IEC 60598-2-18

Edition 3.0 2022-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Luminaires –
Part 2-18: Particular requirements – Luminaires for swimming pools and similar applications

Luminaires –
Partie 2-18: Exigences particulières – Luminaires pour piscines et usages analogues

IEC 60598-2-18:2022-08(en-fr)

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FOREWORD

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IEC 60598-2-18 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lighting. It is an International Standard.

This third edition cancels and replaces the second edition published in 1993 and Amendment 1:2011. This edition constitutes a technical revision.

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

a) references to Part 1 have been updated;
b) some subclauses have been renumbered;
c) the standard has been redrafted such that it is applicable to both filament lamps and LED light sources;
d) marking requirements have been updated and 18.5.3 of the previous edition has been deleted;

e) 18.10.3 of the previous edition has been deleted, as it is no longer relevant, following the update of requirements for cross-sectional areas of external and internal cables in Section 5 of Part 1;

f) 18.10.4 and 18.10.5 of the previous edition renumbered as 18.11.4 and 18.11.5 in this edition have been adapted to allow the use of an alternative waterproof multi-core cable that conforms to the waterproof test of Annex D and Annex E of EN 50525-2-21:2011 or to an equivalent regional standard;

g) in 18.11 (18.10 in the previous edition), the cross-sectional area of wiring has been aligned with Part 1;

h) in 18.11 (18.10 in the previous edition), the types of cables have been updated with alternative regional cables.

The text of this International Standard is based on the following documents:

Draft	Report on voting
34D/1663/FDIS	34D/1667/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

This Part 2-18 is to be used in conjunction with the latest edition of IEC 60598-1 and its amendment(s). It was established on the basis of the ninth edition (2020) of that standard.

NOTE 1 When "Part 1" is mentioned in this document, it refers to IEC 60598-1.

NOTE 2 In this document, the following print type is used:

– compliance statements: *in italic type*.

A list of all parts in the IEC 60598 series, published under the general title *Luminaires* can be found on the IEC website.

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

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

INTRODUCTION

For this third edition of IEC 60598-2-18 the main technical changes comprise the following.

For LED luminaires with bus control, multi-core cables which are suitable for the transmission of data streams are often used. These cables are not standardized. Subclauses 18.10.4 and 18.10.5 of the previous edition allowed the use of H05 RN-F cables but this type of cable is not suitable for the transmission of data streams.

Table 5.1 of Part 1 does not specify a special cable type for luminaires of protection class III. Therefore 18.10.4 and 18.10.5 of the previous edition renumbered as 18.11.4 and 18.11.5 in this edition have been adapted to allow an alternative waterproof multi-core cable that conforms to the waterproof test of Annex D and Annex E of EN 50525-2-21:2011 or to an equivalent regional standard.

Due to the update of Section 5 of IEC 60598-1 regarding cross-sectional areas of external and internal cables, 18.10.3 of the previous edition is no longer relevant. Subclause 18.10.3 was given as a less stringent requirement but in the meantime the requirements of IEC 60598-1 have become less stringent. Therefore 18.10.3 has been deleted.

LUMINAIRES –

Part 2-18: Particular requirements – Luminaires for swimming pools and similar applications

18.1 Scope

This part of IEC 60598 specifies requirements for fixed luminaires intended for use in water, or in contact with water, in, for example, the basins of swimming pools, fountains, paddling pools, and garden pools, and for use with electric light sources.

NOTE Electrical installation rules for swimming pools are given in IEC 60364-7-702.

This document does not cover luminaires not in contact with water (e.g. mounted behind a glass panel which is separate from the luminaire) or hand-held or portable luminaires.

18.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60598-1, *Luminaires – Part 1: General requirements and tests*

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

EN 50525-2-21:2011, *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_0/U) – Part 2-21: Cables for general applications – Flexible cables with crosslinked elastomeric insulation*

18.3 Terms and definitions

For the purposes of this document, the terms and definitions given in Part 1 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

18.4 General test requirements

The provisions of Section 0 of Part 1 apply. The tests described in each appropriate section of Part 1 shall be carried out in the order listed in this document.

Full type testing need not generally be necessary and the product and the previous test results shall be reviewed only against the more onerous requirements. See Annex A.

18.5 Classification of luminaires

18.5.1 Luminaires shall be classified in accordance with the provisions of Section 2 of Part 1 together with the requirements of 18.5.2 to 18.5.4.

18.5.2 Luminaires shall be Class III for protection against electric shock and shall have external and internal circuits which operate on voltages not exceeding 12 V AC or 30 V DC ripple free.

18.5.3 Luminaires shall be classified according to the degree of protection against the ingress of moisture and dust as follows:

a) For those parts of luminaires which are in contact with the water of a pool, fountain, etc., the classification shall be pressure watertight (IPX8).

b) For those parts of luminaires which are not in contact with the water of a pool, fountain, etc., the classification shall be at least dustproof and splashproof (IP54).

18.5.4 Luminaires shall be classified according to the manner of mounting, light source changing and connection to the supply as follows:

a) Category A. Luminaires mounted partly in contact with water, for which connection to the supply and replacement of light sources takes place from the side of the luminaire which is not in contact with water.

b) Category B. Luminaires for which replacement of light sources takes place from the side of the luminaires in contact with water but after the water of the pool has been partially or completely drained.

c) Category C. Luminaires which are completely removed from the water for replacement of light sources, when light source replacement is possible.

18.6 Marking

18.6.1 The provisions of Section 3 of Part 1 apply together with the requirements of 18.6.2 to 18.6.4.

18.6.2 Luminaires intended only for use in water shall be marked:

"For use only when immersed in water"

18.6.3 The output of the transformer (in volt amperes) shall be given on the luminaire or in the installation leaflet supplied with the luminaire.

NOTE Safety isolating transformers according to the IEC 61558 series are marked with the following symbol:

IEC 60417-5222:2002-10

18.6.4 In the instruction leaflet supplied with the luminaire, the manufacturer shall provide information on the mounting of the luminaire with particular regard to corrosion, for example aluminium and its alloys in contact with concrete or similar materials and the electro-chemical action of dissimilar metals.

In providing information for the correct installation of luminaires, the manufacturer shall take the requirements of IEC 60364-7-702 into consideration.

18.7 Construction

18.7.1 The provisions of Section 4 of Part 1 apply together with the requirements of 18.7.2 and 18.7.3.

18.7.2 Luminaires shall be subjected to a test for mechanical strength as follows.

Those parts of the luminaire, including protective glasses, which are in contact with water in normal use shall be subjected to an impact test with an impact energy of 0,7 Nm in the direction of the water pressure. The test shall be carried out in free air.

18.7.3 Luminaires shall be subjected to a corrosion test as follows:

Those parts of the luminaire which are in contact with water in normal use shall be immersed in artificial sea water at a temperature of (25 ± 2) °C for a period of 14 days. After this treatment the parts shall show no signs of corrosion or roughening of their surfaces. Traces of corrosion removable by rubbing shall be ignored.

Artificial sea water is made as follows:

Solution A

28,0 g NaCl

5,0 g $MgCl_2 \cdot 6H_2O$

2,4 g $CaCl_2 \cdot H_2O$

dissolved in 885 ml of distilled water.

Solution B

7,0 g $MgSO_4 \cdot 7H_2O$

0,2 g $NaHCO_3$

dissolved in 100 ml of distilled water.

Solution B is added to solution A slowly and well mixed. The mixture is allowed to stand for 24 h and is then filtered. Finally, the pH value of the mixture is adjusted to between 7 and 8 by adding additional sodium bicarbonate ($NaHCO_3$). It is convenient to pass air bubbles through the mixture during the stabilization of the pH value.

The materials of the test device shall be such that they have no influence on the results of the test.

18.8 Creepage distances and clearances

The provisions of Section 11 of Part 1 apply.

18.9 Provisions for earthing

The provisions of Section 7 of Part 1 do not apply.

18.10 Terminals

The provisions of Sections 14 and 15 of Part 1 apply.

18.11 External and internal wiring

18.11.1 The provisions of Section 5 of Part 1 apply together with the requirements of 18.11.2 to 18.11.5.

18.11.2 Connecting leads (tails) are not permitted.

18.11.3 Switches in flexible cables or cords are not permitted.

18.11.4 Category B luminaires shall be provided with a non-detachable flexible cable or cord at least equivalent in mechanical and electrical properties to cords of the type 245 IEC 57 in IEC 245 or alternative cable, that comply with Annex D and Annex E of EN 50525-2-21:2011 or an equivalent regional standard.

18.11.5 For Category C luminaires, any non-detachable flexible cable or cord provided shall have mechanical and electrical properties at least equivalent to cords of the type 245 IEC 57 in IEC 245 or alternative cable, that comply with Annex D and Annex E of EN 50525-2-21:2011 or an equivalent regional standard.

18.12 Protection against electric shock

The provisions of Section 8 of Part 1 apply.

18.13 Endurance tests and thermal tests

18.13.1 The provisions of Section 12 of Part 1 apply together with the requirements of 18.13.2 to 18.13.3.

18.13.2 Luminaires shall be subjected to the relevant tests of Clauses 12.4, 12.5, 12.6 and 12.7 of Part 1 after the test(s) of Clause 9.2 of Part 1 but before the test(s) of Clause 9.3 of Part 1 specified in Clause 18.14 of this document.

18.13.3 For the endurance tests and thermal tests of Section 12 of Part 1 the luminaire shall be mounted (as far as possible) as for normal use in accordance with the instructions provided by the manufacturer. If the orientation of the luminaire can be varied, that orientation which gives the most unfavourable temperatures shall be chosen. The temperature of the water in front of the luminaire is maintained at t_a ± 10 K. A suitable test device for luminaires where the front is in contact with water is shown in Figure 1.