
(istoveten EN 60081:1998/A2:2003)

Double-capped fluorescent lamps - Performance specifications - Amendment A2
(IEC 60081:1997/A2:2003)

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EUROPEAN STANDARD

EN 60081/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2003

ICS 29.140.30

English version

**Double-capped fluorescent lamps -
Performance specifications
(IEC 60081:1997/A2:2003)**

Lampes à fluorescence à deux culots -
Prescriptions de performance
(CEI 60081:1997/A2:2003)

Zweiseitig gesockelte Leuchtstofflampen -
Anforderungen an die Arbeitsweise
(IEC 60081:1997/A2:2003)

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This amendment A2 modifies the European Standard EN 60081:1998; it was approved by CENELEC on 2003-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

Foreword

The text of document 34A/1020/FDIS, future amendment 2 to IEC 60081:1997, prepared by SC 34A, Lamps, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60081:1998 on 2003-04-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2004-01-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2006-04-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annexes A, B and C are normative.

Endorsement notice

The text of amendment 2:2003 to the International Standard IEC 60081:1997 was approved by CENELEC as an amendment to the European Standard without any modification.

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AMENDEMENT 2
AMENDMENT 2

2003-03

Amendement 2

**Lampes à fluorescence à deux culots –
Prescriptions de performance**

Amendment 2

**Double-capped fluorescent lamps –
Performance specifications**

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*Les feuilles de cet amendement sont à insérer dans la
CEI 60081 (1997)*

*The sheets contained in this amendment are to be
inserted in IEC 60081 (1997)*

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AVANT-PROPOS

Le présent amendement a été établi par le sous-comité 34A : Lampes, du comité d'études 34 de la CEI: Lampes et équipements associés.

Le texte de cet amendement est issu des documents suivants:

FDIS	Rapport de vote
34A/1020/FDIS	34A/1028/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cet amendement.

Le comité a décidé que le contenu de la présente publication ne sera pas modifié avant 2004. A cette date, la publication sera

- reconduite;
- supprimée;
- remplacée par une édition révisée, ou
- amendée.

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FOREWORD

This amendment has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

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

FDIS	Report on voting
34A/1020/FDIS	34A/1028/RVD

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

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
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-

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Edition 5.2

2003-03

Edition 5, modifiée selon les amendements 1 (2000) et 2 (2003)
Edition 5, amended in accordance with amendments 1 (2000) and 2 (2003)

**Lampes à fluorescence à deux culots –
Prescriptions de performance**

iTeh STANDARD PREVIEW
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DOUBLE-CAPPED FLUORESCENT LAMPS –
PERFORMANCE SPECIFICATIONS**

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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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60081 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This consolidated version of IEC 60081 is based on the fifth edition (1997) [documents 34A/759/FDIS and 34A/778/RVD], its amendment 1 (2000) [documents 34A/896/FDIS and 34A/907/RVD] and its amendment 2 (2003) [documents 34A/1020/FDIS and 34A/1028/RVD].

It bears the edition number 5.2.

The committee has decided that the contents of the base publication, its amendment 1 and its amendment 2 will remain unchanged until 2004. At this date, the publication will be

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

DOUBLE-CAPPED FLUORESCENT LAMPS – PERFORMANCE SPECIFICATIONS

1 General

1.1 Scope

This International Standard specifies the performance requirements for double-capped fluorescent lamps for general lighting service.

The requirements of this standard relate only to type testing. Conditions of compliance, including methods of statistical assessment, are under consideration.

The following lamp types and modes of operation are included:

- a) lamps having preheated cathodes, designed for operation on a.c. mains frequencies with the use of a starter, and additionally operating on high frequency;
- b) lamps having preheated high-resistance cathodes, designed for operation on a.c. mains frequencies without the use of a starter (starterless), and additionally operating on high frequency;
- c) lamps having preheated low-resistance cathodes, designed for operation on a.c. mains frequencies without the use of a starter (starterless), and additionally operating on high frequency;
- d) lamps having preheated cathodes, designed for operation on high frequency;
- e) lamps having non-preheated cathodes, designed for operation on a.c. mains frequencies;
- f) lamps having non-preheated cathodes, designed for operation on high frequency.

For some of the requirements given in this standard, reference is made to “the relevant lamp data sheet”. For some lamps these data sheets are contained in this standard. For other lamps, falling under the scope of this standard, the relevant data are supplied by the lamp manufacturer or responsible vendor.

1.2 Statement

It may be expected that lamps which comply with this standard will start and operate satisfactorily at voltages between 92 % and 106 % of rated supply voltage and at an ambient air temperature of between 10 °C and 50 °C, when operated with a ballast complying with IEC 60921 or IEC 60929, where relevant with a starter complying with IEC 60155 or IEC 60927, and in a luminaire complying with IEC 60598.

1.3 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.

IEC 60050(845):1987, *International Electrotechnical Vocabulary (IEV) – Chapter 845: Lighting*

1.5.2 Caps

The dimensions of the caps on a finished lamp shall be in accordance with IEC 60061-1.

- a) For lamps with G5 or G13 caps, both pins (excluding flanges) of the two caps of a finished lamp shall pass simultaneously, freely without binding, through parallel slots, suitably spaced longitudinally to receive the lamp. The slots shall each be 2,87 mm wide for G5 caps, and 3,05 mm wide for G13 caps.
- b) For lamps with R17d caps, both cap bosses of a finished lamp shall pass simultaneously, freely without binding, through parallel slots, suitably spaced longitudinally to receive the lamp with the bottom of the slots against the boss ends. The slots shall each be 6,35 mm deep and 9,22 mm wide.

1.5.3 Dimensions

The dimensions of a lamp shall comply with the values specified on the relevant lamp data sheet.

1.5.4 Starting characteristics

A lamp shall start fully within the time specified on the relevant lamp data sheet and remain alight.

Conditions and method of test are given in annex A.

1.5.5 Electrical and cathode characteristics

- a) The initial reading of the voltage at the lamp terminals shall comply with the values specified on the relevant lamp data sheet.
- b) The initial reading of the power dissipated by a lamp shall not exceed the rated wattage, specified on the relevant lamp data sheet, by more than $5\% \pm 0,5 \text{ W}$.

NOTE – Cathode watts due to supplementary heating are not included in the rated lamp wattage unless otherwise stated on the lamp data sheet.

- c) For a lamp having preheated cathodes for operation on a.c. mains frequencies starterless circuits, the initial reading of the resistance of each cathode shall be not less than the minimum value specified on the relevant lamp data sheet.
- d) For a lamp having preheated cathodes for operation on high frequency, the initial reading of the resistance of each cathode shall comply with the values specified on the relevant lamp data sheet.

Conditions and method of test are given in annex B.

1.5.6 Photometric characteristics

- a) The initial reading of the luminous flux of a lamp shall be not less than 92 % of the rated value.
- b) The initial reading of the chromaticity coordinates x and y of a lamp shall be within 5 SDCM (standard deviation of colour matching) from the rated values.

NOTE – See also annex D on chromaticity co-ordinates.

- c) The initial reading of the general colour rendering index R_a of a lamp shall be not less than the rated value decreased by three.

Conditions and method of test are given in annex B.

1.5.7 Lumen maintenance

The lumen maintenance of a lamp shall be not less than 92 % (under consideration) of the rated lumen maintenance value at any time in its life.

Conditions and method of test are given in annex C.

1.5.8 Marking

A lamp shall be marked with an identification which defines, with the aid of information made available by the manufacturer or responsible vendor, the electrical and photometric characteristics of the lamp.

1.6 Information for ballast and starter design

Refer to the relevant lamp data sheet and to annex E for information for ballast and starter design.

1.7 Information for luminaire design

Refer to annex F for information for luminaire design.

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Annex A (normative)

Method of test for starting characteristics

A.1 General

Tests shall be made in a draught-free atmosphere at an ambient temperature of between 20 °C and 27 °C and a relative humidity of 65 % maximum.

Metallic parts and wires in the vicinity of the lamp, except starting aids when required, shall be avoided as far as possible.

Immediately prior to the starting test the lamps shall be kept inoperative and in an ambient temperature of between 20 °C and 27 °C and a relative humidity of 65 % maximum for a period of at least 24 h.

A.2 Lamps having preheated cathodes for operation on a.c. mains frequencies with the use of a starter

A.2.1 Test circuit

Lamps shall be tested with a 50 Hz or 60 Hz supply in the circuit shown in figure A.1.

A.2.2 Ballast

The ballast used shall be of the inductive type, unless specified otherwise on the relevant lamp data sheet, and shall comply with the requirements of IEC 60921. It shall be rated as specified on the relevant lamp data sheet. Where a capacitive circuit is specified, additionally the capacitor used shall comply with the requirements of IEC 61049.

When the ballast, at its rated voltage, is associated with a test lamp, the lamp shall dissipate a power which does not differ from its rated value by more than 4 %. A test lamp is a lamp whose voltage at lamp terminals does not deviate by more than 2 % from its rated value, when operated with its reference ballast.

The preheating current, when measured at 90 % of rated ballast voltage, shall be between 1,1 and 1,2 times the rated lamp current. To obtain a value of the preheating current within this range, it may be necessary either to make a special selection from among commercial ballasts or else to design and manufacture a ballast for this specific purpose. In some cases, it may be possible to bring the preheating current down to be within this range by adding resistance in series with the starter.

NOTE – In some cases the ballast may include an autotransformer to increase (or reduce) the voltage to the proper value for the starting and operation of the lamp. Ballasts incorporating step-up transformers are particularly likely to be used in countries where 120 V or 100 V power systems predominate.