



SLOVENSKI STANDARD
SIST HD 60364-7-701:2007

01-oktober-2007

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Low-voltage electrical installations -- Part 7-701: Requirements for special installations or locations - Locations containing a bath or shower

Errichten von Niederspannungsanlagen -- Teil 7-701: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art - Räume mit Badewanne oder Dusche

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Installations électriques a basse tension -- Partie 7-701: Regles pour les installations et emplacements spéciaux - Emplacements contenant une baignoire ou une douche

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Ta slovenski standard je istoveten z: HD 60364-7-701:2007

ICS:

91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems
91.140.70	Sanitarne naprave	Sanitary installations

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**Low-voltage electrical installations –
Part 7-701: Requirements for special installations or locations -
Locations containing a bath or shower
(IEC 60364-7-701:2006, modified)**

Installations électriques à basse tension –
Partie 7-701: Règles pour les installations
et emplacements spéciaux -
Emplacements contenant une baignoire
ou une douche
(CEI 60364-7-701:2006, modifiée)

Errichten von Niederspannungsanlagen –
Teil 7-701: Anforderungen
für Betriebsstätten, Räume
und Anlagen besonderer Art -
Räume mit Badewanne oder Dusche
(IEC 60364-7-701:2006, modifiziert)

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This Harmonization Document was approved by CENELEC on 2006-09-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document at national level.
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Up-to-date lists and bibliographical references concerning such national implementations may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 64/1494/FDIS, future edition 2 of IEC 60364-7-701, prepared by IEC TC 64, Electrical installations and protection against electric shock, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by SC 64A, Protection against electric shock, of Technical Committee CENELEC TC 64, Electrical installations and protection against electric shock, was submitted to the formal vote.

The combined texts were approved by CENELEC as HD 60364-7-701 on 2006-09-01.

The following dates were fixed:

- latest date by which the existence of the HD (doa) 2007-03-01
has to be announced at national level
- latest date by which the HD has to be implemented (dop) 2007-09-01
at national level by publication of a harmonized
national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2009-09-01
with the HD have to be withdrawn

Annexes ZA and ZB have been added by CENELEC.

In this standard, the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

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700.1 Introduction

The requirements of this part of HD 60364 supplement, modify or replace certain of the general requirements of the other parts of HD 60364.

The clause numbering of Part 7-701 follows the pattern and corresponding references of HD 60364. The numbers following the particular number of Part 7-701 are those of the corresponding parts, or clauses of HD 60364.

The absence of reference to a part, a clause or a subclause means that the corresponding general requirements are applicable.

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701 Locations containing a bath or shower

701.1 Scope

The particular requirements of this part of HD 60364 apply to the electrical installations in locations containing a fixed bath (bath tub) or shower and to the surrounding zones as described in this standard.

This standard does not apply to emergency facilities, e.g. emergency showers used in industrial areas or laboratories.

NOTE 1 For locations containing a bath or shower for medical treatment, special requirements may be necessary.

NOTE 2 For prefabricated bath and/or shower units, see also EN 60335-2-105.

701.2 Normative references

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

HD 60364-4-41:2007, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock* (IEC 60364-4-41:2005, modified)

HD 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements, protective conductors and protective bonding conductors* (IEC 60364-5-54, modified)

EN 61558-2-5, *Safety of power transformers, power supply units and similar – Part 2-5: Particular requirements for shaver transformers and shaver supply units* (IEC 61558-2-5)

701.30 Assessment of general characteristics

701.30.1 General

When applying this standard, the zones specified in 701.30.2 to 701.30.4 shall be taken into account. For fixed prefabricated bath or shower units, the zones are applied to the situation when the bath or shower basin is in its usable configuration(s).

Horizontal or inclined ceilings, walls with or without windows, doors, floors and fixed partitions may limit the extent of locations containing a bath or shower as well as their zones. Where the dimensions of fixed partitions are smaller than the dimensions of the relevant zones, e.g. partitions having a height lower than 225 cm, the minimum distance in horizontal and vertical direction shall be taken into account (see Figures 701.1 and 701.2).

For electrical equipment in parts of walls or ceilings limiting the zones specified in 701.30.2 to 701.30.4, but being part of the surface of that wall or ceiling, the requirements for the respective zone apply.

701.30.2 Description of zone 0

Zone 0 is the interior of the bath tub or shower basin, see Figure 701.1.

For showers without basin, the height of zone 0 is 10 cm and its surface extent has the same horizontal extent as zone 1, see Figure 701.2.

701.30.3 Description of zone 1

Zone 1 is limited

- a) by the finished floor level and the horizontal plane corresponding to the highest fixed shower head or water outlet or the horizontal plane lying 225 cm above the finished floor level, whichever is higher,
- b) by the vertical surface:
 - circumscribing the bath tub or shower basin (see Figure 701.1),
 - at a distance of 120 cm from the centre point of the fixed water outlet on the wall or ceiling for showers without basin (see Figure 701.2).

Zone 1 does not include zone 0.

The space under the bath tub or shower is considered to be zone 1.

701.30.4 Description of zone 2

Zone 2 is limited

- a) by the finished floor level and the horizontal plane corresponding to the highest fixed shower head or water outlet or the horizontal plane lying 225 cm above the finished floor level, whichever is higher,
- b) by the vertical surface at the boundary of zone 1 and the parallel vertical surface at a distance of 60 cm from the zone 1 border (see Figure 701.1).

For showers without basin, there is no zone 2 but an increased zone 1 is provided by the horizontal dimension of 120 cm mentioned in the second dash of 701.30.3 b) (see Figure 701.2).

701.41 Protection against electric shock

701.410.3 General requirements

To add:

The following protective measures providing basic protection (protection against direct contact) according to Annex B of HD 60364-4-41:2007 are not permitted: "B.2 Obstacles" and "B.3 Placing out of reach".

The following protective measures according to Annex C of HD 60364-4-41:2007 are not permitted: "C.1 Non-conducting location" and "C.2 Protection by earth-free local equipotential bonding".

701.413 Protective measure: electrical separation

701.413.1 General

To add:

Protection by electrical separation shall only be used for

- circuits supplying one item of current-using equipment; or
- one single socket-outlet.

For electric floor heating systems, see 701.753.

701.414 Protective measure: extra-low-voltage provided by SELV and PELV**701.414.1 General**

To add:

Protection against direct contact in zones 0, 1 and 2 shall be provided for all electrical equipment by:

- barriers or enclosures affording a degree of protection of at least IPXXB or IP2X, or
- insulation capable of withstanding a test voltage of 500 V a.c. r.m.s for 1 min.

701.415 Additional protection**701.415.1 Additional protection: residual current protective devices (RCDs)**

To add:

In rooms containing a bath or shower, one or more residual current protective devices (RCDs) with a rated residual operating current not exceeding 30 mA shall provide protection of all circuits. The use of such RCDs is not required for circuits:

- with the protective measure “electrical separation” if any circuit supplies one single current using equipment;
- with the protective measure “extra-low-voltage provided by SELV and PELV”.

701.415.2 Additional protection: supplementary protective equipotential bonding

Modify:

Local supplementary equipotential bonding according to 415.2 shall be established, connecting the protective conductor to the exposed-conductive-parts and accessible extraneous-conductive-parts within a room containing a bath tub and/or a shower.

Supplementary equipotential bonding may be erected outside or inside rooms containing a bath or shower, preferably close to the point of entry of extraneous-conductive-parts into such rooms.

The cross-sectional area of these local protective equipotential bonding conductors shall be in accordance with 543.1.3 of HD 60364-5-54.

The following are examples of possible extraneous-conductive-parts:

- metallic parts of water supply systems and metallic parts of waste water systems;
- metallic parts of heating systems and metallic parts of air conditioning systems;
- metallic parts of gas supply systems;
- accessible structural metallic parts.

Plastic sheathed metal pipes are not required to be connected to the local supplementary equipotential bonding provided they are not accessible in the location and unless they are connected to accessible conductive parts which are not themselves bonded.

In cases where in a building is no main equipotential bonding, the following extraneous-conductive-parts which enter into rooms containing a bath or shower shall be part of the supplementary equipotential bonding:

- parts of fresh water supply systems and waste water systems;
- parts of heating systems and air conditioning systems;
- parts of gas supply systems.

701.5 Selection and erection of electrical equipment

701.512.2 External influences

To add:

Erected electrical equipment (see 701.512.4 and 701.55) shall have at least the following degrees of protection:

- in zone 0: IPX7;
- in zone 1: IPX4;
- in zone 2: IPX4.

This requirement does not apply to shaver supply units complying with EN 61558-2-5 installed in zone 2 and where direct spray from showers is unlikely.

Electrical equipment exposed to water jets e.g. for cleaning purposes in a public bath shall have a degree of protection at least IPX5.

701.512.3 Protection of wiring systems according to external influences

To add:

The following requirements apply:

- a) Wiring systems supplying electrical equipment in zones 0, 1 or 2 and erected on parts of walls which are limiting these zones shall be mounted either on the surface or embedded within a wall at a minimum depth of 5 cm.

Wiring systems supplying current-using equipment in zone 1 shall be erected:

- either vertically from above or horizontally through the wall on the rear of the appliance when the fixed equipment is mounted above the bath tub (e.g. water heating appliances);
- either vertically rising from below or horizontally through the adjacent wall when the equipment is placed in the space below the bath tub.

- b) All other embedded wiring systems including their accessories in parts of walls or partitions which limit a zone 0, 1 or 2 shall be at least 5 cm deep from the zone limiting wall surface.

- c) Where a) or b) are not fulfilled, wiring systems may be erected either if:

- the circuits are protected either by one of the protective measures SELV or PELV or electrical separation; or
- the circuits are protected by additional protection according to Subclause 415.1 of HD 60364-4-41 provided by RCDs with a rated residual operating current not exceeding 30 mA. Such circuits shall contain a protective conductor; or
- embedded cable or conductors incorporating an earthed metallic covering which complies with the requirements for a protective conductor of the circuit concerned, or the cables or conductors are enclosed in earthed conduit, trunking or ducting satisfying the requirements of this standard for a protective conductor, or of insulated concentric construction is used; or
- embedded cable or conductors provided with mechanical protection, e.g. metallic conduit that is likely to prevent penetration of the cable by nails, screws, drills and the like is used.

701.512.4 Erection of switchgear, controlgear and accessories according to external influences

To add:

The following switchgear, controlgear and accessories are permitted within the zones:

Zone 0:

- none.

Zone 1:

- junction boxes and fittings for the supply of current-using equipment permitted in zone 0 and 1 by 701.55;
- accessories, including socket-outlets, of circuits protected by SELV or PELV with a rated voltage not exceeding 25 V a.c. or 60 V d.c. The source of supply shall be installed outside zones 0 and 1.

Zone 2:

- accessories other than socket-outlets;
- accessories, including socket-outlets, of circuits protected by SELV or PELV. The source of supply shall be installed outside zones 0 and 1;
- shaver supply units according to EN 61558-2-5;
- accessories, including socket-outlets for signalling and communications equipment, provided such equipment is protected by SELV or PELV.

For the erection of switchgear, controlgear and accessories, the requirements of 701.512.3b) with regard to the matter of the remaining wall thickness remain applicable.

701.55 Current-using equipment

To add:

In zone 0, current-using equipment shall only be erected provided that the equipment simultaneously:

- complies with the relevant standard and is suitable for use in that zone according to the manufacturer's instructions for use and mounting,
- is fixed and permanently connected, and
- is protected by SELV with a rated voltage not exceeding 12 V a.c. or 30 V d.c.

In zone 1, only fixed and permanently connected current-using equipment shall be installed. The equipment shall be suitable for installation in zone 1 according to the manufacturer's instruction for use and mounting. Such equipment is:

- whirlpool units;
- shower pumps;
- equipment protected by SELV or PELV with a rated voltage not exceeding 25 V a.c. or 60 V d.c.;
- ventilation equipment;
- towel rails;
- water heating appliances;
- luminaires.

701.753 Electric floor heating systems

To add:

For electric floor heating systems, only heating cables according to relevant product standards or thin sheet flexible heating elements according to the relevant equipment standard shall be erected provided that they have either a metal sheath or a metal enclosure or a fine mesh metallic grid. The fine mesh metallic grid, the metal sheath or the metal enclosure shall be connected to the protective conductor of the supply circuit. Compliance with the latter requirement is not mandatory if the protective measure SELV is provided for the floor heating system.

For electric floor heating systems the protective measure “electrical separation” is not permitted.

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