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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

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

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Key words: electrical installations of buildings; direct-current and alternating-current voltages; application of safety requirements; electrical safety requirements.

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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

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

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

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.

ELECTRICAL INSTALLATIONS OF BUILDINGS

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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.

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.

471.2.1.3 Protection by safety extra-low voltage (Clause 411.1) by the use of Class II equipment or equivalent insulation (Clause 413.2) and by electrical separation (Clause 413.5) may be applied in every installation, usually to certain equipment and certain parts of an installation.

471.2.2 Protection against electric shock in case of a fault may be omitted for the following equipment:

- overhead line insulator wall brackets and metal parts connected to them (overhead line fittings) if they are not situated within arm's reach;
- steel reinforced concrete poles in which the steel reinforcement is not accessible;
- exposed conductive parts which, owing to their reduced dimensions (approximately 50 mm × 50 mm) or their disposition, cannot be gripped or come into significant contact with a part of the human body and provided that connection with a protective conductor could only be made with difficulty or would be unreliable,

Note. — This requirement applies, for example, to bolts, rivets, nameplates and cable clips.

- metal tubes or other metal enclosures protecting equipment in accordance with Clause 413.2.

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AMENDEMENT 1
AMENDMENT 1

1993-10

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Partie 4:
Protection pour assurer la sécurité
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Section 470: Généralités
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Amendment 1

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Commission Electrotechnique Internationale
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FOREWORD

This amendment has been prepared by IEC technical committee 64: Electrical installations of buildings.

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

DIS	Reports on voting
64(CO)218	64(CO)231
64(CO)232	64(CO)236 and 236A

Full information on the voting for the approval of this amendment can be found in the reports on voting indicated in the above table.

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Add the following subclause:

471.2.3 Where protection is provided by automatic disconnection of supply, residual current protective devices with rated residual operating current not exceeding 30 mA shall be used to protect socket-outlets with rated current not exceeding 20 A located outdoors and socket-outlets which may reasonably be expected to supply portable equipment for use outdoors.

NOTES

1 Where an installation is to provide for the use of portable equipment to be used outdoors, it is recommended that one or more socket-outlets as necessary be suitably located outdoors.

2 Other cases, where devices with rated residual operating current not exceeding 30 mA are required, are described in part 7.

3 Where protection is provided by automatic disconnection of supply, the use of residual current protective devices with rated residual operating current not exceeding 30 mA is particularly recommended to provide additional protection according to clause 412.5 to protect socket-outlets having rated current not exceeding 20 A, intended to be used by other than skilled or instructed persons.