
**Fluorescenčne sijalke z enim vznožkom – Specifikacije lastnosti (IEC
60901:1996/A3:2004)**

Single-capped fluorescent lamps - Performance specifications (IEC
60901:1996/A3:2004)

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EUROPEAN STANDARD

EN 60901/A3

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2004

ICS 29.140.30

English version

**Single-capped fluorescent lamps –
Performance specifications
(IEC 60901:1996/A3:2004)**

Lampes à fluorescence à culot unique -
Prescriptions de performances
(CEI 60901:1996/A3:2004)

Einseitig gesockelte Leuchtstofflampen -
Anforderungen an die Arbeitsweise
(IEC 60901:1996/A3:2004)

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This amendment A3 modifies the European Standard EN 60901:1996; it was approved by CENELEC on 2004-07-01. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, 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/1078/FDIS, future amendment 3 to IEC 60901:1996, 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 A3 to EN 60901:1996 on 2004-07-01.

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) 2005-04-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2007-07-01

Endorsement notice

The text of amendment 3:2004 to the International Standard IEC 60901:1996 was approved by CENELEC as an amendment to the European Standard without any modification.

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NORME
INTERNATIONALE
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CEI
IEC
60901

AMENDEMENT 3
AMENDMENT 3

2004-05

Amendement 3

**Lampes à fluorescence à culot unique –
Prescriptions de performances**

STANDARD PREVIEW
Amendment 3
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**Single-capped fluorescent lamps –
Performance specifications**

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*Les feuilles de cet amendement sont à insérer dans la
Publication 60901 (2001)*

*The sheets contained in this amendment are to be
inserted in Publication 60901 (2001)*

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International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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PRICE CODE

*Pour prix, voir catalogue en vigueur
For price, see current catalogue*

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/1078/FDIS	34A/1082/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 présent publication ne sera pas modifié avant 2006. A cette date, la publication sera

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

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

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

FDIS	Report on voting
34A/1078/FDIS	34A/1082/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 2006. At this date, the publication will be

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

**INSTRUCTIONS POUR L'INSERTION
DES NOUVELLES PAGES ET FEUILLES
DE CARACTÉRISTIQUES DANS
LA PUBLICATION**

**INSTRUCTIONS FOR THE INSERTION
OF NEW PAGES AND SHEETS
IN PUBLICATION**

- | | |
|--|---|
| 1. Retirer la page de titre et insérer la nouvelle page de titre. | 1. Remove title page and insert new title page. |
| 2. Retirer la page 4 et insérer la nouvelle page 4. | Remove page 5 and insert new page 5. |
| 3. Retirer les pages I-1 et I-9 et insérer les nouvelles pages I-1 et I-9. | 2. Remove pages I-2 and I-10 and insert new pages I-2 and I-10. |
| 4. Retirer la page II-3 et insérer les nouvelles pages II-3 et II-3a. | 3. Remove pages II-4 and insert new pages II-4 and II-4a. |
| 5. Retirer la page II-5 et insérer les nouvelles pages II-5 et II-5a. | 4. Remove pages II-4 and insert new pages II-6 and II-6a. |

SECTION 2 – FEUILLES DE CARACTÉRISTIQUES

SECTION 2 – DATA SHEETS

- | | |
|--|---|
| 6. Retirer les feuilles
2005-1 (page 3)
2007-1 (page 3)
2009-1 (page 3)
2011-1 (page 3)
2218-1 (page 3)
2224-1 (page 3)
2236-1 (page 3)
2510-1 (page 3)
2513-1 (page 3)
2518-1 (page 3)
2526-1 (page 3)
3118-1 (pages 2 et 3)
3124-1 (pages 2 et 3)
3136-1 (pages 2 et 3)
3222-1 (Pages 1, 2 et 3)
3232-1 (Pages 1, 2 et 3)
3240-1 (Pages 1, 2 et 3)
3413-1 (Page 3)
3418-1 (Page 3)
3426-1 (Page 3)
5222-1 (Pages 1 et 2)
5232-1 (Pages 1 et 2)
5240-1 (Pages 1 et 2)
6255-1 (Page 2)
7432-2
7442-2 | 6. Remove sheets.
2005-1 (page 3)
2007-1 (page 3)
2009-1 (page 3)
2011-1 (page 3)
2218-1 (page 3)
2224-1 (page 3)
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3118-1 (pages 2 and 3)
3124-1 (pages 2 and 3)
3136-1 (pages 2 and 3)
3222-1 (Pages 1, 2 and 3)
3232-1 (Pages 1, 2 and 3)
3240-1 (Pages 1, 2 and 3)
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5232-1 (Pages 1 and 2)
5240-1 (Pages 1 and 2)
6255-1 (Page 2)
7432-2
7442-2 |
| 7. Insérer les nouvelles feuilles
2005-2 (page 3)
2007-2 (page 3)
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2011-2 (page 3)
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2518-2 (page 3)
2526-2 (page 3)
3118-2 (pages 2 et 3)
3124-2 (pages 2 et 3)
3136-2 (pages 2 et 3)
3222-2 (Pages 1 et 2)
3232-2 (Pages 1 et 2)
3240-2 (Pages 1 et 2)
3413-2 (Page 3)
3418-2 (Page 3)
3426-2 (Page 3)
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5232-2 (Pages 1 et 2)
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2005-2 (page 3)
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2011-2 (page 3)
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5222-2 (Pages 1 and 2)
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5240-2 (Pages 1 and 2) |

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6255-2 (Page 2)
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6255-2 (Page 2)
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8. Ajouter les nouvelles feuilles

6722-1 (Pages 1 et 2)
6740-1 (Pages 1 et 2)
6755-1 (Pages 1 et 2)
6820-1 (Pages 1 et 2)
6827-1 (Pages 1 et 2)
6834-1 (Pages 1 et 2)
6941-1 (Pages 1 et 2)
6968-1 (Pages 1 et 2)
6997-1 (Pages 1 et 2)
7457-1 (Pages 1 et 2)

8. Add new sheets

6722-1 (Pages 1 and 2)
6740-1 (Pages 1 and 2)
6755-1 (Pages 1 and 2)
6820-1 (Pages 1 and 2)
6827-1 (Pages 1 and 2)
6834-1 (Pages 1 and 2)
6941-1 (Pages 1 and 2)
6968-1 (Pages 1 and 2)
6997-1 (Pages 1 and 2)
7457-1 (Pages 1 and 2)

9. Supprimer les feuilles

3231-1 (3 pages)
3239-1 (3 pages)

9. Delete sheets

3231-1 (3 pages)
3239-1 (3 pages)

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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International Standard IEC 60901 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This consolidated version of IEC 60901 is based on the second edition (1996) [documents 34A/588/FDIS and 34A/634/RVD], its amendment 1 (1997) [documents 34A/706/FDIS and 34A/743/RVD], its amendment 2 (2000) [documents 34A/908/FDIS and 34A/914/RVD], and its amendment 3 (2004) [documents 34A/1078/FDIS and 34A/1082/RVD].

It bears the edition number 2.3.

The origin (edition 2 or amendments 1, 2 or 3) of the standard sheets constituting this consolidated edition may be identified by the headers of the sheets.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

SINGLE-CAPPED FLUORESCENT LAMPS – PERFORMANCE SPECIFICATIONS

Section 1: General

1.1 Scope

This International Standard specifies the performance requirements for single-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 with external ballasts are included:

- a) lamps operated with an internal means of starting, having preheated cathodes, for operation on a.c. mains frequencies;
- b) lamps operated with an external means of starting, having preheated cathodes, for operation on a.c. mains frequencies with the use of a starter, and additionally operating on high frequency;
- c) lamps operated with an external means of starting, having preheated cathodes, for operation on a.c. mains frequencies without the use of a starter (starterless), and additionally operating on high frequency;
- d) lamps operated with an external means of starting, having preheated cathodes, for operation on high frequency;
- e) lamps operated with an external means of starting, having non-preheated cathodes, 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 General 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.

NOTE For some lamps, additional information for high-frequency ballast design is given for proper starting at an ambient air temperature of -15 °C.

1.3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

The requirements and information given apply to 95 % of production.

NOTE The requirements and tolerances permitted by this standard correspond to the testing of a type test sample, submitted by the manufacturer for that purpose. In principle this type test sample should consist of units having characteristics typical of the manufacturer's production and being as close to the production centre point values as possible.

It may be expected with the tolerances given in the standard that products manufactured in accordance with the type test sample will comply with the standard for the majority of production. Due to the production spread however, it is inevitable that there will sometimes be products outside the specified tolerances. For guidance on sampling plans and procedures for inspection by attributes, see IEC 60410.

1.5.2 Caps

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

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 characteristics

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- 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 % $\pm 0,5$ W.

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

Conditions and method of test are given in annex B.

1.5.6 Cathode characteristics

- a) 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. These resistance values include lead wire resistance.
- b) For a lamp having preheated cathodes for operation on high frequency or additionally operating on high frequency, the initial reading of the resistance of each cathode, when heated with the specified test current, shall comply with the values specified on the relevant lamp data sheet. These resistance values include lead wire resistance.

In addition, the average value of the resistance ratio R_h/R_c of the coils of 10 cathodes shall be in the range $4,75 \pm 0,5$. R_h is the resistance of the cathode when heated with the specified test current. R_c is the resistance of the cathode at a temperature of $25 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$. Both resistance values shall exclude lead wire resistance.

Conditions and method of test are given in annex B.

1.5.7 Photometric characteristics

- a) The initial reading of the luminous flux of a lamp shall be not less than 90 % 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 the relevant annex on rated colour characteristics in IEC 60081.

- 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.

1.5.8 Lumen maintenance

The lumen maintenance of a lamp, at any time in its life, shall be not less than 90 % (under consideration) of the rated lumen maintenance value.

Conditions and method of test are given in annex C.

1.5.9 Radio interference suppression (RIS)

A lamp with an internal starter shall contain means to aid in the suppression of radio interference, the effect of which shall be equivalent to that of the RIS capacitor prescribed in IEC 60155.

1.5.10 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.

For a lamp using amalgam as a means of mercury vapour pressure control and exhibiting a slow run-up, the immediate lamp wrapping or container shall be marked with the word "AMALGAM".

NOTE The marking of "AMALGAM" is required in order to make aware of the relatively slow run-up behaviour of lamps containing certain amalgam compositions. Lamps containing amalgam with no retardation of luminous flux during run-up, compared with non-amalgam lamps, are not addressed by the marking requirement.

1.6 Information for ballast and starter design

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

1.7 Information for luminaire design

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

2.3 Lamp data sheets

2.3.1 List of lamp data sheets

Sheet No. 60901-IEC-	Nominal wattage W	Frequency		Shape	Cap	Means of starting	Circuit		Cathode type
		Hz					AC mains	High frequency	
0005	5	50	60	Dual	G23	Internal	-	-	Preheated
0007	7	50	60	Dual	G23	Internal	-	-	Preheated
0009	9	50	60	Dual	G23	Internal	-	-	Preheated
0011	11	50	-	Dual	G23	Internal	-	-	Preheated
0013	13	-	60	Dual	GX23	Internal	-	-	Preheated
0510	10	50	60	Quad	G24d-1	Internal	-	-	Preheated
0513	13	50	60	Quad	G24d-1	Internal	-	-	Preheated
0518	18	50	60	Quad	G24d-2	Internal	-	-	Preheated
0526	26	50	60	Quad	G24d-3	Internal	-	-	Preheated
0715	15	-	60	Quad	GX32d-1	Internal	-	-	Preheated
0720	20	-	60	Quad	GX32d-2	Internal	-	-	Preheated
0727	27	-	60	Quad	GX32d-3	Internal	-	-	Preheated
1016	16	50	-	Square	GR8	Internal	-	-	Preheated
1028	28	50	-	Square	GR8	Internal	-	-	Preheated
1413	13	50	60	Multilimbed	GX24d-1	Internal	-	-	Preheated
1418	18	50	60	Multilimbed	GX24d-2	Internal	-	-	Preheated
1426	26	50	60	Multilimbed	GX24d-3	Internal	-	-	Preheated
2005	5	50	60	Dual	2G7	External	Starter	Starterless	Preheated
2007	7	50	60	Dual	2G7	External	Starter	Starterless	Preheated
2009	9	50	60	Dual	2G7	External	Starter	Starterless	Preheated
2011	11	50	-	Dual	2G7	External	Starter	Starterless	Preheated
2127	27	50	60	Dual	GY10q-4	External	Starter	-	Preheated
2128	28	50	60	Dual	GY10q-5	External	Starter	-	Preheated
2130	30	50	60	Dual	GY10q-4	External	Starter	-	Preheated
2136	36	50	60	Dual	GY10q-6	External	Starter	-	Preheated
2218	18	50	60	Dual	2G11	External	Starter	Starterless	Preheated
2224	24	50	60	Dual	2G11	External	Starter	Starterless	Preheated
2236	36	50	60	Dual	2G11	External	Starter	Starterless	Preheated
2510	10	50	60	Quad	G24q-1	External	Starter	Starterless	Preheated
2513	13	50	60	Quad	G24q-1	External	Starter	Starterless	Preheated
2518	18	50	60	Quad	G24q-2	External	Starter	Starterless	Preheated
2526	26	50	60	Quad	G24q-3	External	Starter	Starterless	Preheated
2613	13	50	60	Quad	GX10q-2	External	Starter	-	Preheated
2618	18	50	60	Quad	GX10q-3	External	Starter	-	Preheated
2627	27	50	60	Quad	GX10q-4	External	Starter	-	Preheated
3010	10	50	-	Square	GR10q	External	Starter	-	Preheated
3016	16	50	-	Square	GR10q	External	Starter	-	Preheated
3021	21	50	-	Square	GR10q	External	Starter	-	Preheated
3028	28	50	-	Square	GR10q	External	Starter	-	Preheated
3038	38	50	-	Square	GR10q	External	Starter	-	Preheated
3118	18	50	60	Square	2G10	External	Starter	Starterless	Preheated
3124	24	50	60	Square	2G10	External	Starter	Starterless	Preheated
3136	36	50	60	Square	2G10	External	Starter	Starterless	Preheated
3222	22	50	60	Circular	G10q	External	Starter	-	Preheated
3232	32	50	60	Circular	G10q	External	Starter	-	Preheated
3240	40	50	-	Circular	G10q	External	Starter	-	Preheated
3413	13	50	60	Multilimbed	GX24q-1	External	Starter	Starterless	Preheated
3418	18	50	60	Multilimbed	GX24q-2	External	Starter	Starterless	Preheated
3426	26	50	60	Multilimbed	GX24q-3	External	Starter	Starterless	Preheated
4224	24/27	-	60	Dual	2G11	External	Starterless	-	Preheated, low resistance
4236	36/39	-	60	Dual	2G11	External	Starterless	-	Preheated, low resistance
5010	10	50	-	Square	GR10q	External	Starterless	-	Preheated, high resistance
5016	16	50	-	Square	GR10q	External	Starterless	-	Preheated, high resistance
5021	21	50	-	Square	GR10q	External	Starterless	-	Preheated, high resistance
5028	28	50	-	Square	GR10q	External	Starterless	-	Preheated, low resistance
5038	38	50	-	Square	GR10q	External	Starterless	-	Preheated, low resistance
5222	22	-	60	Circular	G10q	External	Starterless	-	Preheated, low resistance
5232	32	-	60	Circular	G10q	External	Starterless	-	Preheated, low resistance
5240	40	-	60	Circular	G10q	External	Starterless	-	Preheated, low resistance