



SLOVENSKI STANDARD
SIST IEC/TR2 61200-52:2000
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Electrical installation guide - Part 52: Selection and erection of electrical equipment -
 Wiring systems

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Guide pour les installations électriques (Partie 52: Choix et mise en oeuvre des
 matériels électriques - Canalisations)

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Guide pour les installations électriques –

Partie 52:

Choix et mise en oeuvre des matériels
électriques – Canalisations

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Electrical installation guide –

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Part 52:

Selection and erection of electrical
equipment – Wiring systems

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATION GUIDE –

Part 52: Selection and erection of electrical equipment –
Wiring systems

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.
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- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 1200-52, which is a technical report of type 2, has been prepared by IEC technical committee 64: Electrical installations of buildings.

The text of this technical report is based on the following documents:

Six Months' Rule	Report on Voting
64(CO)199	64(CO)215

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

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INTRODUCTION

When designing an installation or during initial verification, it is sometimes observed that the temperatures reached by interfaces between terminals and conductors are higher than those which could be withstood by insulation in normal service.

In this case, precautions shall be taken so that the temperature attained by terminals in normal service shall not impair the effectiveness of the insulation of conductors connected to them or supporting them. See IEC 364-5-52.

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ELECTRICAL INSTALLATION GUIDE –

Part 52: Selection and erection of electrical equipment – Wiring systems

52.1 General

52.1.1 Scope

This technical report is for use as a guide for electrical installations. It is applicable to the limitation of temperature rises of connecting interfaces.

52.1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1200. 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 1200 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.

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IEC 364-5-523: 1983, *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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IEC 439-1: 1992, *Low-voltage switchgear and controlgear assemblies – Part 1: Type-tested and partially type-tested assemblies*

IEC 439-3: 1990, *Low-voltage switchgear and controlgear assemblies – Part 3: Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use – Distribution boards*

IEC 890: 1987, *A method of temperature-rise assessment by extrapolation for partially type-tested assemblies (PTTA) of low-voltage switchgear and controlgear*

IEC 943: 1989, *Guide for the specification of permissible temperature and temperature rise for parts of electrical equipment, in particular for terminals*

52.2 Maximum temperatures of terminals in normal service conditions

52.2.1 The temperature of a terminal is the sum of the ambient temperature and its temperature rise in normal service.

Product standards give conventional limit values for temperature rise under defined test conditions, but do not indicate, in general, limits for permissible temperature rises in service conditions. Relevant standards in this respect are IEC 439-1, IEC 439-3 and IEC 890.

52.2.2 The temperatures of terminals are affected by the heat dissipated in normal service by the equipment. This heat may be caused by internal losses dissipated in the equipment and by neighbouring internal and external heat sources, if any.

The temperatures of terminals are also related to the way in which they are used, which could affect their electrical resistance and dissipation of heat.

52.2.3 Compatibility between temperatures of terminals of equipment and temperatures permitted for the insulation of the conductors and cables shall be obtained by appropriate arrangement during installation.

Clauses, subclauses	Recommendations
52.3 Means for limiting temperatures of terminals in service or their effects	<p>Recommendations for the choice of methods for limiting temperatures of terminals in service on their effects</p> <p>Recommendations are given below on the selection of methods according to local conditions of installation, practicability of installation, nature of equipment.</p>
52.3.1 Temperatures of terminals can be limited by one or more of the following measures:	
52.3.1.1 Limitation of contents of enclosures (cubicles, cabinets, trunkings, conduits).	<p>The limitation of contents of trunkings and conduits is recommended when a great number of circuits issue from the same panel; in this case it is preferable to use several runs of trunking or conduit.</p>
52.3.1.2 Spacing between equipment in order to improve natural ventilation.	<p>Spacing between adjacent equipment permits better dissipation of heat. It is necessary to refer to manufacturer's instructions. This solution is especially recommended when a great number of items of equipment are installed in the same enclosure (cubicle or cabinet).</p>
52.3.1.3 Appropriate arrangement of equipment dissipating heat inside enclosures.	<p>It is recommended that equipment dissipating heat is installed in an appropriate way so that the correct operation of other equipment will not be impaired. Other means, such as the interposition of screens or deflectors, may be used for this purpose.</p>

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Clauses, subclauses	Recommendations
52.3.1.4 Natural or forced ventilation or air-conditioning of cubicles, cabinets or locations.	Forced ventilation of the equipment may be necessary in specific applications, for example to protect against ingress of dust.
52.3.1.5 Derating of equipment by use of equipment having higher rated current, consequently dissipating less heat.	Derating of equipment can be used to reduce the temperature of terminals, provided that such derating is permitted for the equipment.
52.3.1.6 Selection of material for enclosures of cubicles or cabinets in which terminals are installed, in order to improve the thermal dissipation.	
52.3.1.7 Maintenance of correct clamping of conductors in the terminals.	Arrangements shall be made to ensure the maintenance of clamping pressure of conductors in their terminals. Such arrangements may be built-in (for example, use of resilient connections) or result from instructions for the inspection of the installation.
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52.3.2 The effects of temperature rise of terminals in normal service can be limited by one or more of the following means:	
52.3.2.1 Selection of the insulation of conductors in relation to the presumed temperature rises.	If elastomeric insulation rather than thermoplastic is used in order to utilize their higher thermal ratings, it may be necessary to derate the equipment to which they are connected.
<p>Permissible temperatures in steady-state service for some types of insulation of conductors are determined by TC 20:</p>	
Natural rubber:	60 °C
PVC:	70 °C
XLPE, EPR:	90 °C
Silicone rubber:	180 °C
EVA rubber:	110 °C