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Second edition
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Electrical installations of buildings – Part 7-702: Requirements for special installations or locations – Swimming pools and other basins

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CONTENTS

	Page
FOREWORD	5
INTRODUCTION	7
Clause	
702.1 Scope, object and fundamental principles.....	9
702.2 Definitions	11
702.3 Assessment of general characteristics	11
702.4 Protection for safety.....	11
702.5 Selection and erection of electrical equipment.....	15
Annex A – Summary of principal protection requirements.....	23

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL INSTALLATIONS OF BUILDINGS –

Part 7: Requirements for special installations or locations –
Section 702: Swimming pools and other basins

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 co-operation 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.
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International Standard IEC 60364-7-702 has been prepared by IEC technical committee 64: Electrical installations of buildings.

This second edition cancels and replaces the first edition published in 1983 and constitutes a technical revision.

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

FDIS	Report on voting
64/906/FDIS	64/969/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.

Annex A is for information only.

INTRODUCTION

The requirements of Part 7 supplement, modify or replace the general requirements of the other parts of IEC 60364. The numbers following the particular number of section 702 are those of the corresponding parts, chapters, sections or clauses of IEC 60364. The absence of reference to a chapter, section or a clause means that the corresponding general requirements are applicable.

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ELECTRICAL INSTALLATIONS OF BUILDINGS –

Part 7: Requirements for special installations or locations – Section 702: Swimming pools and other basins

702 Swimming pools and other basins

702.1 Scope, object and fundamental principles

702.11 Scope

The particular requirements of this Section apply to the basins of swimming pools, the basins of fountains and the basins of paddling pools. They also apply to the surrounding zones of all these basins. 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.

The requirements for swimming pools are applicable for paddling pools.

For swimming pools for medical use, special requirements may be necessary.

702.12 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 60364-7. At the time of the publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreement based on this section of IEC 60364-7 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.

IEC 60245-1: 1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 60245-4: 1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

IEC 60364-2-21: 1993, *Electrical installations of buildings – Part 2: Definitions – Chapter 21: Guide to general terms*

IEC 60364-4-41: 1992, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock*

IEC 60364-7-701: 1984, *Electrical installations of buildings – Part 7: Requirements for special installations or locations – Section 701: Locations containing a bath tub or shower basin*

IEC 60529: 1989, *Degrees of protection provided by enclosures (IP code)*

IEC 60536: 1976, *Classification of electrical and electronic equipment with regard to protection against electric shock*

IEC 60598-2-18: 1993, *Luminaires – Part 2: Particular requirements – Section 18: Luminaires for swimming pools and similar applications*

IEC 61140:1997, *Protection against electric shock – Common aspects for installation and equipment* (2nd edition)

702.2 Definitions

702.2.21 Guide to general terms

For the purpose of this section of IEC 60364-7, the following definitions apply. For other general definitions, see IEC 60364-2-21.

702.2.21.1

basin of fountain

Basin not intended to be occupied by persons.

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

702.3 Assessment of general characteristics

702.32 Classification of external influences

These requirements are based on the dimensions of three zones (examples are given in figures 702A, 702B, 702C, 702D and 702E).

a) Zone 0

This zone is the interior of the basins including any recesses in their walls or floors and basins for foot cleaning or the interior of waterjets or waterfalls.

b) Zone 1

This zone is limited by

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

When the swimming pool contains diving boards, spring boards, starting blocks, chutes or other components expected to be occupied by persons, zone 1 comprises the zone limited by

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

c) Zone 2

This zone is limited by

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

There is no zone 2 for fountains.

702.4 Protection for safety

702.41 Protection against electric shock

NOTE 1 – For protection of socket-outlets, see also 702.53.

NOTE 2 – For protection of other equipment, see also 702.55.

702.411 Protection against both direct and indirect contact**702.411.1 Protection by extra low-voltage: SELV and PELV****702.411.1.4 Requirements for unearthed circuits (SELV)**

702.411.1.4.3 Where SELV is used, whatever the nominal voltage, protection against direct contact shall be provided by:

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

702.412 Protection against electric shock in normal service (protection against direct contact or basic protection)**702.412.3 Protection by obstacles**

Protection by obstacles is not applicable.

702.412.4 Protection by placing out of reach

Protection by placing out of reach is not applicable.

702.413 Protection against indirect contact**702.413.1.6 Supplementary equipotential bonding**

All extraneous conductive parts in zones 0, 1 and 2 shall be connected by equipotential bonding conductors and connected to the protective conductor 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 702.55.1

702.413.3 Protection by non-conducting locations

Protection by non-conducting locations is not applicable.

702.413.4 Protection by earth free local equipotential bonding

Protection by earth free local equipotential bonding is not applicable.

702.47 Application of protective measures for safety**702.471 Measures of protection against electric shock****702.471.3 Particular requirements for each zone**

702.471.3.1 General

With the exception for fountains mentioned in 702.471.3.2 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, the safety source being installed external to zones 0, 1 and 2 (see also 702.53 and 702.55).

Equipment for use in the interior of basins which are only intended to be into operation when people are outside zone 0 shall be supplied by circuits protected either by:

- SELV (see clause 411.1 of IEC 60364-4-41), the safety source being installed outside zones 0, 1 and 2; or
- automatic disconnection of the supply (see clause 413.1 of IEC 60364-4-41), using a residual current protective device with a rated residual operating current not exceeding 30 mA; or
- electrical separation (see clause 413.5 of IEC 60364-4-41), the separation source supplying only one item of equipment being installed external to zones 0, 1 and 2.

The socket-outlets of circuits supplying such equipment and the control device of such equipment shall have a notice, in order to warn the user that this equipment shall be used only when the swimming pool is not occupied by persons.

702.471.3.2 Zones 0 and 1 of fountains

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

- SELV (see clause 411.1 of IEC 60364-4-41), the safety source being installed outside zones 0 and 1; or
- automatic disconnection of supply (see clause 413.1 of IEC 60364-4-41) using a residual current protective device with a rated residual operating current not exceeding 30 mA; or
- electrical separation (see clause 413.5 of IEC 60364-4-41), the separation source supplying a single item of equipment and being installed external to zone 0.

702.471.3.3 Zone 2

NOTE – There is no zone 2 for fountains

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

- SELV (see clause 411.1 of IEC 60364-4-41), the safety source being installed outside of zones 0, 1 and 2;
- automatic disconnection of supply (see clause 413.1 of IEC 60364-4-41) using residual current protective devices with a rated residual operating current not exceeding 30 mA;
- Electrical separation (see clause 413.5 of IEC 60364-4-41); the separation source supplying a single item of equipment and being installed outside zones 0, 1 and 2.

702.5 Selection and erection of electrical equipment

702.51 Common rules

702.512 Operational conditions and external influences