SLOVENSKI STANDARD
SIST HD 245.3 S3:2002

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Letter symbols to be used in electrical technology - Part 3: Logarithmic quantities and units

Letter symbols to be used in electrical technology -- Part 3: Logarithmic quantities and units

Formelzeichen für die Elektrotechnik -- Teil 3: Logarithmische Größen und Einheiten

Symboles littéraux à utiliser en électrotechnique -- Partie 3: Grandeurs et unités logarithmiques

Ta slovenski standard je istoveten z: **HD 245.3 S3:2001**

ICS:

01.060	Veliḷine in enote	Quantities and units
01.075	Simboli za znake	Character symbols
29.020	Elektrotehnika na splošno	Electrical engineering in general

SIST HD 245.3 S3:2002 **en**

HARMONIZATION DOCUMENT **HD 245.3 S3**

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT July 2001

ICS 01.060

Supersedes HD 245.3 S2:1991

English version

Letter symbols to be used in electrical technology
Part 3: Logarithmic quantities and units
(IEC 60027-3:1989 + A1:2000)

Symboles littéraux à utiliser en électrotechnique
Partie 3: Grandeurs et unités logarithmiques
(CEI 60027-3:1989 + A1:2000)

Formelzeichen für die Elektrotechnik
Teil 3: Logarithmische Größen und Einheiten
(IEC 60027-3:1989 + A1:2000)

This Harmonization Document was approved by CENELEC on 2001-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document on a national level.

Up-to-date lists and bibliographical references concerning such national implementation may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Ref. No. HD 245.3 S3:2001 E

Foreword

The text of the International Standard IEC 60027-3:1989 + A1:2000, prepared by IEC TC 25, Quantities and units, and their letter symbols, was submitted to the formal vote and was approved by CENELEC as HD 245.3 S3 on 2001-05-01 without any modification.

This Harmonization Document supersedes HD 245.3 S2:1991.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 2001-10-01
- latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 2002-04-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2004-04-01

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 60027-3:1989 + A1:2000 was approved by CENELEC as a Harmonization Document without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This Harmonization Document 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 Harmonization Document 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 60050-702	1992	International electrotechnical vocabulary - Chapter 702: Oscillations, signals and related devices	-	-
ISO 31-11	1978	Mathematical signs and symbol for use in the physical sciences and technology	-	-
ISO 2382-16	1996	Information technology - Vocabulary Part 16: Information theory	-	-

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
27-3

Deuxième édition
Second edition
1989-11

Symboles littéraux à utiliser en électrotechnique

Troisième partie:
Grandeurs et unités logarithmiques

Letter symbols to be used in electrical technology

Part 3:
Logarithmic quantities and units

Numéro de référence
Reference number
CEI/IEC 27-3: 1989

Révision de la présente publication

Le contenu technique des publications de la CEI est constamment revu par la Commission afin d'assurer qu'il reflète bien l'état actuel de la technique.

Les renseignements relatifs à ce travail de révision, à l'établissement des éditions révisées et aux mises à jour peuvent être obtenus auprès des Comités nationaux de la CEI et en consultant les documents ci-dessous:

- **Bulletin de la CEI**
- **Annuaire de la CEI**
- **Catalogue des publications de la CEI**
  Publié annuellement

Terminologie

En ce qui concerne la terminologie générale, le lecteur se reportera à la Publication 50 de la CEI: Vocabulaire Electrotechnique International (VEI), qui est établie sous forme de chapitres séparés traitant chacun d'un sujet défini, l'Index général étant publié séparément. Des détails complets sur le VEI peuvent être obtenus sur demande.

Les termes et définitions figurant dans la présente publication ont été soit repris du VEI, soit spécifiquement approuvés aux fins de cette publication.

Symboles graphiques et littéraux

Pour les symboles graphiques, symboles littéraux et signes d'usage général approuvés par la CEI, le lecteur consultera:

— la Publication 27 de la CEI: Symboles littéraux à utiliser en électrotechnique;

— la Publication 617 de la CEI: Symboles graphiques pour schémas.

Les symboles et signes contenus dans la présente publication ont été soit repris des Publications 27 ou 617 de la CEI, soit spécifiquement approuvés aux fins de cette publication.

Publications de la CEI établies par le même Comité d'Etudes

L'attention du lecteur est attirée sur le deuxième feuillet de la couverture, qui énumère les publications de la CEI préparées par le Comité d'Etudes qui a établi la présente publication.

Revision of this publication

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology.

Information on the work of revision, the issue of revised editions and amendment sheets may be obtained from IEC National Committees and from the following IEC sources:

- **IEC Bulletin**
- **IEC Yearbook**
- **Catalogue of IEC Publications**
  Published yearly

Terminology

For general terminology, readers are referred to IEC Publication 50: International Electrotechnical Vocabulary (IEV), which is issued in the form of separate chapters each dealing with a specific field, the General Index being published as a separate booklet. Full details of the IEV will be supplied on request.

The terms and definitions contained in the present publication have either been taken from the IEV or have been specifically approved for the purpose of this publication.

Graphical and letter symbols

For graphical symbols, and letter symbols and signs approved by the IEC for general use, readers are referred to:

— IEC Publication 27: Letter symbols to be used in electrical technology;

— IEC Publication 617: Graphical symbols for diagrams.

The symbols and signs contained in the present publication have either been taken from IEC Publications 27 or 617, or have been specifically approved for the purpose of this publication.

IEC publications prepared by the same Technical Committee

The attention of readers is drawn to the back cover, which lists IEC publications issued by the Technical Committee which has prepared the present publication.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LETTER SYMBOLS TO BE USED IN ELECTRICAL TECHNOLOGY
Part 3: Logarithmic quantities and units

FOREWORD

1) 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.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by IEC Technical Committee No. 25: Quantities and units, and their letter symbols.

This standard forms the second edition of IEC Publication 27-3 and supersedes the first edition issued in 1974.

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

Six Months' Rule	Reports on Voting
25(CO)93	25(CO)95 and 95A

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

The following IEC publication is quoted in this standard:

Publication No. 50 (702): International Electrotechnical Vocabulary (IEV), Chapter 702: Oscillations, signals and related devices (in preparation).

Other publications quoted:

ISO 31-11 (1978): Mathematical signs and symbols for use in the physical sciences and technology.

ISO 2382-16 (1978): Data processing — Vocabulary — Section 16: Information theory.

LETTER SYMBOLS TO BE USED IN ELECTRICAL TECHNOLOGY

Part 3: Logarithmic quantities and units

SCOPE AND INTRODUCTION

This standard applies to logarithmic quantities and units.

Quantities that can be expressed as the logarithm of a dimensionless quantity, such as the ratio of two physical quantities of the same kind, can be regarded and treated in different ways. In many cases, differences in principle do not affect the practical treatment.

Logarithmic quantities are here treated in a way that makes it possible, for example, to express the attenuation of a certain linear two-terminal network by the equally valid expressions $A = 4{,}6$ nepers = 4,0 bels = 40 decibels, where 4,6, 4,0 and 40 are regarded as numerical values and "neper", "bel" and "decibel" as units with specified relationships.

The fact that this standard is based on certain principles and assumptions implies no opinion whether any other principle or assumption is "right" or "wrong". This standard relates to the handling of logarithmic quantities, without regard to their interpretation or specific application.

The fact that only some logarithmic quantities are particularly dealt with here does not imply that other logarithmic quantities do not exist. It is possible that other logarithmic quantities will be particularly dealt with in a later edition or separately.

1. Logarithmic quantities

1.1 *General*

logarithmic quantity

A quantity expressed as the logarithm of the ratio of two quantities of the same kind (two voltages, two powers, two frequencies) or as the logarithm of any dimensionless quantity. For a complete definition of a logarithmic quantity, the base of the logarithm shall be specified.

In the set of logarithmic quantities can also be included quantities which are derivatives of a logarithmic quantity, or quotients of a logarithmic quantity and another quantity. An example of such a derivative is the attenuation coefficient (see Sub-clause 4.3).

The logarithmic quantities particularly dealt with here are transmission path quantities, levels, frequency intervals and decision content.

For transmission path quantities and levels, one must deal with two sets of the quantities to whose ratios the logarithmic quantities correspond, namely field quantities and power quantities.

Field quantity is a quantity such as voltage, current, sound pressure, electric field strength, velocity and charge density, the square of which in linear systems is proportional to power.

Power quantity is power or a quantity directly proportional to power, e.g. energy density, acoustic intensity and luminous intensity.