
D.C. or a.c. supplied electronic step-down convertors for filament lamps - General and safety requirements

D.C. or a.c. supplied electronic step-down convertors for filament lamps - General and safety requirements

Gleich- oder wechselstromversorgte elektronische Konverter für Glühlampen - Allgemeine und Sicherheits-Anforderungen

Convertisseurs abaisseurs électroniques alimentés en courant continu ou alternatif pour lampes à incandescence - Prescriptions générales et de sécurité

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-982a3a35f9c/sist-en-61046-2000>

Ta slovenski standard je istoveten z: EN 61046:1994

ICS:

29.130.01	Stikalne in krmilne naprave na splošno	Switchgear and controlgear in general
29.140.99	Drugi standardi v zvezi z žarnicami	Other standards related to lamps

SIST EN 61046:2000

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61046:2000

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-982af3a35f9c/sist-en-61046-2000>

ICS 29.140.30

Supersedes EN 61046:1992 + A1:1992

Descriptors: Electronic equipment, convertors, AC-DC convertors, incandescent lamps, tungsten lamps, halogen lamps, marking, safety requirements

ENGLISH VERSION

D.C. or a.c. supplied electronic step-down convertors for filament lamps - General and safety requirements
(IEC 1046:1993)

Convertisseurs abaisseurs électroniques alimentés en courant continu ou alternatif pour lampes à incandescence Prescriptions générales et de sécurité
(CEI 1046:1993)

Gleich- oder Wechselstromversorgte elektronische Konverter für Glühlampen - Allgemeine und Sicherheits-Anforderungen
(IEC 1046:1993)

This European Standard was approved by CENELEC on 1994-09-01. 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

FOREWORD

At the request of the CENELEC Technical Committee TC 34Z, Luminaires and associated equipment, the International Standard IEC 1046:1993 was submitted to the CENELEC Unique Acceptance Procedure (UAP) in November 1993 for acceptance as a European Standard.

The text of the International Standard was approved by CENELEC as EN 61046 on 1st September 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-07-15
- latest date of withdrawal of conflicting national standards (dow) 1995-07-15

For products which have complied with EN 61046:1992 and its amendment A1:1992 before 1995-07-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-07-15.

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

ENDORSEMENT NOTICE

The text of the International Standard IEC 1046:1993 was approved by CENELEC as a European Standard without any modification.

STANDARD PREVIEW
(standards.tech.a)
SIST EN 61046:2000
https://standards.iteh.ai/catalog/standards/sist/982a13a35f9c/sist-en-61046-2000

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD
WITH THE REFERENCES OF THE RELEVANT 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.

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

IEC Publication	Date	Title	EN/HD	Date
51	series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	series
65, mod A1 A2	1985 1987 1989	Safety requirements for mains operated electronic and related apparatus for household and similar general use	EN 60065*	1993
83 A1	1975 1979	Plugs and socket-outlets for domestic and similar general use - Standards	-	-
85	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990
127	series	Miniature fuses	EN 60127	series
249	series	Base materials for printed circuits	EN 60249	series
269-2	1986	Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application)	-	-
269-3	1987	Part 3: Supplementary requirements for fuses for use by unskilled persons (Fuses mainly for household and similar applications)	-	-
317	series	Specifications for particular types of winding wires	HD 555 EN 60317	series

* EN 60065 includes A1:1987 + A2:1989 + A3:1992 to IEC 65

IEC Publication	Date	Title	EN/HD	Date
357	1982	Tungsten halogen lamps (non-vehicle)	EN 60357	1988
A1	1984			
A2	1985			
A3	1987			
A4	1989		EN 60357/A4	1991
364-4-41	1992*	Electrical installations of buildings Part 4: Protection for safety Chapter 41: Protection against electric shock	-	-
417	1973	Graphical symbols for use on equipment Index, survey and compilation of the single sheets	HD 243 S10*	1993
449	1973	Voltage bands for electrical	HD 193 S2	1982
A1	1979	installations of buildings		
454	series	Specifications for pressure-sensitive adhesive tapes for electrical purposes	EN 60454	series
529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
598-1, mod	1986	Luminaires - Part 1: General	EN 60598-1	1989
A1	1988	requirements and tests	+ corr. May 1993	
598-2-6	1979	Luminaires - Part 2: Particular	EN 60598-2-6*	1989
A1	1987	requirements - Section Six - Luminaires with built-in transformers for filament lamps		
691, mod	1980	Thermal-links	EN 60691*	1987
695-2-1	1980	Fire hazard testing - Part 2: Test methods - Glow-wire test and guidance	HD 444.2.1 S1	1983
695-2-2	1980	Part 2: Test methods Needle-flame test	HD 444.2.2 S1*	1983
730-2-3, mod	1990	Automatic electrical controls for household and similar use Part 2: Particular requirements for thermal protectors for ballasts for tubular fluorescent lamps	EN 60730-2-3	1992

* IEC 364-4-41:1977, mod, is harmonized as HD 384.4.41 S1:1980
 HD 243 S10 includes supplements A:1974 to K:1991 to IEC 417
 EN 60598-2-6:1989 is superseded by EN 50598-2-6:1994, which is based
 on IEC 598-2-6:1994
 The title of EN 60691 is: Requirements and application guide for thermal
 links
 HD 444.2.2 S1:1983 is superseded by EN 60695-2-2:1993, which is based
 on IEC 695-2-2:1991

IEC Publication	Date	Title	EN/HD	Date
742, mod	1983	Isolating transformers and safety isolating transformers - Requirements	EN 60742	1989
906	--	IEC System of plugs and socket outlet for household and similar purposes	-	-
920	1990	Ballasts for tubular fluorescent lamps General and safety requirements	EN 60920	1991
1047	1991	D.C. or a.c. supplied electronic step-down convertors for filament lamps Performance requirements	EN 61047	1992

Other publication quoted:

ISO 4046	1978	Paper, board, pulp and related terms	Vocabulary
----------	------	--------------------------------------	------------

<https://standards.iteh.ai/catalog/standards/sist/397b84ff-9a7c-4364-8a5c-9828a35f9c/sist-en-61046-2000>
 SIST EN 61046:2000

ITC STANDARD PREVIEW
 (standards.iteh.ai)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 61046:2000

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-982af3a35f9c/sist-en-61046-2000>

NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
1046

Deuxième édition
Second edition
1993-11

Convertisseurs abaisseurs électroniques
alimentés en courant continu ou alternatif
pour lampes à incandescence —

Prescriptions générales et de sécurité

iTeh STANDARD PREVIEW

(standards.iTeh.ai)
D.C. or a.c. supplied electronic step-down
converters for filament lamps —

SIST EN 61046:2000

<https://standards.iTeh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-962a9a55bc/sist-en-61046-2000>
General and safety requirements

© CEI 1993 Droits de reproduction réservés — Copyright — all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Genève, Suisse



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

X

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

CONTENTS

	Page
FOREWORD	5
INTRODUCTION	9
SECTION 1: GENERAL REQUIREMENTS	
Clause	
1 General	11
1.1 Scope	11
1.2 Normative references	11
2 Definitions	15
3 General requirements	19
4 General notes on tests	19
5 Classification	21
6 Marking	21
SECTION 2: SAFETY REQUIREMENTS	
7 Terminals	23
8 Provisions for earthing	25
9 Construction	25
10 Creepage distances and clearances	25
11 Protection against accidental contact with live parts	29
12 Moisture resistance and insulation	31
13 Electric strength	33
14 Transformer heating	33
15 Abnormal conditions	35
16 Fault conditions	37
17 Screws, current-carrying parts and connections	41
18 Resistance to heat and fire	41
19 Resistance to corrosion	43
Figure 1	44
Annexes	
A Test to establish whether a conductive part is a live part which may cause an electric shock	47
B Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps with means of protection against overheating	49
C Particular additional requirements for independent SELV d.c. or a.c. supplied electronic step-down convertors for filament lamps	53

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**D.C. OR A.C. SUPPLIED ELECTRONIC
STEP-DOWN CONVERTORS
FOR FILAMENT LAMPS -**

General and safety requirements

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, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use 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.

International Standard IEC 1046 has been prepared by sub-committee 34C: Auxiliaries for discharge lamps, of IEC technical committee 34: Lamps and related equipment.

This second edition cancels and replaces the first edition, published in 1991, and amendment 1, published in 1991.

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

DIS	Reports on Voting	Amendment to DIS	Report on Voting
34C(CO)244 34C(CO)245 34C(CO)246	34C(CO)265 34C(CO)266 34C(CO)267	34C(CO)271	34C(CO)274

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

In this standard, the following print types are used:

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

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

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST EN 61046:2000

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-982af3a35f9c/sist-en-61046-2000>

INTRODUCTION

This standard covers general and safety requirements for d.c. or a.c. electronic step-down convertors for filament lamps generally operating with a frequency deviating from the supply frequency.

Performance requirements are the subject of the future publication IEC 1047.

NOTE - Safety requirements ensure that electrical equipment constructed in accordance with these requirements, does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it is intended.

This standard refers to d.c. or a.c. supplied electronic step-down convertors for use with tungsten-halogen lamps as specified in IEC 357 and other filament lamps.

Tests in this standard are type tests. Requirements for testing individual convertors during production are not included.

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST EN 61046:2000

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-982af3a35f9c/sist-en-61046-2000>

D.C. OR A.C. SUPPLIED ELECTRONIC STEP-DOWN CONVERTORS FOR FILAMENT LAMPS

General and safety requirements

Section 1: General requirements

1 General

1.1 Scope

This International Standard specifies general and safety requirements for electronic step-down convertors for use on d.c. supplies up to 250 V or a.c. supplies up to 1 000 V at 50 Hz or 60 Hz and rated output voltage ≤ 50 V r.m.s. at a frequency deviating from the supply frequency or $\leq 50 \sqrt{2}$ V unsmoothed d.c. between conductors or between any conductor and earth, associated with tungsten-halogen lamps as specified in IEC 357 and other filament lamps.

NOTE - The limit of 50 V rated output voltage is in accordance with Band I of IEC 449.

standards.iteh.ai

Particular requirements for electronic step-down convertors with means of protection against overheating are given in annex B.

[SIST EN 61046:2000](https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c-)

<https://standards.iteh.ai/catalog/standards/sist/3e7b84ff-9a7c-4364-8a5c->

Particular requirements for stationary independent SELV convertors, which are part of the wiring in installations, are given in annex C.

Plug-in convertors, being part of the luminaire, are covered as built-in convertors together with the additional requirements of the luminaire standard.

NOTE - These proposals have also been submitted to SC 14D for introduction in the new omnibus standard IEC 742 which is in preparation.

1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents 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 normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

1.2.1 IEC standards

IEC 51, *Direct acting indicating analogue electrical-measuring instruments and their accessories*

IEC 65: 1985, *Safety requirements for mains operated electronic and related apparatus for household and similar general use*
Amendment No. 1 (1987). Amendment No. 2 (1989)

IEC 83: 1975, *Plugs and socket-outlets for domestic and similar general use. Standards*
Amendment No. 1 (1979)

IEC 85: 1894, *Thermal evaluation and classification of electrical insulation*

IEC 127, *Miniature fuses*

IEC 249, *Base materials for printed circuits*

IEC 269-2: 1986, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application)*

IEC 269-3: 1987, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications)*

IEC 317, *Specifications for particular types of winding wires*

IEC 357: 1982, *Tungsten-halogen lamps (non-vehicle)*
Amendment No. 1 (1984), Amendment No. 2 (1985), Amendment No. 3 (1987), Amendment No. 4 (1989)

IEC 364-4-41: 1982, *Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock*

IEC 417: 1973, *Graphical symbols for use on equipment. Index, survey and compilation of the single sheets*

IEC 449: 1973, *Voltage bands for electrical installations of buildings*
Amendment No. 1 (1979)

IEC 454, *Specifications for pressure-sensitive adhesive tapes for electrical purposes*

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

IEC 598-1: 1986, *Luminaires – Part 1: General requirements and tests*
Amendment No. 1 (1988)

IEC 598-2-6: 1979, *Luminaires – Part 2: Particular requirements – Section Six: Luminaires with built-in transformers for filament lamps*
Amendment No. 1 (1987)

IEC 691: 1980, *Thermal-links*

IEC 695-2-1: 1980, *Fire hazard testing – Part 2: Test methods. Glow-wire test and guidance*