



# SLOVENSKI STANDARD SIST HD 384.4.47 S2:2000

01-februar-2000

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Electrical installations of buildings -- Part 4: Protection for safety -- Chapter 47:  
Application of protective measures for safety - Section 470: General - Section 471:  
Measures of protection against electric shock

## iTeh STANDARD PREVIEW

Elektrische Anlagen von Gebäuden -- Teil 4: Schutzmaßnahmen -- Kapitel 47:  
Anwendung der Schutzmaßnahmen - Hauptabschnitt 470: Allgemeines - Hauptabschnitt  
471: Anwendung der Maßnahmen zum Schutz gegen elektrischen Schlag

[SIST HD 384.4.47 S2:2000](#)

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Installations électriques des bâtiments -- Partie 4: Protection pour assurer la sécurité --  
Chapitre 47: Application des mesures de protection pour assurer la sécurité - Section  
470: Généralités - Section 471: Mesures de protection contre les chocs électriques

**Ta slovenski standard je istoveten z: HD 384.4.47 S2:1995**

### ICS:

- |           |   |   |
|-----------|---|---|
| 29.120.50 | Xæ[ çæ\ ^Á Ái` * æ<br>{ ^âç \ [ ç} æÁ æz ææ | Fuses and other overcurrent<br>protection devices |
| 91.140.50 | Sistemi za oskrbo z elektriko               | Electricity supply systems                        |

**SIST HD 384.4.47 S2:2000 en**

HARMONIZATION DOCUMENT  
DOCUMENT D'HARMONISATION  
HARMONISIERUNGSDOKUMENT

**HD 384.4.47 S2**

August 1995

ICS 91.140.50

Supersedes HD 384.4.47 S1:1988 and its amendment

Descriptors: Electrical installations of buildings, direct current and alternating current voltages, application of safety requirements, electrical safety requirements

English version

**Electrical installations of buildings**  
**Part 4: Protection for safety**  
**Chapter 47: Application of protective measures for safety**  
**Section 470: General**  
**Section 471: Measures of protection against electric shock**  
(IEC 364-4-47:1981 + A1:1993, modified)

Installations électriques des bâtiments  
Partie 4: Protection pour assurer la  
sécurité

Chapitre 47: Application des mesures  
de protection pour assurer la sécurité

Section 470: Généralités

Section 471: Mesures de protection  
contre les chocs électriques

(CEI 364-4-47:1981 + A1:1993,  
modifiée)

Elektrische Anlagen von Gebäuden  
Teil 4: Schutzmaßnahmen

Kapitel 47: Anwendung der  
Schutzmaßnahmen

Abschnitt 470: Allgemeines

Abschnitt 471: Anwendung der  
Maßnahmen zum Schutz gegen  
elektrischen Schlag

(IEC 364-4-47:1981 + A1:1993,  
modifiziert)

This Harmonization Document was approved by CENELEC on 1995-07-04. 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, 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

### Foreword

The text of the International Standard IEC 364-4-47:1981 and its amendment 1:1993, prepared by IEC TC 64, Electrical installations of buildings, together with common modifications prepared by SC 64A, Protection against electric shock, of Technical Committee CENELEC TC 64, was submitted to the formal vote and was approved by CENELEC as HD 384.4.47 S2 on 1995-07-04.

This European Standard supersedes HD 384.4.47 S1:1988 + A1:1995.

The following dates were fixed:

- latest date by which the existence of the HD  
has to be announced at national level (doa) 1996-01-01
- latest date by which the HD has to be implemented  
at national level by publication of a harmonized  
national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting  
with the HD have to be withdrawn (dow) 1996-07-01

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**Endorsement notice**

The text of the International Standard IEC 364-4-47:1981 and its amendment 1:1993 was approved by CENELEC as a Harmonization Document with agreed common modifications as given below.

**COMMON MODIFICATIONS**

470.2 Replace the text of this clause by:

The choice and application of protective measures according to conditions of external influence shall remain the responsibility of national committees until CENELEC Harmonization Documents on the subject are available.

470.3 Replace the text of this clause by:

Protection shall be provided by:

- a) the equipment itself, or;
  - b) application of a protective measure as a process of erection, or;
  - c) a combination of a) and b),
- as required by the following Sections of this Chapter.

470.4 Replace the text of this clause by:

Provision shall be made to avoid any mutual detrimental influence between different protective measures applied in the same installation or part of an installation.

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Add the following new clause:

471.3 Protection against both direct and indirect contact provided by means of FELV circuits

471.3.1 General

Where, for functional reasons, a voltage within Band I is used but not all the requirements of subclause 411.1 relating to SELV or PELV are fulfilled, and where SELV or PELV is not necessary, the supplementary measure described in subclauses 471.3.2 and 471.3.3 shall be taken to provide protection against both direct and indirect contact.

This combination of measures is known as FELV.

Note - Such conditions may, for example, be encountered where the circuit contains equipment (such as transformers, relays, remote-control switches, contactors) which is not insulated in accordance with the requirements for protective separation.

FELV circuits including sources shall be separated from circuits of higher voltage by basic separation.

## 471.3.2 Protection against direct contact

Protection against direct contact shall be provided either by:

- barriers or enclosures in accordance with subclause 412.2, or
- insulation corresponding to the minimum test voltage required for the primary circuit.

Where however the insulation of equipment which is part of a FELV circuit is not capable of withstanding the test voltage specified for the primary circuit, the insulation shall be reinforced during erection so that it can withstand a test voltage of 1500 V r.m.s. a.c. for 1 min.

Note - The value of this voltage may be reviewed at a later date depending on the results of international standardization (at present being undertaken) in low voltage insulation coordination.

## 471.3.3 Protection against indirect contact

Protection against indirect contact shall be provided:

- in a system where the protective measure by automatic disconnection of supply is applied (in accordance with 413.1) and which supplies the FELV circuit, by connecting the exposed-conductive parts of the FELV circuit with the protective conductor of the primary system;
- in a system where the protective measure by electrical separation is applied (in accordance with 413.5) and which supplies the FELV system, by connecting the exposed-conductive-parts of the FELV circuit with the insulated non-earthed equipotential bonding conductor (in accordance with 413.5.3.1).

## 471.3.4 Plugs and socket-outlets

Plugs and socket-outlets for FELV circuits shall comply with the following requirements:

- plugs shall not be able to enter socket-outlets of other voltage systems, and
  - socket-outlets shall not admit plugs of other voltage systems.
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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE  
NORME DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
IEC STANDARD

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1981

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**Installations électriques des bâtiments**

Quatrième partie: Protection pour assurer la sécurité

Chapitre 47: Application des mesures de protection pour assurer la sécurité

Section 470: Généralités  
Section 471: Mesures de protection contre les chocs électriques  
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**Electrical installations of buildings**

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**Part 4: Protection for safety-2000**

Chapter 47: Application of protective measures for safety

Section 470: General

Section 471: Measures of protection against electric shock

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Bureau Central de la Commission Electrotechnique Internationale

1, rue de Varembe  
Genève, Suisse

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTRICAL INSTALLATIONS OF BUILDINGS

## Part 4: Protection for safety

## Chapter 47: Application of protective measures for safety

## Section 470: General

## Section 471: Measures of protection against electric shock

## 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.

This standard has been prepared in two steps.

A draft of Section 470 was discussed at the meeting held in Sydney in 1979. As a result of this meeting, a draft, Document 64(Central Office)79, was submitted to the National Committees for approval under the Six Months' Rule in September 1979.

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

Argentina	Japan
Australia	Korea (Republic of)
Austria	Netherlands
Belgium	Poland
Bulgaria	Romania
Canada	South Africa (Republic of)
China	Sweden
Denmark	Switzerland
Egypt	Turkey
France	Union of Soviet
Germany	Socialist Republics
Israel	United States of America
Italy	

Drafts of Section 471 were discussed at the meetings held in Toronto in 1976 and in Sydney in 1979. As a result of the latter meeting, a draft, Document 64(Central Office)89, was submitted to the National Committees for approval under the Six Months' Rule in April 1980.

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

Australia	New Zealand
Austria	Poland
Belgium	Romania
Egypt	Spain
France	Sweden
Germany	Switzerland
Israel	Turkey
Italy	United States of America
Japan	

The British National Committee returned a negative vote and gave the following reasons:

The British National Committee voted against this standard because the unconditional application of the protective measures in any electrical installation could cause danger.

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## ELECTRICAL INSTALLATIONS OF BUILDINGS

### Part 4: Protection for safety

#### Chapter 47: Application of protective measures for safety

##### Section 470: General

##### Section 471: Measures of protection against electric shock

#### 47. Application of protective measures for safety

##### 470. GENERAL

470.1 Protective measures shall be applied in every installation, part of an installation, and to equipment, as required by the following sections of this chapter.

470.2 The choice and application of protective measures according to conditions of external influence shall be as specified in Chapter 48.

470.3 Protection shall be ensured by:

- a) the equipment itself, or
- b) application of a protective measure as a process of erection, or
- c) a combination of a) and b).

470.4 It shall be ensured that there is no mutual detrimental influence between different protective measures applied in the same installation or part of an installation.

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##### 471. MEASURES OF PROTECTION AGAINST ELECTRIC SHOCK

###### 471.1 Protection against electric shock in normal service

All electrical equipment shall be subject to one of the measures of protection against electric shock in normal service described in Sections 411 and 412.

###### 471.2 Protection against electric shock in case of a fault

471.2.1 Except as provided in Sub-clause 471.2.2, all electrical equipment shall be subject to one of the measures of protection against electric shock in case of a fault described in Sections 411 and 413, and to the conditions given in Sub-clauses 471.2.1.1 to 471.2.1.3.

471.2.1.1 Protection by automatic disconnection of supply (Clause 413.1) shall be applied to any installation except to parts of the installation to which another measure of protection is applied.

471.2.1.2 Where the application of the requirements of Clause 413.1 for protection by automatic disconnection of supply is impracticable or undesirable, protection by the provision of a non-conducting location (Clause 413.3) or earth-free local equipotential bonding (Clause 413.4) may be applied to certain parts of an installation.