

SLOVENSKI STANDARD SIST EN 60400:1998

01-april-1998

Lampholders for tubular fluorescent lamps and starterholders

Lampholders for tubular fluorescent lamps and starterholders

Lampenfassungen für röhrenförmige Leuchtstofflampen und Starterfassungen

Douilles pour lampes tubulaires à fluorescence et douilles pour starters

Ta slovenski standard je istoveten z: EN 60400:1996

SIST EN 60400:1998

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29.140.10 Grla in držala žarnic Lamp caps and holders

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EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

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July 1996

ICS 29.140.10

Supersedes EN 60400:1992 and its amendments

Descriptors: Holder for fluorescent tubes, holder for external starting devices, requirements, testing, definitions

English version

Lampholders for tubular fluorescent lamps and starterholders (IEC 400:1996)

Douilles pour lampes tubulaires à fluorescence et douilles pour starters (CEI 400:1996)

Lampenfassungen für röhrenförmige Leuchtstofflampen und Starterfassungen (IEC 400:1996)

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This European Standard was approved by CENELEC on 1996-07-02. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

Page 2

EN 60400:1996

Foreword

The text of document 34B/592/FDIS, future edition 5 of IEC 400, prepared by SC 34B, Lamp caps and holders, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60400 on 1996-07-02.

This European Standard supersedes EN 60400:1992 and its amendments.

The following dates were fixed:

 latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement

(dop) 1997-04-01

 latest date by which the national standards conflicting with the EN have to be withdrawn

(dow) 1997-04-01

For products which have complied with EN 60400:1992 and its amendments A1:1994 and A2:1995 before 1997-04-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2002-04-01.

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B and ZA are normative and annex C is informative.

Annex ZA has been added by CENELEC.

(standa<u>rds.ite</u>h.ai)

Endorsement notice

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The text of the International Standard IEC 400:19968 was approved by CENELEC as a European Standard without any modification.



Page 3 EN 60400:1996

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 61-1 + supplements (mod)	1969 s	Lamp caps and holders together with gauges for the control of interchangeability and safety Part 1: Lamp caps	EN 60061-1 + amendments	1993
IEC 61-2 + supplements (mod)	1969 s	Part 2: Lampholders ITeh STANDARD PREVIE	EN 60061-2 amendments	1993
IEC 61-3 + supplements (mod)		(standards.iteh.ai) Part 3: Gauges SIST EN 60400:1998 s://standards.iteh.ai/catalog/standards/sist/58a53e81-6ba5-41	EN 60061-3 + amendments	1993
IEC 68-2-20	1979	Basic environmental testing procedures Part 2: Tests - Test T: Soldering	HD 323.2.20 S3 ¹⁾	1988
IEC 81	1984	Tubular fluorescent lamps for general lighting service	EN 60081 ²⁾	1989
IEC 112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
IEC 155	1993	Glow-starters for fluorescent lamps	EN 60155	1995
IEC 238	1996	Edison screw lampholders	EN 60238	1996
IEC 352-1	1983	Solderless connections Part 1: Solderless wrapped connections General requirements, test methods and practical guidance	EN 60352-1	1994
IEC 399	1972	Standard sheets for barrel thread for E14 and E27 lampholders with shade holder ring	EN 60399	1993

¹⁾ HD 323.2.20 S3 includes A2:1987 to IEC 68-2-20.

²⁾ EN 60081 includes A1:1987 + A2:1988 to IEC 81.

Page 4 EN 60400:1996

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 598-1 (mod)	1992	Luminaires Part 1: General requirements and tests	EN 60598-1 + corr. May	1993 1996
IEC 664	series	Insulation coordination for equipment within low-voltage systems		-
IEC 695-2-1/X	K1994 ³⁾	Fire hazard testing Part 2: Test methods Section 1	-	-
IEC 695-2-2	1991	Section 2: Needle-flame test	EN 60695-2-2	1994
IEC 1199	1993	Single-capped fluorescent lamps Safety specifications	EN 61199	1994
ASTM specification D 785-65	1981	•	-	-

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³⁾ IEC 695-2-1/0 to 1/3:1994 are being harmonized by CENELEC.

NORME INTERNATIONALE INTERNATIONAL STANDARD

CEI IEC 400

Cinquième édition Fifth edition 1996-06

Douilles pour lampes tubulaires à fluorescence et douilles pour starters

iTeh ST ampholders for tubular fluorescent lamps (sand starterholders)

<u>SIST EN 60400:1998</u> https://standards.iteh.ai/catalog/standards/sist/58a53e81-6ba5-412f-aa4d-7db1293cf643/sist-en-60400-1998

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CONTENTS

		Page
FOF	REWORD	. 5
Clau:	•	·
Clau		
1	General	
	1.1 Scope	. 7
	1.2 Normative references	. 7
2	Definitions	
-3-	General requirement	1-3-
4	General conditions for tests	13
5	Electrical rating	. 15
6	Classification	. 15
7	Marking	
8	Protection against electric shock NDARD PREVIEW	. 21
9	Terminals(standards.iteh.ai)	. 23
10	Construction	. 27
11	Construction SIST EN 60400:1998 Resistance to dust and moisture atalog/standards/sist/58a53e81-6ba5-412f-aa4ti-	. 37
12	Insulation resistance and electric strengthst-en-60400-1998	. 37
13	Endurance	. 41
14	Mechanical strength	. 43
15	Screws, current-carrying parts and connections	. 47
16	Creepage distances and clearances	
17	Resistance to heat, fire and tracking	. 55
18	Resistance to excessive residual stresses (season cracking) and to rusting	. 65
Figu	ıres	66
Anr	nexes	
Α	Examples of lampholders covered by this standard	105
В	Season cracking/corrosion test	. 107
C.	Explanatory details for the requirements in subclause 8.2	. 111

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LAMPHOLDERS FOR TUBULAR FLUORESCENT LAMPS AND STARTERHOLDERS

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 cooperation 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.
- 2)—The formal decisions or agreements of the IEC on technical matters, express as nearly as possible an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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This standard has been prepared by subcommittee 34B. Lamp caps and holders, of IEC technical committee 34: Lamps and related equipment.

This fifth edition cancels and replaces the fourth edition published in 1991, amendment 1 (1993) and amendment 2 (1994); it constitutes a technical revision.

The text of this standard is based on the fourth edition, amendment 1, amendment 2 and the following documents:

FDIS ·	Report on voting
34B/592/FDIS	34B/637/RVD

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

Annexes A and B form an integral part of this standard.

Annex C is for information only.

In this standard, the following print types are used:

- requirements proper: in roman type;
- test specifications: in italic type;
- notes: in smaller roman type.

LAMPHOLDERS FOR TUBULAR FLUORESCENT LAMPS AND STARTERHOLDERS

1 General

1.1 Scope

This International Standard states the technical and dimensional requirements for lampholders for tubular fluorescent lamps and for starterholders, and the methods of test to be used in determining the safety and the fit of the lamps in the lampholders and the starters in the starterholders.

This standard covers independent lampholders and lampholders for building-in, used with tubular fluorescent lamps provided with caps as listed in annex A, and independent starterholders and starterholders for building-in, used with starters in accordance with IEC 155, intended for use in a.c. circuits where the working voltage does not exceed 1 000 V r.m.s.

This standard also covers lampholders for single capped tubular fluorescent lamps integrated in an outer shell and dome similar to Edison screw lampholders (e.g. for G23 and G24 capped lamps). Such lampholders shall further be tested in accordance with the following subclauses of IEC 238: 8.4; 8.5; 8.6; 9.3; 10.7; 11; 12.2; 12.5; 12.6; 12.7; 13; 15.3; 15.4; 15.5 and 15.9.

Lampholders designed with a barrel thread for shade holder rings shall comply with the current edition of IEC 399. **Teh STANDARD PREVIEW**

As far as it applies, this standard also covers combinations of lampholders and starterholders as well as lampholders or combinations which are wholly or partly integral with the luminaire. It also applies, as far as is reasonable, to lampholders and starterholders other than the types explicitly mentioned above and to lamp connectors standards/sist/58a53e81-6ba5-412f-aa4d-7db1293cf643/sist-en-60400-1998

Where the term "holders" is used in the standard, both lampholders and starterholders are intended.

1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication of this standard, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 61: Lamp caps and holders together with gauges for the control of interchangeability and safety

IEC 61-1: Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamp caps

IEC 61-2: Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders

IEC 61-3: Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges

IEC 68-2-20: 1979, Environmental testing - Part 2: Tests - Test T: Soldering

IEC 81: 1984, Tubular fluorescent lamps for general lighting service

IEC 112: 1979, Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions

IEC 155: 1993, Starters for tubular fluorescent lamps

IEC 238: 1996, Edison screw lampholders.

IEC 352-1: 1983, Solderless connections – Part 1: Solderless wrapped connections - General requirements, test methods and practical guidance

IEC 399: 1972, Standard sheets for barrel thread for E14 and E27 lampholders with shade holder ring

IEC 529: 1989, Degrees of protection provided by enclosures (IP Code)

IEC 598-1: 1992, Luminaires – Part 1: General requirements and tests

IEC 664: Insulation co-ordination for equipment within low-voltage systems

IEC 695-2-1: 1994, Fire hazard testing - Part 2: Test methods - Section 1: Glow-wire test

IEC 695-2-2: 1991, Fire hazard testing - Part 2: Test methods - Section 2: Needle-flame test

(standards.iteh.ai) IEC 1199: 1993, Single-capped fluorescent lamps – Safety specifications

ASTM* D 785-65: 1981

SIST EN 60400:1998

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2 Definitions

For the purposes of this International Standard the following definitions apply:

- 2.1 rated voltage: A voltage declared by the manufacturer to indicate the highest working voltage for which the holder is intended.
- 2.2 **working voltage**: The highest r.m.s. voltage which may occur across any insulation, transients being disregarded, both when the lamp or starter is operating under normal conditions and when the lamp or starter is removed.
- 2.3 flexible lampholders for linear double-capped fluorescent lamps: A pair of lampholders in which the base of each holder is rigidly mounted in the luminaire but which has one or both of the lampholders so designed as to allow axial movement of the contacts to provide compensation for variations in lamp lengths and, where necessary, to permit insertion and removal of the lamp.

NOTE – In case of doubt whether a lampholder G5 or G13 provides the required axial movement of the contact, a test with the device shown in figure 3 may be carried out.

American Society for Testing and Materials.

- 2.4 inflexible lampholders for linear double-capped fluorescent lamps: A pair of lampholders intended for rigid mounting and in which no axial movement of the contacts is provided or is needed, either for the insertion and removal of the lamp or as compensation for variation in lamp lengths.
- 2.5 flexibly mounted lampholders for linear double-capped fluorescent lamps: A pair of lampholders which do not in themselves provide for any axial movement of the contact system but which are intended to be mounted in a luminaire in a specified manner so that the combination provides the necessary axial movement of the contact system.
 - NOTE Lampholders of this type may or may not be suitable for rigid mounting also.
- 2.6 lamp connectors: A set of contacts mounted on flexible conductors which provide for electrical contact but do not support the lamp.
- 2.7 holder for building-in: A holder designed to be built into a luminaire, an additional enclosure or the like.
- 2.7.1 unenclosed holder: A holder for building-in so designed that it requires additional means, for example an enclosure, to meet the requirements of this standard with regard to protection against electric shock.
- 2.7.2 enclosed holder: A holder for building-in so designed that on its own it fulfils the requirements of this standard with regard to protection against electric shock and IP classification, if appropriate. (standards.iteh.ai)
- 2.8 independent holder: A holder so designed that it can be mounted separately from a luminaire and at the same time providing all the necessary protection according to its classification and marking.

 7db1293cf643/sist-en-60400-1998
- 2.9 rated operating temperature: The highest temperature for which the holder is designed...
- 2.10 rated lampholder rearside temperature: The rearside temperature for lampholders with T-marking ascertained by test b) in 17.1, or a higher temperature as declared by the manufacturer.
- 2.11 **type test**: A test or series of tests made on a type test sample, for the purpose of checking compliance of the design of a given product with the requirements of the relevant standard.
- 2.12 **type test sample**: A sample consisting of one or more similar specimens submitted by the manufacturer or responsible vendor for the purpose of a type test.
- 2.13 live part: A conductive part which may cause an electric shock.
- 2.14 rated pulse voltage: The highest peak value of pulse voltages the holder is able to withstand.

3 General requirement

Holders shall be so designed and constructed that in normal use they function reliably and cause no danger to persons or surroundings.

In general, compliance is checked by carrying out all the tests specified.

In addition, the enclosure of independent holders shall comply with the appropriate requirements of IEC 598-1, including the classification and marking requirements of that standard.

4 General conditions for tests

4.1 Tests according to this standard are type tests.

NOTE – The requirements and tolerances permitted by this standard are related to testing of a type test sample submitted for that purpose.

Compliance of the type test sample does not ensure compliance of the whole production of a manufacturer with this safety standard.

In addition to type testing, conformity of production is the responsibility of the manufacturer and may include routine tests and quality assurance.

- 4.2 Unless otherwise specified, the tests are made at an ambient temperature of 20 °C \pm 5 °C and with the holder in the most unfavourable position for normal use.
- 4.3 The tests shall be carried out in the order of the clauses, unless another succession of tests is specified. (standards.iteh.ai)

Holders intended to provide an IP classification greater than IP20 shall be subjected to the tests in 11.1 and 11.2 after the test in 17.1 catalog/standards/sist/58a53e81-6ba5-412f-aa4d-7db1293cf643/sist-en-60400-1998

- 4.4 The tests and inspections are carried out on a total of:
 - 8 pairs of matching lampholders intended for linear double-capped fluorescent lamps;

NOTE – If a pair of lampholders consists of identical holders, it is sufficient for one holder instead of one pair to be subjected to all the tests, except for the test of item d) in 10.5, where one pair is needed.

8 specimens intended for single-capped fluorescent lamps and 8 starterholders;

in the order of the clauses, as follows:

2 pairs or 2 specimens: clause 5 up to and including clause 16 (except for 9.2 and 9.5);

NOTE - The tests of 9.2 are carried out on the number of separate specimens as required by the relevant standards.

- 3 pairs or 3 specimens: 9.5 and 17.1;
- 2 pairs or 2 specimens: 17.2 up to and including 17.5 (of which one specimen for the test in 17.2 and the other for the tests in 17.4 and 17.5);
- 1 pair or 1 specimen: 17.6 and clause 18.

In the case of flexible and inflexible lampholders G5 or G13 (see 2.3 and 2.4 respectively), the specimens are mounted on two pairs of mounting sheets as specified in figure 2.

One pair of holders is mounted so as to represent the minimum mounting distance for this pair of holders according to the manufacturer's mounting instructions; the other pair is mounted at the maximum distance. The matching mounting sheets are marked.

In special cases, it may be necessary to test more than the specified number of specimens.

Together with these specimens, the manufacturer's mounting instructions (see 7.3) shall be supplied.

For holders intended to provide an IP classification greater than IP20 with detachable gaskets having a maximum operating temperature different from the values in 17.1, an additional set of gaskets shall be supplied with the specimen, together with information on their maximum operating temperature (this is part of the manufacturer's mounting instructions).

NOTE - This does not refer to detachable gaskets on the mounting surface of the holder, see 17.1.

4.5 Holders are deemed to comply with this standard if no specimen fails in the complete series of tests specified in 4.4.

If one specimen fails in one test, that test and the preceding ones which may have influenced the result of that test are repeated on another set of specimens to the number required in 4.4, all specimens of which shall then comply with the repeated tests and with the subsequent tests. Holders are deemed not to comply with this standard if there are more failures than that of one specimen in one of the tests. STANDARD PREVIEW

NOTE – In general, it will only be necessary to repeat the relevant test, unless the specimen fails in the tests according to clause 13 or 14, in which case the tests shall be repeated from the test according to clause 12 onwards:

A second type test sample, which may be required should one specimen fail, may be submitted together with the first sample.

If the additional type test sample is not submitted at the same time, a failure of one specimen entails a rejection.

5 Electrical rating

The electrical rating shall be:

- not less than 125 V and not more than 1 000 V a.c. r.m.s.;
- not less than 125 V and not more than 250 V a.c. r.m.s. for lampholders G5;
- not less than 1 A;
- not less than 2 A for lampholders G13, 2G13, G20, Fa6, Fa8 and R17d.

NOTE - In countries where marking of rated wattage is required in place of rated current, the rating of the G5 lampholder shall be not less than 75 W.

6 Classification

Holders are classified:

- 6.1 According to protection against electric shock:
 - unenclosed holders;
 - enclosed holders:
 - independent holders.

6.2 According to degree of protection against ingress of dust or water in accordance with the system of classification (IP Code) explained in IEC 529.

Symbols for the degrees of protection are given in 7.4. (Independent and enclosed holders only.)

- 6.3 According to the resistance to heat:
 - holders for rated operating temperatures up to and including 80 °C;
 - holders for rated operating temperatures over 80 °C.

NOTE - The measuring point for the operating temperature is that area of the lampholder where it touches the lamp cap.

- 6.4 Moreover, starterholders are classified according to the possibility of accepting different types of starters:
 - starterholders intended for starters according to IEC 155;
 - starterholders intended for starters according to IEC 155, annex B only.

7 Marking

- 7.1 Holders shall be marked with:
 - a) mark of origin (this may take the form of a trade mark, manufacturer's identification mark or the name of the responsible vendor);
 - b) type reference;
 - c) rated voltage in volts and rated pulse voltage in kV, if applicable;
 - d) rated current, in amperes (see note to clause 5):0-1998
 - e) rated operating temperature T if greater than 80 °C, in steps of 10 °C:
 - f) degree of protection against ingress of dust and water, for drip-proof holders only (see 7.4).

Marking of "IP20" on ordinary holders is not required;

g) for holders protected against dust and moisture, the holder manufacturer shall indicate in his instructions the nominal diameter of the lamp(s) or starter for which the holder is intended.

Compliance is checked by inspection.

7.2 Information to be provided, if applicable

The following information, if applicable, shall either be given on the holder, or be made available in the manufacturer's catalogue or the like:

- the temperature $T_{\rm m}$ for the rearside of the holder, for holders tested according to item b) in 17.1:
- the temperature measured for the screwless terminals, for holders tested according to item b) in 17.1;
- a declaration in conformity with 9.3 of the cross-section of the conductor(s) for which the holder terminals are suitable.

Compliance is checked by inspection.