

SLOVENSKI STANDARD
SIST HD 384.5.523 S1:2000**01-februar-2000**

Električne inštalacije v zgradbah – 5. del: Izbira in namestitvev električne opreme – 52. poglavje: Sistem vodov – 523. podpoglavje: Trajno dovoljeni toki (IEC 60364-5-523:1983, spremenjen)

Electrical installations of buildings -- Part 5: Selection and erection of electrical equipment -- Chapter 52: Wiring systems - Section 523: Current-carrying capacities (IEC 60364-5-523:1983)

Elektrische Anlagen von Gebäuden -- Teil 5: Auswahl und Errichtung elektrischer Betriebsmittel -- Kapitel 52: Kabel- und Leitungssysteme (-anlagen) - Hauptabschnitt 523: Strombelastbarkeit

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Installations électriques des bâtiments -- Partie 5: Choix et mise en oeuvre des matériels électriques -- Chapitre 52: Canalisations - Section 523: Courants admissibles

Ta slovenski standard je istoveten z: HD 384.5.523 S1:1991

ICS:

91.140.50 Sistemi za oskrbo z elektriko Electricity supply systems

SIST HD 384.5.523 S1:2000**en**

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HARMONIZATION DOCUMENT

HD 384.5.523 S1

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

May 1991

UDC 621.316.172:696.6:621.315.3.027.4

Descriptors: Electrical installation, wiring system, current carrying capacities

ENGLISH VERSION

ELECTRICAL INSTALLATIONS OF BUILDINGS
 PART 5: SELECTION AND ERECTION OF ELECTRICAL EQUIPMENT
 CHAPTER 52: WIRING SYSTEMS
 SECTION 523 - CURRENT-CARRYING CAPACITIES
 (IEC 364-5-523:1983, modified)

Installations électriques des
 bâtiments
 Cinquième partie: Choix et mise
 en oeuvre des matériels électriques
 Chapitre 52: Canalisations
 Section 523 - Courants admissibles
 (CEI 364-5-523:1983, modifiée)

Elektrische Anlagen von Gebäuden
 Teil 5: Auswahl und Errichtung
 elektrischer Betriebsmittel
 Kapitel 52: Kabel- und
 Leitungssysteme (-anlagen)
 Hauptabschnitt 523: Strombelastbarkeit
 (IEC 364-5-523:1983, modifiziert)

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This Harmonization Document was approved by CENELEC on 1990-09-11.
 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 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,
 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

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Ref. No. HD 384.5.523 S1:1991 E

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FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 364-5-523:1983 could be accepted without textual changes, has shown that some common modifications were necessary for the acceptance as Harmonization Document.

The reference document, together with the common modifications prepared by the CENELEC Subcommittee SC 64B, Electrical installations of buildings: protection against thermal effects, was submitted to the CENELEC members for formal vote.

The text of the draft was approved by CENELEC as HD 384.5.523 S1 on 11 September 1990.

The following dates were fixed:

- latest date of announcement
of the HD at national level (doa) 1991-03-15
- latest date of publication of
a new harmonized national standard (dop) 1991-09-15
- latest date of withdrawal of
conflicting national standards (dow) 1991-09-15

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Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA ~~is normative~~.S1:2000

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IEC Publication 364: Electrical installations of buildings, is a composite publication of seven Parts, each dealing with a particular aspect of electrical installations. Part 5 is concerned with selection and erection of electrical equipment, chapter 52 deals with wiring systems and section 523 with current carrying capacities.

R064-001, a report "Current carrying capacities in conductors and cables" prepared by WG 205 of CENELEC Subcommittee SC 64B completes this Harmonization Document.

ENDORSEMENT NOTICE

The text of the International Standard IEC 364-5-523:1983 was approved by CENELEC as a Harmonization Document with agreed common modifications as indicated by a vertical line in the left margin of the text.

ELECTRICAL INSTALLATION OF BUILDINGS

Part 5 : Selection and erection of electrical equipment

Chapter 52 : Wiring systems

Section 523 : Current carrying capacities

523.0 Object

The requirements of this Harmonization Document are intended to provide for satisfactory life of conductor and insulation subjected to the thermal effects of operation at the appropriate maximum operating temperature for prolonged periods and for normal installation conditions. Other considerations affect the choice of cross-sectional area of conductors, such as the requirements for protection against electric shock (see HD 384.4.41), protection against thermal effects (see HD 384.4.42), over-current protection (see HD 384.4.43), voltage drop (under consideration) and limiting temperatures for terminals of equipment to which the conductors are connected.

This Harmonization Document applies to cables and insulated conductors manufactured for use at nominal supply voltages up to and including 1kV ac or 1.5 kV dc.

This Harmonization Document does not deal with cables installed in the ground or in water.

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523.1 General

523.1.1 The maximum current to be carried continuously by a conductor under specified conditions shall be such that its maximum operating temperature shall not exceed the appropriate value given in Table 52-A. The value of current shall be selected in accordance with Sub-clause 523.1.2 or determined in accordance with Sub-clause 523.1.3.

Table 52-A

Maximum operating temperatures for types of insulation

Type of insulation	Maximum operating temperature, °C (see Note 1)
Polyvinyl chloride (PVC)	70 Conductor
Cross-linked polyethylene (XLPE) and ethylene propylene rubber (EPR)	90 Conductor
Mineral (PVC covered or bare, exposed to touch)	70 Metallic sheath
Mineral (bare not exposed to touch and not in contact with combustible material)	105 Metallic sheath (See note 2)

- Notes.** 1. The maximum operating temperatures given in Table 52-A have been taken from IEC Publications 502 (1983) and 702 (1981)
2. For mineral insulated cables, higher operating temperatures may be permissible dependent upon the temperature rating of the cable, its terminations, the environmental conditions and other external influences.

523.1.2 The requirement of Sub-clause 523.1.1 is considered to be satisfied if the currents for insulated conductors or cables without armour do not exceed the appropriate current carrying capacities selected according to the tables in Cenelec Report "Current carrying capacities in conductors and cables". For types and sizes of cable and installation methods not covered in that report the current carrying capacities shall be determined according to Sub-clause 523.1.3.

523.1.3 Values of current carrying capacity and group reduction factors to meet the requirements of Sub-clause 523.1.1 may be determined as described in IEC Publication 287, or by test, or by calculation using a recognised method provided that the method is stated. Account may be taken of the characteristics of the load.

523.2 Ambient temperature

523.2.1 The value of ambient temperature to be used is the temperature of the surrounding medium when the cable(s) or insulated conductor(s) under consideration are not loaded.

523.2.2, 523.2.3, 523.2.4 (not used)

523.3 (not used)

523.4 (not used)

523.5 Number of loaded conductors in a circuit

523.5.1 The number of loaded conductors to be considered in a circuit are those carrying load current. Where it can be assumed that conductors in polyphase circuits carry balanced currents, except where sub-clause 523.5.2 applies, the associated neutral conductor need not be taken into consideration.

523.5.2 Where the neutral conductor carries current without a corresponding reduction in load of the phase conductors, the neutral conductor shall be taken into account in ascertaining the rating of the circuit.

Note. - Such currents may be caused, for example, by a significant harmonic current in three phase circuits.

523.5.3 Conductors which serve the purpose of protective conductors only are not to be taken into consideration. PEN conductors shall be taken into consideration in the same way as neutral conductors.

523.6 Conductors in parallel

Where two or more conductors are connected in parallel in the same phase or pole of a system, measures shall be taken to ensure that the load current is shared equally between them.

This requirement is considered to be fulfilled if the conductors are of the same material, have the same cross-sectional area, approximately the same length and have no branch circuits along the length, and

- either the conductors in parallel are multi-core cables or twisted single-core cables,
- or if the conductors in parallel are non--twisted single-core cables in trefoil or in flat formations, and have cross-sectional areas greater than 50 mm² in copper or 70 mm² in aluminium ; Then the special configurations necessary for such formations are adopted. These configurations consist of suitable grouping and spacing of the different phases or poles.

523.7 Variation of installation conditions along a route

Where conditions of cooling differ from one part of a route to another, the current-carrying capacity shall be determined so as to be appropriate for the part of the route having the most adverse conditions.

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ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

<u>IEC</u>	<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
228			Conductors of insulated cables	HD 383 S2 + A1	1986 1989
287			Calculation of the continuous current rating of cables (100% load factor)	-	-
502			Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV	-	-

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Cinquième partie: Choix et mise en œuvre des matériels électriques

Chapitre 52: Canalisations

Section 523 — Courants admissibles

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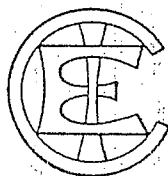
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Electrical installations of buildings

Part 5: Selection and erection of electrical equipment

Chapter 52: Wiring systems

Section 523 — Current-carrying capacities



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS OF BUILDINGS

Part 5: Selection and erection of electrical equipment

Chapter 52: Wiring systems

Section 523 — Current-carrying capacities

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.

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PREFACE

This standard has been prepared by IEC Technical Committee No. 64: Electrical Installations of Buildings.

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It supersedes IEC Publication 448: Current-carrying Capacities of Conductors for Electrical Installations of Buildings.

A first draft was discussed at the meeting held in Pretoria in 1980. As a result of this meeting, a draft, Document 64(Central Office)115, was submitted to the National Committees for approval under the Six Months' Rule in September 1981.

The National Committees of the following countries voted explicitly in favour of publication:

Australia	Netherlands
Austria	New Zealand
Belgium	Poland
Denmark	South Africa (Republic of)
Egypt	Sweden
Indonesia	Switzerland
Italy	Union of Soviet
Korea (Democratic People's	Socialist Republics
Republic of)	United Kingdom

Other IEC publications quoted in this standard:

- Publications Nos. 228: Conductors of Insulated Cables.
 287: Calculation of the Continuous Current Rating of Cables (100% Load Factor).
 502: Extruded Solid Dielectric Insulated Power Cables for Rated Voltages from 1 kV up to 30 kV.