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Low-voltage fuses -- Part 4: Supplementary requirements for fuse links for the protection of semiconductor devices (IEC 60269-4:2006)

Niederspannungssicherungen -- Teil 4: Zusätzliche Anforderungen an Sicherungseinsätze zum Schutz von Halbleiter-Bauelementen (IEC 60269-4:2006)

Fusibles basse tension -- Partie 4: Exigences supplémentaires concernant les éléments de remplacement utilisés pour la protection des dispositifs a semiconducteurs (IEC 60269-4:2006)

Ta slovenski standard je istoveten z: EN 60269-4:2007

ICS:

29.120.50 Xæ[çæ ^ Ái ~ * æ Fuses and other overcurrent protection devices
{ ^ áq \ [ç} æ Á æ æ

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**Low-voltage fuses -
Part 4: Supplementary requirements for fuse-links
for the protection of semiconductor devices
(IEC 60269-4:2006)**

Fusibles basse tension -
Partie 4: Exigences supplémentaires
concernant les éléments
de remplacement utilisés
pour la protection des dispositifs
à semiconducteurs
(CEI 60269-4:2006)

Niederspannungssicherungen -
Teil 4: Zusätzliche Anforderungen
an Sicherungseinsätze zum Schutz
von Halbleiter-Bauelementen
(IEC 60269-4:2006)

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This European Standard was approved by CENELEC on 2007-03-01. 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, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 32B/485/FDIS, future edition 4 of IEC 60269-4, prepared by SC 32B, Low-voltage fuses, of IEC TC 32, Fuses, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60269-4 on 2007-03-01.

This European Standard supersedes EN 60269-4:1996 + A1:1997 + A2:2003 and EN 60269-4-1:2002.

This part is to be used in conjunction with EN 60269-1:2007, Part 1:General requirements.

This Part 4 supplements or modifies the corresponding clauses or subclauses of Part 1.

Where no change is necessary, this Part 4 indicates that the relevant clause or subclause applies.

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) | 2008-03-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2010-03-01 |

Tables and figures which are additional to those in Part 1 are numbered starting from 101.

Annex ZA has been added by CENELEC.

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Endorsement notice

[SIST EN 60269-4:2007](#)

The text of the International Standard IEC 60269-4:2006 was approved by CENELEC as a European Standard without any modification. [eb2ba3dd5876/sist-en-60269-4-2007](#)

Annex ZA
(normative)

**Normative references to international publications
with their corresponding European publications**

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.

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> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-----------------|---|--------------|--------------------|
| IEC 60269-1 | - ¹⁾ | Low-voltage fuses - Part 1: General requirements | EN 60269-1 | 2007 ²⁾ |
| IEC 60269-2 (mod) | - ¹⁾ | Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) - Examples of standardized systems of fuses A to I | HD 60269-2 | 2007 ²⁾ |
| IEC 60269-3 (mod) | - ¹⁾ | Low-voltage fuses - Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar applications) - Examples of standardized systems of fuses A to F | HD 60269-3 | 2007 ²⁾ |
| IEC 60417 | data- base | Graphical symbols for use on equipment | - | - |
| ISO 3 | - ¹⁾ | Preferred numbers - Series of preferred numbers | - | - |

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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CEI
IEC

60269-4

Quatrième édition
Fourth edition
2006-11

Fusibles basse tension –

Partie 4:

**Exigences supplémentaires concernant les
éléments de remplacement utilisés pour la
protection des dispositifs à semiconducteurs**

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Low-voltage fuses –

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Part 4:

**Supplementary requirements for fuse-links
for the protection of semiconductor devices**

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE FUSES –

**Part 4: Supplementary requirements for fuse-links
for the protection of semiconductor devices**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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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International Standard IEC 60269-4 has been prepared by subcommittee 32B: Low-voltage fuses, of IEC technical committee 32: Fuses.

This fourth edition cancels and replaces the third edition published in 1986, amendment 1 (1995) and amendment 2 (2002) as well as IEC 60269-4-1(2002) and constitutes a minor revision.

The general re-organization of the IEC 60269 series has led to the creation of this new edition.

This part is to be used in conjunction with IEC 60269-1:2006, Part 1:General requirements.

This Part 4 supplements or modifies the corresponding clauses or subclauses of Part 1.

Where no change is necessary, this Part 4 indicates that the relevant clause or subclause applies.

Tables and figures which are additional to those in Part 1 are numbered starting from 101.

The text of this standard is based on following documents:

| FDIS | Report on voting |
|--------------|------------------|
| 32B/485/FDIS | 32B/492/RVD |

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

IEC 60269 consists of the following parts, under the general title *Low-voltage fuses*:

Part 1: General requirements

NOTE This part includes the IEC 60269-1 (third edition, 1998) and parts of the IEC 60269-2 (second edition, 1986) and IEC 60269-3 (second edition, 1987).

Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to I

NOTE This part includes parts of the IEC 60269-2 (second edition, 1986) and the entire IEC 60269-2-1 (fourth edition, 2004).

Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar application) – Examples of standardized systems of fuses A to F

NOTE This part includes parts of the IEC 60269-3 (second edition, 1987) and the entire IEC 60269-3-1 (second edition, 2004).

Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices

NOTE This part includes the IEC 60269-4 (third edition, 1986) and the IEC 60269-4-1 (first edition, 2002).

Part 5: Guidance for the application of low-voltage fuses

NOTE Currently IEC/TR 61818 (2003).

For reasons of convenience, when a part of this publication has come from other publications, a remark to this effect has been inserted in the text.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

INTRODUCTION

A reorganization of the different parts of the IEC 60269 series has been carried out, in order to simplify its use, especially by the laboratories which test the fuses.

IEC 61269-1, IEC 60269-2, IEC 60269-3 and IEC 60269-3-1 have been integrated into either the new part 1 or the new parts 2 or 3, according to the subjects considered, so that the clauses which deal exclusively with “fuses for authorized persons” are separated from the clauses dealing with “fuses for unauthorized persons”.

As far as IEC 60269-4 and IEC 60269-4-1 are concerned, they have been integrated into the new part 4 which deals with the fuse-links used for semiconductor protection.

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LOW-VOLTAGE FUSES –

Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices

1 General

IEC 60269-1 applies with the following supplementary requirements.

Fuse-links for the protection of semiconductor devices shall comply with all requirements of IEC 60269-1, if not otherwise indicated hereinafter, and shall also comply with the supplementary requirements laid down below.

1.1 Scope and object

These supplementary requirements apply to fuse-links for application in equipment containing semiconductor devices for circuits of nominal voltages up to 1 000 V a.c. or 1 500 V d.c. and also, in so far as they are applicable, for circuits of higher nominal voltages.

NOTE 1 Such fuse-links are commonly referred to as “semiconductor fuse-links”.

NOTE 2 In most cases, a part of the associated equipment serves the purpose of a fuse-base. Owing to the great variety of equipment, no general rules can be given; the suitability of the associated equipment to serve as a fuse-base should be subject to agreement between the manufacturer and the user. However, if separate fuse-bases or fuse-holders are used, they should comply with the appropriate requirements of IEC 60269-1.

The object of these supplementary requirements is to establish the characteristics of semiconductor fuse-links in such a way that they can be replaced by other fuse-links having the same characteristics provided that their dimensions are identical. For this purpose, this standard refers in particular to [IEC 60269-1](#) and [IEC 60269-2](#).

a) The following characteristics of fuses:

- 1) their rated values;
- 2) their temperature rises in normal service;
- 3) their power dissipation;
- 4) their time-current characteristics;
- 5) their breaking capacity;
- 6) their cut-off current characteristics and their I^2t characteristics;
- 7) their arc voltage limits.

b) Type tests for verification of the characteristics of fuses.

c) The markings on fuses.

d) Availability and presentation of technical data (see Annex B).

1.2 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 60269-1, *Low-voltage fuses – General requirements*

IEC 60269-2, *Low-voltage fuses – Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to I*

IEC 60269-3, *Low-voltage fuses – Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household or similar application) – Examples of standardized systems of fuses A to F*

IEC 60417, *Graphical symbols for use on equipment*

ISO 3, *Preferred numbers – Series of preferred numbers*

2 Terms and definitions

IEC 60269-1 applies with the following supplementary requirements.

2.2 General terms

2.2.101

semiconductor device

Remark: previously 2.1.14 in IEC 60269-4, Amendment 2

device whose essential characteristics are due to the flow of charge carriers within a semiconductor

[IEV 521-04-01]

2.2.102

semiconductor fuse-link

Remark: previously 2.1.15 in IEC 60269-4, Edition 3

current-limiting fuse-link capable of breaking, under specific conditions, any current value within the breaking range (see 7.4)

2.2.103

signalling device

Remark: previously 2.1.16 in IEC 60269-4, Amendment 2

device forming part of the fuse and signalling the fuse operation to a remote place. A signalling device consists of a striker and an auxiliary switch. Electronic devices may also be used

3 Conditions for operation in service

IEC 60269-1 applies with the following supplementary requirements.

3.4 Voltage

3.4.1 Rated voltage

For a.c., the rated voltage of a fuse-link is related to the applied voltage; it is based on the r.m.s. value of a sinusoidal a.c. voltage. It is further assumed that the applied voltage retains the same value throughout the operation of the fuse-link. All tests to verify the ratings are based on this assumption.

NOTE In many applications, the applied voltage will be sufficiently close to the sinusoidal form for the significant part of the operating time, but there are many cases where this condition is not satisfied.