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Electrical installations of buildings –

Part 5:
Selection and erection of electrical equipment –
Chapter 53: Switchgear and controlgear

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembé Genève, Suisse

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS OF BUILDINGS –

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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 cooperation 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, 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.

3) They have the form of recommendations for international use published in the form of standards, 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.

International Standard IEC 364-5-53 has been prepared by IEC technical committee 64: Electrical installations of buildings.

This second edition cancels and replaces the first edition published in 1986 and amendment 2 (1992) and constitutes a technical revision.

The numbering of sections in this second edition is similar to that used in other chapters of IEC 364-4. Consequently, the new section 530 corresponds to the old sections 530 and 531; the new section 531 corresponds to the old section 532; the new section 536 corresponds to the old section 537 and the new section 539 corresponds to the old section 536.

This new edition includes the texts of the publications quoted below:

Six Months' Rule/DIS	Reports on voting	IEC references
64(CO)151 64(CO)136	64(CO)159 64(CO)145	364-3-53 (1986)
64(CO)164	64(CO)176	Amend. 1 (1989)
64(CO)197 64(CO)198	64(CO)217 64(CO)226	Amend. 2 (1992)

and the new text based on the following documents:

DIS	Report on voting
64(CO)222	64(CO)237

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

ELECTRICAL INSTALLATIONS OF BUILDINGS –

Part 5: Selection and erection of electrical equipment – Chapter 53: Switchgear and controlgear

53 SWITCHGEAR AND CONTROLGEAR

53.1 Scope

This chapter deals with the selection of equipment and its erection. It shall provide compliance with the measures of protection for safety, the requirements for proper functioning for intended use of the installation, and the requirements appropriate to the external influences foreseen. Every item of equipment shall be selected and erected so as to allow compliance with the rules stated in the following clauses of this chapter and the relevant rules in other chapters of this standard.

53.2 Normative references

The following normative documents contain provisions which, through reference in this text, constititute provisions of this part of IEC 364. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 364 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 269-3: 1987, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications)*

IEC 364-4-41: 1992, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock*

IEC 364-4-43: 1977, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 43: Protection against overcurrent*

IEC 364-4-473: 1977, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 47: Application of protective measures for safety – Section 473: Measures of protection against overcurrent*

IEC 364-4-482: 1982, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 48: Choice of protective measures as a function of external influences – Section 482: Protection against fire*

IEC 364-5-537: 1981, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 53: Switchgear and controlgear – Section 537: Devices for isolation and switching*

IEC 364-6-61: 1986, *Electrical installations of buildings – Part 6: Verification – Chapter 61: Initial verification*

IEC 364-7-705: 1984, *Electrical installations of buildings – Part 7: Requirements for special installations or locations – Section 705: Electrical installations of agricultural and horticultural premises*

IEC 1008: *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs)*

IEC 1009: *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)*

530 GENERAL AND COMMON REQUIREMENTS

The requirements of this chapter are supplementary to the common rules given in chapter 51.

530.1 The moving contacts of all poles of multipole devices shall be so coupled mechanically that they make and break substantially together, except that contacts solely intended for the neutral may close before and open after the other contacts.

530.2 Except as provided in 537.2.4, in multiphase circuits, single-pole devices shall not be inserted in the neutral conductor.

In single-phase circuits single-pole devices shall not be inserted in the neutral conductor, unless a residual current device complying with the rules of clause 413.1 is provided on the supply side.

530.3 Devices embodying more than one function shall comply with all the requirements of this chapter appropriate to each separate function.

531 DEVICES FOR PROTECTION AGAINST INDIRECT CONTACT BY AUTOMATIC DISCONNECTION OF SUPPLY

531.1 Overcurrent protective devices

531.1.1 *TN systems*

In TN systems overcurrent protective devices shall be selected and erected according to the conditions specified in clauses 473.2, 473.3 and 533.3 for devices for protection against short circuit, and shall satisfy the requirements of 413.1.3.3.

531.1.2 *TT systems*

Under consideration.

531.1.3 *IT systems*

Where exposed-conductive-parts are interconnected, overcurrent protective devices for protection in the event of a second fault shall comply with 531.1.1 taking into account the requirements of 413.1.5.5.

531.2 Residual current protective devices

531.2.1 *General conditions of installation*

Residual current protective devices in d.c. systems shall be specially designed for detection of d.c. residual currents, and to break circuit currents under normal conditions and fault conditions.

531.2.1.1 A residual current protective device shall ensure the disconnection of all live conductors in the circuit protected. In TN-S systems, the neutral need not be disconnected if the supply conditions are such that the neutral conductor can be considered to be reliably at earth potential.

NOTE – The conditions for verification that the neutral conductor is reliably at earth potential are under consideration.

531.2.1.2 No protective conductor shall pass through the magnetic circuit of a residual current protective device.

531.2.1.3 Residual current protective devices shall be so selected, and the electrical circuits so subdivided, that any earth-leakage current which may be expected to occur during normal operation of the connected load(s) will be unlikely to cause unnecessary tripping of the device.

NOTE – Residual current protective devices may operate at any value of residual current in excess of 50 % of the rated operating current.

531.2.1.4 *Influence of d.c. components*

Under consideration.

531.2.1.5 The use of a residual current protective device associated with circuits not having a protective conductor, even if the rated operating residual current does not exceed 30 mA, shall not be considered as a measure sufficient for protection against indirect contact.

531.2.2 *Selection of devices according to their method of application*

531.2.2.1 Residual current protective devices may or may not have an auxiliary source, taking into account the requirements of 531.2.2.2.

NOTE – The auxiliary source may be the supply system.

531.2.2.2 The use of residual current protective devices with an auxiliary source not operating automatically in the case of failure of the auxiliary source is permitted only if one of the two following conditions is fulfilled:

– protection against indirect contact according to 413.1 is ensured even in the case of failure of the auxiliary supply;

– the devices are installed in installations operated, tested and inspected by instructed persons (BA4) or skilled persons (BA5).