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Guide pour les installations électriques - Partie 704: Installations de chantiers

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATION GUIDE – Part 704: Construction and demolition site installations

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object to 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, express as nearly as possible an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are 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.

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The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical report of one of the following types:

- 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.

International Standard IEC 1200-704, which is a technical report of type 3, has been prepared by IEC technical committee 64: Electrical installations of buildings.

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

Committee draft	Report on voting
64(SEC)697	64(SEC)736

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

INTRODUCTION

This technical report does not form part of IEC 364. It is a supplement to IEC 364-7-704, of which it explains the rules so as to facilitate the design, the execution and the maintenance of electrical installations on construction and demolition sites.

It is written for everyone concerned with the design, the selection and supply of equipment, as well as the persons who install, maintain and use these installations.

The chapters, sections and clauses are, in some cases, marked with the following information: modification, recommendation or explanation.

ELECTRICAL INSTALLATION GUIDE – Part 704: Construction and demolition site installations

704.1 Scope

This technical report is for use as a guide for temporary installations provided only for the period of construction, during which they may be frequently modified and relocated. They are dismantled and removed upon completion of the works.

The object of this report is to give more detailed guidance on the application of the requirements of IEC 364 to these particular types of installation, in a form convenient for use by persons concerned with these types of installation. To make it easier for users, definitions are repeated, and several examples of important items are listed.

It describes practical means of satisfying the requirements, based on experience and practice, but it does not exclude the use of other means which provide the same level of safety and reliability.

704.2 Reference documents and definitions

704.2.1 *Reference documents*

IEC 50(826): 1982, *International Electrotechnical Vocabulary (IEV) – Chapter 826: Electrical installations of buildings*
Amendment 1 (1990)

IEC 245-4: 1980, *Rubber insulated cables of rates voltages up and including 450/750 V – Part 4: Cords and flexible cables*

IEC 364-2-21: 1993, *Electrical installations of buildings – Part 2: Definitions – Chapter 21: Guide to general terms*

IEC 364-3: 1993, *Electrical installations of buildings – Part 3: Assessment of general characteristics*

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 installation of buildings – Part 4: Protection for safety – Chapter 47: Application of protective measures for safety – Section 473: Measures of protection against overcurrent*

IEC 364-5-51: 1994, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 51: Common rules*

IEC 364-5-52: 1993, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 52: Wiring systems*

IEC 364-5-53: 1994, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 53: Switchgear and controlgear*

IEC 364-5-54: 1980, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 54: Earthing arrangements and protective conductors*

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

IEC 364-7-704: 1989, *Electrical installations of buildings – Part 7: Requirements for special installations or locations – Section 704: Construction and demolition site installations*

IEC 364-7-706: 1983, *Electrical installations of buildings – Part 7: Requirements for special installations or locations – Section 706: Restrictive conducting locations*

IEC 439-4: 1990, *Low-voltage switchgear and controlgear assemblies – Part 4: Particular requirements for assemblies for construction sites (ACS)*

IEC 598-2-22:1990, *Luminaires – Part 2: Particular requirements – Section twenty-two: Luminaires for emergency lighting*

IEC 1024-1: 1990, *Protection of structures against lightning – Part 1: General principles*

704.2.2 *Definitions*

For the purpose of this technical report, the following definitions apply:

704.2.2.1 Chapter 826* of the International Electrotechnical Vocabulary (IEV)

overcurrent: Any current exceeding the rated value. For conductors, the rated value is the current-carrying capacity [IEV 826-05-06].

overload current: An overcurrent occurring in a circuit in the absence of an electrical fault [IEV 826-05-07].

short-circuit current: An overcurrent resulting from a fault of negligible impedance between live conductors having a difference in potential under normal operating conditions [IEV 826-05-08].

portable equipment: Equipment which is moved while in operation or which can easily be moved from one place to another while connected to the supply [IEV 826-07-04].

hand-held equipment: Portable equipment intended to be held in the hand during normal use, in which the motor, if any, forms an integral part of the equipment [IEV 826-07-05].

NOTE – The use of hand-held equipment requires the constant use of one hand, either for support or guidance.

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*IEC 364-2-21: *Electrical installations of buildings – Part 2: Definitions – Chapter 21: Guide to general terms (1993)* contains explanatory notes on terms used in IEC 364 and defined in IEC 50(826).

stationary equipment: Either fixed equipment or equipment not provided with a carrying handle and having such a mass that it cannot easily be moved [IEV 826-07-06].

fixed equipment: Equipment fastened to a support or otherwise secured in a specific location [IEV 826-07-07].

isolation: A function intended to cut off for reasons of safety the supply from all or a discrete section of the installation by separating the installation or section from every source of electrical energy [IEV 826-08-01].

switching-off for mechanical maintenance: An operation intended to inactivate an item or items of electrically powered equipment for the purpose of preventing danger, other than due to electric shock or to arcing, during non-electrical work on this equipment [IEV 826-08-02].

emergency switching: An operation intended to remove as quickly as possible danger which may have occurred unexpectedly [IEV 826-08-03].

emergency stopping: Emergency switching intended to stop a movement which has become dangerous [IEV 826-08-04].

functional switching: An operation intended to switch "on" or "off" or vary the supply of electrical energy to all or part of an installation for normal operating purposes [IEV 826-08-05].

704.2.2.2 *Other IEC publications*

restrictive conducting location: A restrictive conducting location is one comprised mainly of metallic or conductive surrounding parts, within which it is likely that a person will come in contact through a substantial portion of his body with the conductive surrounding parts and where the possibility of interrupting this contact is limited [706.1 of IEC 364-7-706].

Low-voltage switchgear and controlgear assembly for construction sites (ACS): A combination of one or several transforming or switching devices with associated control, measuring, signalling, protective and regulating equipment complete with all their internal electrical and mechanical connections and structural parts, designed and built for use on all construction sites, indoors and outdoors [2.1.1.3 of IEC 439-4].

704.3 Assessment of general characteristics

704.312 *Types of distribution systems (see 312 of IEC 364-3)*

704.312.2 *Types of system earthing*

The following systems are permitted in installations:

704.312.2.1 *TN systems*

TN power systems have one point directly earthed, the exposed-conductive-parts of the installation being connected to that point by protective conductors. Three types of TN systems are considered according to the arrangement of neutral and protective conductors, as follows:

– TN-S system: in which throughout the system, a separate protective conductor is used;

– TN-C-S system: in which neutral and protective functions are combined in a single conductor in a part of the system;

– TN-C system: in which neutral and protective functions are combined in a single conductor throughout the system.

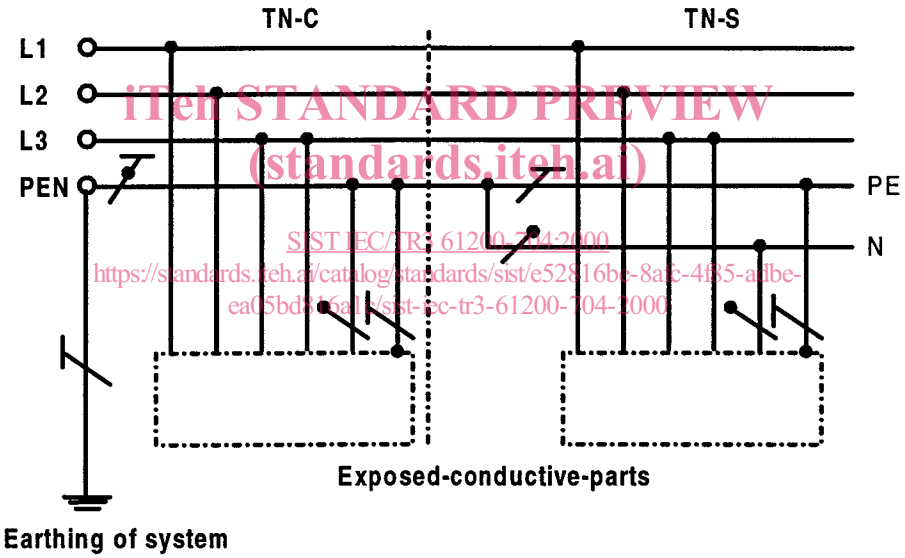

Figure 1 – TN-C-S system. Neutral and protective functions combined in a single conductor in a part of the system