IEC 60364-7-753

Edition 2.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Low-voltage electrical installations – Part 7-753: Requirements for special installations or locations – Heating cables and embedded heating systems

Installations électriques à basse tension – Partie 7-753: Exigences pour les installations ou emplacements spéciaux – Câbles chauffants et systèmes de chauffage intégrés

IEC 60364-7-753:2014-05(en-fr)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX M

ICS 91.140.50

ISBN 978-2-8322-1573-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-753: Requirements for special installations or locations – Heating cables and embedded heating systems

FOREWORD

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International Standard IEC 60364-7-753 has been prepared by IEC technical committee 64: Electrical installations and protection against electric shock.

This second edition cancels and replaces the first edition published in 2005 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) The title has been changed from "Floor and ceiling heating systems" to "Heating cables and embedded heating systems" to align with the revised scope.
b) The scope has been extended and now covers embedded electric heating systems for surface heating, also electric heating systems for de-icing or frost prevention or similar applications, and covers both indoor and outdoor systems. This includes heating systems

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for: walls, ceiling, floors, roofs, drainpipes, gutters, pipes, stairs, roadways, non-hardened compacted areas (e.g. football fields, lawns).

c) For wall heating systems, this standard contains additional requirements (e.g. metal sheath/enclosure/grid) to protect against the effects of overheating caused by a short-circuit between live conductors due to penetration of an embedded heating unit.

d) From heating units delivered from the manufacturer without exposed-conductive-parts, this standard requires a metallic mesh grid covering. This has been reduced to 3 mm for wall heating systems.

e) This standard now requires that electric heating systems shall be selected and erected so as to avoid any harmful influence between the heating system and any electrical or non-electrical installations envisaged.

f) This standard covers surface temperatures and now refers the reader to the appropriate IEC guide.

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

FDIS	Report on voting
64/1916FDIS	64/1954/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60364 series, published under the general title *Low-voltage electrical installations*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

For the purpose of this part (IEC 60364-7-753) the requirements of the general parts 1 to 6 of IEC 60364 apply.

The IEC 60364-7-7XX parts of IEC 60364 contain particular requirements for special installations or locations which are based on the requirements of the general parts of IEC 60364 (IEC 60364-1 to IEC 60364-6). These IEC 60364-7-7XX parts are considered in conjunction with the requirements of the general parts.

The particular requirements of this part of IEC 60364 supplement, modify or replace certain of the requirements of the general parts of IEC 60364 being valid at the time of publication of this part. The absence of reference to the exclusion of a part or a clause of a general part means that the corresponding clauses of the general part are applicable (undated reference).

Requirements of other 7XX parts being relevant for installations covered by this part also apply. This part may therefore also supplement, modify or replace certain of these requirements valid at the time of publication of this part.

The clause numbering of this part follows the pattern and corresponding references of IEC 60364. The numbers following the particular number of this part are those of the corresponding parts, or clauses of the other parts of the IEC 60364 series, valid at the time of publication of this part, as indicated in the normative references of this document (dated reference).

If requirements or explanations additional to those of the other parts of the IEC 60364 series are needed, the numbering of such items appears as 753.101, 753.102, 753.103 etc.

NOTE In the case where new or amended general parts with modified numbering were published after this part was issued, the clause numbers referring to a general part in this 753 part may no longer align with the latest edition of the general part. Dated references should be observed.

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LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-753: Requirements for special installations or locations – Heating cables and embedded heating systems

753 Heating cables and embedded heating systems

753.1 Scope

This part of IEC 60364 applies to embedded electric heating systems for surface heating. It also applies to electric heating systems for de-icing or frost prevention or similar applications. Both indoor and outdoor systems are covered.

Heating systems for industrial and commercial applications complying with relevant parts of IEC 60519, IEC 62395 and IEC 60079 are not covered.

NOTE Examples of heating systems covered by this standard are heating systems for walls, ceilings, floors, roofs, drainpipes, gutters, pipes, stairs, roadways, non-hardened compacted areas (e.g. football fields, lawns).

753.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-7, *Explosive atmospheres – Part 7: Equipment protection by increased safety "e"*

IEC 60335-2-96, *Household and similar electrical appliances – Safety – Part 2-96: Particular requirements for flexible sheet heating elements for room heating*

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-4-42, *Low-voltage electrical installations – Part 4-42: Protection for safety – Protection against thermal effects*

IEC 60800, *Heating cables with a rated voltage of 300/500 V for comfort heating and prevention of ice formation*

753.3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

753.3.1
thermal storage floor heating system
heating system in which, due to a limited charging period, a restricted availability of electrical energy is converted into heat and dissipated mainly through the surface of the floor to the room to be heated with an intended time delay

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753.3.2
direct heating system
heating system which generates heat from electrical energy and dissipates it to the room to be heated with a response time being as low as possible

753.3.3
complementary floor heating
direct heating system integrated into the floor construction, for example, in the border zones close to outer walls, which complements the heat dissipation of a thermal storage floor heating system

753.3.4
heating-free area
area of a surface that is deliberately left free of all parts of the heating system

753.3.5
heating cable
cable with or without a shield or a metallic sheath, intended to give off heat for heating purposes

753.3.6
flexible sheet heating element
heating element consisting of sheets of electrical insulation laminated with electrical resistance material, or a base material on which electrically insulated heating wires are fixed

753.3.7
heating unit
heating cable or flexible sheet heating element with rigidly fixed cold leads or terminal fittings which are connected to the terminals of the electrical installation

753.3.8
cold lead
insulated cable or cord intended to connect the heating unit with the electrical installation

753.3.9
self-limiting heating cable
cable that cannot exceed 70 °C when tested according to IEC 60079-7 and which does not require cold leads for connection to the electrical installation

753.4 Protection for safety

753.41 Protection against electric shock

753.410.3.5 Protection by obstacles and placing out of reach

Replace the requirements with the following:

The protective measures "obstacles" and "placing out of reach" as specified in Annex 41B of IEC 60364-4-41: 2005, shall not be used.

753.410.3.6

Replace the requirements with the following:

The protective measures "protection by non-conducting location", "protection by earth-free local equipotential bonding" and "protection by electrical separation for the supply of more than one item of current-using equipment" as specified in Annex 41C of IEC 60364-4-41:2005, shall not be used.

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