SLOVENSKI STANDARD
SIST EN 60269-1:2007/oprA3:2022

01-junij-2022

Nizkonapetostne varovalke - 1. del: Splošne zahteve - Dopolnilo A3

Amendment 3 - Low-voltage fuses - Part 1: General requirements

Niederspannungssicherungen - Teil 1: Allgemeine Anforderungen

Fusibles basse tension - Partie 1: Exigences générales

Ta slovenski standard je istoveten z: **EN 60269-1:2007/prA3:2022**

ICS:		
29.120.50	Varovalke in druga nadtokovna zaščita	Fuses and other overcurrent protection devices

SIST EN 60269-1:2007/oprA3:2022 **en,fr,de**

32B/715/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 60269-1/AMD3 ED4	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2022-03-11	**2022-06-03**
SUPERSEDES DOCUMENTS:	
32B/702/CD, 32B/708A/CC	

IEC SC 32B : LOW-VOLTAGE FUSES	
SECRETARIAT: Germany	SECRETARY: Mr Michael Altenhuber
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Amendment 3 - Low-voltage fuses - Part 1: General requirements

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

All changes to the present edition are marked in red for easier reading

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

LOW-VOLTAGE FUSES –

Part 1: General requirements

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.

2) The formal decisions or agreements of 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 IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

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

This Consolidated version of IEC 60269-1 bears the edition number 4.2. It consists of the fourth edition (2006-11) [documents 32B/483/FDIS and 32B/490/RVD], its amendment 1 (2009-04) [documents 32B/534/FDIS and 32B/540/RVD] and its amendment 2 (2014-06) [documents 32B/626/FDIS and 32B/628/RVD]. The technical content is identical to the base edition and its amendments.

This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.

This publication has been prepared for user convenience.

252 International Standard IEC 60269-1 has been prepared by subcommittee 32B: Low-voltage
253 fuses, of IEC technical committee 32: Fuses.

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

255 Part 1: General requirements

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

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

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

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

262 Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic
263 energy systems

264 Part 7: Battery Fuses

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

267 The committee has decided that the contents of the base publication and its amendments will
268 remain unchanged until the stability date indicated on the IEC web site under
269 "http://webstore.iec.ch" in the data related to the specific publication. At this date, the
270 publication will be

271 • reconfirmed,

272 • withdrawn,

273 • replaced by a revised edition, or

274 • amended.

275

~~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 60269-1, 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.~~

LOW-VOLTAGE FUSES –

Part 1: General requirements

1 General

1.1 Scope and object

This part of IEC 60269 is applicable to fuses incorporating enclosed current-limiting fuse-links with rated breaking capacities of not less than 6 kA, intended for protecting power-frequency AC circuits of nominal voltages not exceeding 1 000 V or DC circuits of nominal voltages not exceeding 1 500 V.

Subsequent parts of this standard, referred to herein, cover supplementary requirements for such fuses intended for specific conditions of use or applications.

Fuse-links intended to be included in fuse-switch combinations according to IEC 60947-3 should also comply with the following requirements.

NOTE 1 **As far as not stated in subsequent parts** for ~~"a"~~ fuse-links details of performance (see 2.2.4) on DC circuits should be subject to agreement between user and manufacturer.

NOTE 2 Modifications of, and supplements to, this standard required for certain types of fuses for particular applications – for example, certain fuses for rolling stock, or fuses for high-frequency circuits – will be covered, if necessary, by separate standards.

NOTE 3 This standard does not apply to miniature fuses, these being covered by IEC 60127.

The object of this standard is to establish the characteristics of fuses or parts of fuses (fuse-base, fuse-carrier, fuse-link) in such a way that they can be replaced by other fuses or parts of fuses having the same characteristics provided that they are interchangeable as far as their dimensions are concerned. For this purpose, this standard refers in particular to

– the following characteristics of fuses:
  - ~~their~~ rated values;
  - ~~their~~ insulation;
  - ~~their~~ temperature rise in normal service;
  - ~~their~~ power dissipation and acceptable power dissipation;
  - ~~their~~ time/current characteristics;
  - ~~their~~ breaking capacity;
  - ~~their~~ cut-off current characteristics and their I^2t characteristics.
– type test for verification of the characteristics of fuses;
– the marking of fuses.

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 60038:1983, *IEC standard voltages*

IEC 60050(441):1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*
Amendment 1 (2000)

IEC 60228:2004, *Conductors of insulated cables*

IEC 60269-2, *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)*

IEC 60269-3, *Low-voltage fuses – 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*

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

IEC 60269-5, *Low-voltage fuses – Part 5: Guidance for the application of low-voltage fuses*

IEC 60269-6, *Low-voltage fuses – Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems*

IEC 60269-7, *Low-voltage fuses – Part 7: Supplementary requirements for fuse-links for the protection of battery systems*

IEC 60364-3:1993, *Electrical installations of buildings – Part 3: Assessment of general characteristics*

IEC 60364-5-52:2001, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring system*

IEC 60529:1989, *Degrees of protection provided by enclosures (Code IP)*

IEC 60584-1:1995, *Thermocouples – Part 1: Reference tables*

IEC 60617, *Graphical symbols for diagrams*

IEC 60664-1:2002, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-12:2000, *Fire hazard testing – Part 2-12: Glowing/hot-wire based test methods – Glow-wire flammability index (GWFI) test method for materials*

IEC 60695-2-13:2000, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*

ISO 3:1973, *Preferred numbers – Series of preferred numbers*

ISO 478:1974, *Paper – Untrimmed stock sizes for the ISO-A series – ISO primary range*

ISO 593:1974, *Paper – Untrimmed stock size for the ISO-A series – ISO supplementary range*

ISO 4046:1978, *Paper, board, pulp and related terms – Vocabulary – Bilingual edition*

2 Terms and definitions

NOTE For general definitions concerning fuses, see also IEC 60050-441.

For the purposes of this document, the following terms and definitions apply.

2.1 Fuses and their component parts

2.1.1
fuse
device that by the fusing of one or more of its specially designed and proportioned components opens the circuit in which it is inserted by breaking the current when this exceeds a given value for a sufficient time. The fuse comprises all the parts that form the complete device.

[IEV 441-18-01]

2.1.2
fuse-holder
combination of the fuse-base with its fuse-carrier

NOTE Where, in this standard, the term "fuse-holder" is used, it covers fuse-bases and/or fuse-carriers, if no clearer distinction is necessary.

[IEV 441-18-14]

2.1.2.1
fuse-base (fuse-mount)
fixed part of a fuse provided with contacts and terminals

[IEV 441-18-02]

NOTE Where applicable, covers are considered as part of the fuse-base.

2.1.2.2
fuse-carrier
movable part of a fuse designed to carry a fuse-link

[IEV 441-18-13]

2.1.3
fuse-link
part of a fuse including the fuse-element(s), intended to be replaced after the fuse has operated

[IEV 441-18-09]

2.1.4
fuse-contact
two or more conductive parts designed to ensure circuit continuity between a fuse-link and the corresponding fuse-holder

2.1.5
fuse-element
part of the fuse-link designed to melt under the action of current exceeding some definite value for a definite period of time

[IEV 441-18-08]

NOTE The fuse-link may comprise several fuse-elements in parallel.

2.1.6
indicating device (indicator)
part of a fuse provided to indicate whether the fuse has operated

[IEV 441-18-17]

2.1.7
striker
mechanical device forming part of a fuse-link which, when the fuse operates, releases the energy required to cause operation of other apparatus or indicators or to provide interlocking

[IEV 441-18-18]

2.1.8
terminal
conductive part of a fuse provided for electric connection to external circuits

NOTE Terminals may be distinguished according to the kind of circuits for which they are intended (for example, main terminal, earth terminal, etc.) and also according to their design (for example, screw terminal, plug terminal, etc.).

2.1.9
dummy fuse-link
test fuse-link with defined power dissipation and dimensions

2.1.10
test rig
defined test fuse-base

2.1.11
gauge-piece
additional part of a fuse-base intended to achieve a degree of non-interchangeability

2.1.12
linked fuse-carrier
a fuse-carrier which is mechanically linked to the fuse-base and gives a defined insertion and withdrawal movement to the fuse-link

[This definition was definition 2.1.12 in IEC 60269-2-1, Section I, which has been withdrawn.]

2.2 General terms

2.2.1
enclosed fuse-link
fuse-link in which the fuse-element(s) is (are) totally enclosed, so that during operation within its rating it cannot produce any harmful external effects, for example, due to development of an arc, the release of gas or the ejection of flame or metallic particles

[IEV 441-18-12]

2.2.2
current-limiting fuse-link
fuse-link that during and by its operation in a specified current range, limits the current to a substantially lower value than the peak value of the prospective current

[IEV 441-18-10]

2.2.3
"g" fuse-link
(full-range breaking-capacity fuse-link, formerly general purpose fuse-link)
current-limiting fuse-link capable of breaking under specified conditions all currents, which cause melting of the fuse-element up to its rated breaking capacity

2.2.4
"a" fuse-link
(partial-range breaking-capacity fuse-link, formerly back-up fuse-link)
current-limiting fuse-link capable of breaking under specified conditions all currents between the lowest current indicated on its operating time-current characteristic ($k_2 I_n$ in Figure 2) and its rated breaking capacity

NOTE "a" fuse-links are generally used to provide short-circuit protection. Where protection is required against over-currents less than $k_2 I_n$ in Figure 2, they are used in conjunction with another suitable switching device designed to interrupt such small overcurrents.