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Nizkonapetostne električne inštalacije - 7-702. del: Zahteve za posebne inštalacije ali lokacije - Plavalni bazeni in vodnjaki (IEC 60364-7-702:2010, spremenjen)

Low-voltage electrical installations - Part 7-702: Requirements for special installations or locations - Swimming pools and fountains

Errichten von Niederspannungsanlagen - Teil 7-702: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art - Schwimmbecken und Springbrunnen

Installations électriques à basse tension Partie 7-702: Règles pour les installations ou emplacements spéciaux - Piscines et fontaines

Ta slovenski standard je istoveten z: HD 60364-7-702:2010

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HD 60364-7-702

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English version

**Low-voltage electrical installations -
Part 7-702: Requirements for special installations or locations -
Swimming pools and fountains
(IEC 60364-7-702:2010, modified)**

Installations électriques à basse tension -
Partie 7-702: Règles pour les installations
ou emplacements spéciaux -
Piscines et fontaines
(CEI 60364-7-702:2010, modifiée)

Errichten von Niederspannungsanlagen -
Teil 7-702: Anforderungen
für Betriebsstätten, Räume und Anlagen
besonderer Art -
Schwimmbekken und Springbrunnen
(IEC 60364-7-702:2010, modifiziert)

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This Harmonization Document was approved by CENELEC on 2010-09-01. 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.

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, Croatia, 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

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Foreword

The text of document 64/1724/FDIS, future edition 3 of IEC 60364-7-702, 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 TC 64, Electrical installations and protection against electric shock, was submitted to the formal vote.

The combined texts were approved by CENELEC as HD 60364-7-702 on 2010-09-01.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 2011-09-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2013-09-01

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Annexes ZA to ZC 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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INTRODUCTION

The requirements of this part of HD 60364 supplement, modify or replace certain of the general requirements contained in Parts 1 to 6 of HD 60364/HD 384.

The clause numbering appearing after 702 refers to the corresponding parts or clauses of HD 60364/HD 384, Parts 1 to 6. Therefore, the numbering of clauses does not necessarily follow sequentially. Numbering of figures and tables takes the number of this part followed by a sequential number.

The absence of reference to a part or clause means that the general requirements contained in Parts 1 to 6 of HD 60364/HD 384 are applicable.

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LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 7-702: Requirements for special installations or locations – Swimming pools and fountains

702 Swimming pools and fountains

702.1 Scope

The particular requirements of this part of HD 60364 apply to electrical installations of:

- basins of swimming pools and paddling pools and their surrounding zones;
- areas in natural waters, lakes in gravel pits and coastal and similar areas, specially intended to be occupied by persons for swimming, paddling and similar purposes, and their surrounding zones. Such areas in natural waters, lakes in gravel pits and coastal and similar areas, are considered as swimming pools;
- basins of fountains and their surrounding zones.

NOTE In these areas, in normal use, the effect of an electric shock is increased by a reduction in body resistance and contact of the body with earth potential.

For swimming pools for medical use, special requirements may apply.

This standard does not cover the use of mobile equipment, e.g. pool cleaning equipment.

702.2 Normative references

[SIST HD 60364-7-702:2011](https://standards.iteh.ai/catalog/standards/sist/ef7173a4-ad19-4d3e-b498-cd77a8bf3996/sist-hd-60364-7-702-2011)
<https://standards.iteh.ai/catalog/standards/sist/ef7173a4-ad19-4d3e-b498-cd77a8bf3996/sist-hd-60364-7-702-2011>

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.

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60355-2-41, *Household and similar electrical appliances - Safety - Part 2-41: Particular requirements for pumps*

HD 60364-4-41:2007, *Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock*

EN 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

EN 60598-2-18, *Luminaires – Part 2: Particular requirements – Section 18: Luminaires for swimming pools and similar applications*

EN 61386-1, *Conduit systems for cable management - Part 1: General requirements*

702.3 Terms and definitions

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

702.3.1**fountain**

arrangement, typically for decorative purposes, where water issues from a source and fills a basin of some kind

702.3.2**basin of fountain**

part of the fountain which collects discharged water

NOTE See also 702.30.101.

702.3.3**swimming pool**

water basin designed for purposes such as swimming, diving, etc. and not for personal cleaning activity

702.3.4**paddling pool**

water basin with low water level, e.g. for playing or wading

702.30 Assessment of general characteristics**702.30.101 General**

Add the following:

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The requirements of this part are based on the dimensions of three zones, zone 0, zone 1 and zone 2 as described in 702.30.102 to 702.30.104 (see Figures A.702.1 to A.702.4).

For electrical equipment in parts of walls, floors or ceilings limiting the zones specified in 702.30.102 to 702.30.104, but being part of the surface of that wall, floor or ceiling, the same requirements that apply for the zone limited by the surface shall be fulfilled unless specific requirements exist (see 702.55).

The width of zone 1 or zone 2 may be reduced by fixed partitions having a minimum height of 2,5 m.

The requirements for swimming pools also apply to paddling pools.

For basins of fountains which are intended to be occupied by persons, the specifications and requirements for zone 0 and zone 1 for swimming pools apply.

NOTE 1 Fixed partitions are fixed separating walls, walls including windows and doors. The zones are also limited by ceilings, slopes of roofs and floors. Fixed partitions that are lower than 2,5 m are only limiting if they end at a ceiling or slope of a roof.

NOTE 2 When a fixed partition is erected inside a zone, its effects on the zone are illustrated in Figure A.702.3.

NOTE 3 For the installation of a prefabricated swimming pool, the requirements of this standard are applicable.

NOTE 4 Annex A provides some examples of the zones.

702.30.102 Description of zone 0

This zone comprises

- the interior of basins, including any recesses in their walls or floors, and
- the interior of basins for foot cleaning, and
- the interior of waterjets or waterfalls, and the space below them (see Figure A.702.4).

NOTE If the zone cannot be precisely determined under waterjets or waterfalls, it is recommended to take the vertical plane from the rim of the basin as the horizontal limitation of the zone and the maximum height of the water jet or waterfall as the limitation of height.

702.30.103 Description of zone 1

This zone is limited by

- the zone 0 boundaries,
- a vertical plane 2 m from the rim of the basin,
- the floor or surface expected to be occupied by persons,
- the horizontal plane 2,5 m above the floor or the surface expected to be occupied by persons.

NOTE Inaccessible equipment installed in an enclosure below the surface of a floor or wall or above a ceiling is not considered to be within zone 1 (see 702.55.101.3).

Where the swimming pool contains diving structures, starting blocks, chutes or other components expected to be occupied or accessible by persons, zone 1 also comprises the zone limited by

- a vertical plane situated 1,5 m around the diving boards, springboards, starting blocks, chutes and other components such as accessible sculptures and decorative basins,
- the horizontal plane 2,5 m above the highest surface expected to be occupied by persons.

702.30.104 Description of zone 2

This zone is limited by

- the vertical plane external to zone 1 and a parallel plane 1,5 m from the former,
- the floor or surface expected to be occupied by persons, and
- the horizontal plane 2,5 m above the floor or surface expected to be occupied by persons.

There is no zone 2 for fountains.

NOTE Inaccessible equipment installed in an enclosure below the surface of a floor or wall or above a ceiling is not considered to be within zone 2 (see 702.55.101.3).

702.4 Protection for safety

702.41 Protection against electric shock

Add the following:

NOTE 1 For selection and erection of socket-outlets, see 702.53.

NOTE 2 For selection and erection of other equipment, see 702.55.

702.410.3 General requirements

702.410.3.5

Replace the existing clause by the following:

The protective measures of obstacles and placing out of reach, as specified in Annex B of HD 60364-4-41, shall not be applied.

702.410.3.6

Replace the existing clause by the following:

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

702.410.3.101 Particular requirements for each zone

Add the following:

702.410.3.101.1 Zones 0 and 1 of swimming pools and in areas of natural waters, lakes in gravel pits and coastal and similar areas

In zones 0 and 1 only protection by SELV at a nominal voltage not exceeding 12 V a.c. or 30 V d.c. is permitted, except where 702.55.104 applies. The source of supply shall be installed external to zones 0 and 1. Where the source of supply is installed in zone 2, 702.53 applies.

702.410.3.101.2 Zones 0 and 1 of fountains

In zones 0 and 1, only the following protective measures shall be employed:

- SELV (see Clause 414 of HD 60364-4-41), the source of supply being installed external to zones 0 and 1; or
- automatic disconnection of supply (see Clause 411 of HD 60364-4-41) using a residual current protective device with a rated residual operating current not exceeding 30 mA; or
- electrical separation (see Clause 413 of HD 60364-4-41), the separation source supplying a single item of equipment and being installed external to zones 0 and 1.

702.410.3.101.3 Zone 2 of swimming pools and in areas of natural waters, lakes in gravel pits and coastal and similar areas

NOTE There is no zone 2 for fountains.

One or more of the following protective measures shall be employed:

- SELV (see Clause 414 of HD 60364-4-41). The source of supply shall be installed external to zone 0 and 1. Where the source of supply is installed in zone 2, 702.53 applies; or
- automatic disconnection of supply (see Clause 411 of HD 60364-4-41) using a residual current protective device with a rated residual operating current not exceeding 30 mA; or
- electrical separation (see Clause 413 of HD 60364-4-41). The separation source shall supply a single item of equipment and be installed external to zones 0 and 1. Where the separation source is installed in zone 2, 702.53 applies.

702.414 Protective measure: extra-low-voltage (SELV and PELV)**702.414.4 Requirements for SELV and PELV circuits**

Add the following:

PELV is not permitted.

702.414.4.5

Add the following:

Where SELV is used, whatever the nominal voltage, basic protection (protection against direct contact) shall be provided by

- barriers or enclosures affording at least the degree of protection according to EN 60529 IP2X or IPXXB, or
- insulation capable of withstanding a test voltage of 500 V a.c. for 1 min.

702.415 Additional protection

702.415.2 Additional protection: supplementary protective equipotential bonding

Add the following:

All extraneous-conductive-parts in zones 0, 1 and 2 shall be connected by protective equipotential bonding conductors to the protective conductors of the exposed-conductive-parts of equipment situated in these zones.

NOTE 1 This connection with the protective conductor may be provided in close proximity to the location, for example at an accessory or a distribution board or other equipment.

NOTE 2 See also 702.522.8 and 702.55.101.

Extraneous-conductive-parts are conductive parts not forming part of the electrical installation and liable to introduce an electric potential, including the electric potential of a local earth – for the scope of this standard, from outside zones 0, 1 and 2 into these zones.

NOTE 3 Such parts may, for example, be

- metallic pipelines for freshwater, waste water, gas, heating, climate control,
- metallic parts of building construction,
- metallic parts of the basin construction,
- metal reinforcement of non-insulating floors,
- metal reinforcement of concrete basins.

Floors made of individual concrete tiles, the reinforcement of which is fully encapsulated within the tile and not accessible without damaging the tile, are not considered as extraneous-conductive-parts and therefore need not be included in additional protective equipotential bonding.

Concrete tiles without metallic reinforcement, tile coverings and topsoil (e.g. lawn) are not considered as extraneous-conductive-parts and therefore need not be included in additional protective equipotential bonding.

NOTE 4 The following conductive parts generally need not be included in additional protective equipotential bonding:

- basin ladders and barriers;
- diving structure ladders;
- handrails and handholds on the rim of the basin;
- grid covers including the mounting frames of overflow pipes;
- window frames;
- door frames;
- starting blocks.

702.5 Selection and erection of electrical equipment

702.51 Common rules

702.512 Operational conditions and external influences

702.512.2 External influences

Add the following:

Electrical equipment shall have at least the IP code (see EN 60529) according to Table 702.1.