
Low-voltage fuses - Part 2-1: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial applications) - Sections I to IV: Examples of types of standardized fuses for use by authorized persons (IEC 60269-2-1:1996, modified)

Low-voltage fuses -- Part 2-1: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) -- Sections I to IV: Examples of types of standardized fuses for use by authorized persons

iTeh STANDARD PREVIEW

Niederspannungssicherungen (NH-System) -- Teil 2-1: Zusätzliche Anforderungen an Sicherungen zum Gebrauch durch Elektrofachkräfte bzw. elektrotechnisch unterwiesene Personen (Sicherungen überwiegend für den industriellen Gebrauch) -- Hauptabschnitte I bis IV: Beispiele von genormten Sicherungstypen zum Gebrauch durch Elektrofachkräfte bzw. elektrotechnisch unterwiesene Personen

Fusibles basse tension -- Partie 2-1: Règles supplémentaires pour les fusibles destinés à être utilisés par des personnes habilitées (fusibles pour usages essentiellement industriels) -- Sections I à IV: Exemples de fusibles normalisés destinés à être utilisés par des personnes habilitées

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Descriptors: Low-voltage fuses, fuse-links with blades, fuse-links with bolted connections, fuse-links having cylindrical contact caps, industrial application, supplementary requirements, marking, testing

English version

Low-voltage fuses
Part 2-1: Supplementary requirements for fuses for use
by authorized persons (fuses mainly for industrial application)
Sections I to IV: Examples of types of standardized fuses
for use by authorized persons
(IEC 60269-2-1:1996, modified)

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Sections I à IV: Exemples de fusibles normalisés destinés à être utilisés par des personnes habilitées
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(IEC 60269-2-1:1996, modifiziert)

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MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

SIST... **HD 630.2.1 S2**

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-04- 1998

Ref. No. HD 630.2.1 S2:1997 E

Foreword

The text of the International Standard IEC 60269-2-1:1996, prepared by SC 32B, Low-voltage fuses, of IEC TC 32, Fuses, together with common modifications prepared by the CENELEC BTTF 56-2, Low-voltage fuses, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as HD 630.2.1 S2 on 1997-07-01.

The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 1997-12-01
- latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 1998-06-01
- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 1998-06-01

For products which have complied with HD 630.2.1 S1:1996 before 1998-06-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2003-06-01.

This part 2.1 of HD 630 is to be used in conjunction with EN 60269-1:1989 + A1:1994 + A2:1997 and EN 60269-2:1995 + A1:1997.

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Endorsement notice

The text of the International Standard IEC 60269-2-1:1996 was approved by CENELEC as a Harmonization Document with agreed common modifications as given below.

COMMON MODIFICATIONS

Title Replace "Sections I to V" by "Sections I to IV".

Contents Delete Section V.

1 General

Delete Section V including the heading.

Replace the note by:

The following fuse systems are standardized systems in respect to their safety aspects. The National Committees shall select at least one complete section of this standard for their national standards.

Section V Delete.



**NORME
INTERNATIONALE
INTERNATIONAL
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**CEI
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60269-2-1

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1998-03

Fusibles basse tension –

Partie 2-1:

**Règles supplémentaires pour les fusibles
destinés à être utilisés par des personnes
habilitées (fusibles pour usages
essentiellement industriels) –**

Sections I à V: Exemples de fusibles normalisés

SIST HD 630.2.1 S2:1998

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Low-voltage fuses –

Part 2-1:

**Supplementary requirements for fuses
for use by authorized persons (fuses mainly
for industrial application) –**

**Sections I to V: Examples of types of
standardized fuses**

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International Electrotechnical Commission
Telefax: +41 22 919 0300

e-mail: inmail@iec.ch

3, rue de Varembe Geneva, Switzerland
IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE FUSES –

**Part 2-1: Supplementary requirements for fuses for use by
authorized persons (fuses mainly for industrial application) –
Sections I to V: Examples of types of standardized fuses**

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.
- 2) The formal decisions or agreements of the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
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International Standard IEC 60269-2-1 has been prepared by subcommittee 32B: Low-voltage fuses, of IEC technical committee 32: Fuses.

This third edition cancels and replaces the second edition published in 1996 and IEC 60269-2A published in 1975. It constitutes a technical revision.

A vertical line in the margin shows the texts amended by amendment 1.

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

FDIS	Report on voting
32B/299/FDIS	32B/304/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.

LOW-VOLTAGE FUSES –

Part 2-1: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Sections I to V: Examples of types of standardized fuses

EXPLANATORY NOTE

In view of the fact that this standard should be read together with IEC 60269-1 and 60269-2, the numbering of its clauses and subclauses are made to correspond to these publications. Regarding the tables, their numbering also corresponds to that of IEC 60269-1; however, when additional tables appear they are referred to by capital letters, for example, table A, table B, etc.

1 General

Fuses for use by authorized persons according to the following sections shall also comply with all subclauses of:

IEC 60269-1: *Low-voltage fuses – Part 1: General requirements*

IEC 60269-2: *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial applications)*

This standard is divided into five sections, each dealing with a specific example of standardized fuse for use by authorized persons:

Section I: Fuses with fuse-links with blade contacts.

Section II: Fuses with fuse-links for bolted connections.

Section III: Fuses with fuse-links having cylindrical contact caps.

Section IV: Fuses with fuse-links with offset blade contacts.

Section V: Fuses with fuse-links having "gD" and "gN" characteristics.

NOTE – The following fuse systems are standardized systems in respect to their safety aspects. The National Committees may select from the examples of standardized fuses one or more systems for their own standards.

Section I – Fuses with fuse-links with blade contacts

1.1 Scope

The following additional requirements apply to fuses with fuse-links having blade contacts intended to be replaced by means of a device, for example replacement handle, which complies with the dimensions specified in figures 1(I*) and 2(I*). Such fuses have rated currents up to and including 1 250 A and rated voltages up to and including AC 690 V or DC 440 V.

5.2 Rated voltage

For a.c., the standard values of rated voltage are 400 V, 500 V and 690 V. For d.c., the rated voltages are 250 V and 440 V. The standard values of d.c. rated voltage are not related to the standard values of a.c. rated voltage. For example the following standard combinations are possible: AC 500 V – DC 250 V, AC 500 V – DC 440 V, AC 500 V, etc.

5.3.1 Rated current of the fuse-link

For each size the maximum rated currents are given in figure 1(I). These values depend upon the utilization categories and rated voltages.

5.3.2 Rated current of the fuse-holder

The rated current for the different sizes of the fuse-bases is given in figure 2(I).

5.5 Rated power dissipation of a fuse-link and rated power acceptance of a fuse-holder

The maximum values of rated power dissipation for the different sizes of fuse-links are specified in figure 1(I). The values apply to the maximum rated currents of the fuse-links. The values of rated power acceptance of fuse-bases are given in figure 2(I).

5.6 Limits of time-current characteristics

5.6.1 Time-current characteristics, time-current zones and overload curves

The tolerance on time-current characteristics given by the manufacturer shall not deviate by more than $\pm 10\%$ in terms of current. The time-current zones given in figure 4(I), including manufacturing tolerances shall be met by all pre-arcing and total times measured at the test voltage according to 8.7.4.

5.6.2 Conventional times and currents

The conventional times and currents, in addition to the values of IEC 60269-1, are given in table II.

* Refers to section I.

Table II – Conventional time and current for "gG" fuse-links with rated current lower than 16 A

Rated current I_n A	Conventional time h	Conventional current	
		I_{nt}	I_t
$I_n \leq 4$	1	$1,5 I_n$	$2,1 I_n$
$4 < I_n < 16$	1	$1,5 I_n$	$1,9 I_n$

5.6.3 Gates

For "gG" fuse-links the gates given in table III apply, in addition to the gates of IEC 60269-1.

Table III – Gates for specified pre-arcing and operating times of "gG" fuse-links with rated current lower than 16 A

I_n A	I_{min} (10 s) A	I_{max} (5 s) A	I_{min} (0,1 s) A	I_{max} (0,1 s) A
2	3,7	9,2	6,0	23,0
4	7,8	18,5	14,0	47,0
6	11,0	28,0	26,0	72,0
8	16,0	35,2	41,6	92,0
10	22,0	46,5	58,0	110,0
12	24,0	55,2	69,6	140,4

6 Marking

Fuse-links and fuse-holders which meet the requirements and tests of section I of this standard may be marked with 60269-2-1.

6.1 Markings of fuse-holders

The marking of the rated current and the rated voltage shall be discernible from the front when a fuse-link has not been fitted.

6.2 Markings of fuse-links

The marking of the rated current and the rated voltage shall be discernible from the front. Furthermore, fuse-links shall be marked as described in the following table:

Characteristic	gG		aM	
	Black		Green	
Kind of print	Strip with inverse print	Normal print	Strip with inverse print	Normal print
Voltage				
400 V ¹⁾	X		X	
500 V		X		X
690 V	X		X	

¹⁾ For 400 V gG, a blue colour is also permitted.

7.1 Mechanical design

The dimensions of fuse-links and fuse-bases are given in figures 1(I) and 2(I).

7.1.2 Connections, including terminals

There are different kinds of terminals. As far as lug terminals are concerned, the range of cross-sections which the terminals shall be capable of accepting results from the following ranges of rated currents of fuse-links of each size.

Terminals designed for unprepared conductors shall be capable of accepting as a minimum three consecutive sizes of conductors within the cross-sectional ranges given in table D. In case the terminal is a lug terminal (see IEC 60999*), the torques which shall be applied are given in table F. Torque values for other terminals should be given in the manufacturers' instructions.

Table D – Minimum cross-sectional ranges of unprepared conductors

Size	Range of the rated currents of the fuse-links A	Cross-sectional area ranges mm ²	
		Copper	Aluminium
00	6 to 160	10 to 70	25 to 95
0*	6 to 160	10 to 70	25 to 95
1	80 to 250	70 to 120	95 to 150
2	125 to 400	95 to 240	120 to 300
3	315 to 630	} No values available	
4	500 to 1 000		
4a	500 to 1 250		
* Not allowed for new installations except for fuse-links with strikers.			

Connections of larger and/or smaller cross-sectional area may be necessary. This can be achieved either by the construction of the terminal, or by additional means of connection as recommended by the manufacturer.

Whether the terminals for unprepared conductors are suitable for copper, aluminium or copper and aluminium shall be marked accordingly. Furthermore, the range of cross-sections shall be marked on or near to the clamping saddle, or given in the manufacturer's literature.

7.1.3 Fuse-contacts

The contact surfaces of fuse-links and fuse bases should be silver-plated, otherwise it shall be verified that contacting is not impaired in normal operation. The requirements for fuse contacts will be verified by the tests given in 8.10 of IEC 60269-1.

7.1.7 Construction of a fuse-link

The preferred construction is as follows; the blade contacts shall be made of solid material. If any other construction of blade contacts is used the manufacturer has to demonstrate that this construction is adequate for the purpose.

With the exception of the attachment for the replacement handle the endplates are not permitted to protrude radially from the insulation body. For some applications it is preferable to insulate the gripping lugs from live parts.

Fuse-links shall have an indicator.

* IEC 60999 (all parts): *Connecting devices – Safety requirements for screw-type and screwless-type clamping units for electrical copper conductors*