concerning electric and magnetic circuits

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

CONVENTIONS CONCERNING ELECTRIC AND MAGNETIC CIRCUITS

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 60375 has been prepared by IEC technical committee 25: Quantities and units, and their letter symbols.

This second edition cancels and replaces the first edition issued in 1972, and constitutes a technical revision.

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

FDIS	Report on voting
25/261/FDIS	25/266/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.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

CONVENTIONS CONCERNING ELECTRIC AND MAGNETIC CIRCUITS

1 Scope

This International Standard lays down rules for signs and reference directions and reference polarities for electric currents and voltages in electric networks, as well as for the corresponding quantities in magnetic circuits.

In Clauses 3 to 9, the time dependence is arbitrary. Clause 10 details the rules and recommendations for complex notation.

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 60050-121:1998, *International Electrotechnical Vocabulary (IEV) – Part 121: Electromagnetism*

IEC 60050-131:2002, *International Electrotechnical Vocabulary (IEV) – Part 131: Circuit theory*

IEC 60617, *Graphical symbols for diagrams*

3 Terms and definitions

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

3.1
terminal
point of interconnection of an electric circuit element, an electric circuit or a network (IEC 60050-131:2002, 131-13-03) with other electric circuit elements, electric circuits or networks

[IEV-131-11-11]

NOTE 1 For an electric circuit element, the terminals are the points at which or between which the related integral quantities are defined. At each terminal, there is only one electric current from outside into the element.

NOTE 2 The term “terminal” has a related meaning in IEC 60050-151.

3.2
circuit element
in electromagnetism, mathematical model of a device characterized by one or more relations between integral quantities

[IEV-131-11-03]

3.3
two-terminal element
electric circuit element having two terminals

[IEV 131-11-16]

3.4
***n*-terminal circuit element**
electric circuit element having n terminals with generally $n > 2$

[IEV-131-11-13]

NOTE For an n-terminal electric circuit element:

1) the algebraic sum of the electric currents into the element through the terminals is zero at any instant;

2) there are $n - 1$ independent relations between integral quantities.

3.5
network
in network topology, set of ideal circuit elements and their interconnections, considered as a whole

[IEV-131-13-03]

NOTE 1 The term "electric network" is defined in IEC 60050-131-11-07 and in IEC 60050-151.

NOTE 2 In diagrams in this standard, a box, IEC 60617 symbol, represents any network, unless otherwise specified.

3.6
branch
subset of a network, considered as a two-terminal circuit, consisting of a circuit element or a combination of circuit elements

[IEV-131-13-06]

3.7
node, vertex (US)
end-point of a branch connected or not to one or more other branches

[IEV-131-13-07]

3.8
loop
closed path passing only once through any node

[IEV-131-13-12]

3.9
tree
connected set of branches joining all the nodes of a network without forming a loop

[IEV-131-13-13]

3.10
co-tree
set of the branches of a network not included in a chosen tree

[IEV-131-13-14]