BS HD 60269-2 :2013+A1:2022

BSI Standards Publication

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 K

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Full document details: BS HD 60269-2:2013+A1:2022

National foreword

This British Standard is the UK implementation of HD 60269-2:2013+A1:2022. It is derived from IEC 60269-2:2013, incorporating amendment 1:2016. It supersedes BS HD 60269-2:2013, which is withdrawn.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags ▌C⟩ ⟨C▐.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by ▌A1⟩ ⟨A1▐.

This standard covers the following British Fuse systems that are included in BS HD 60269-2:2013 (BS 88-2:2013):

Fuse system E — Fuses with fuse-links for bolted connections (BS bolted fuse system)

Fuse system G — Fuses with fuse-links with offset blade contacts (BS clip-in fuse system)

Fuse system I — gU fuse-links with wedge tightening contacts

This standard is part of a series of British Standards for Low Voltage Fuses. These cover the related parts and examples of systems of fuses in the associated IEC 60269 series of standards.

These British Standards together with their IEC counterparts are:
BS EN 60269-1:2007+A1:2009 (BS 88-1:2007) — General requirements (IEC 60269-1)

BS HD 60269-2:2013 (BS 88-2:2013) — Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) (IEC 60269-2, Fuse systems E, G and I)

BS HD 60269-3:2010 (BS 88-3:2010) — Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) (IEC 60269-3, Fuse system C)

BS EN 60269-4:2009+A1:2012 (BS 88-4:2009+A1:2012) — Supplementary requirements for fuse-links for the protection of semiconductor devices (IEC 60269-4)

PD IEC/TR 60269-5:2010 (PD 88-5:2010) — Guidance for the application of low voltage fuses (IEC/TR 60269-5:2010)

BS EN 60269-6:2011 — Supplementary requirements for fuse-links for the protection of solar photovoltaic energy system (IEC 60269-6:2010).

The text for BS HD 60269-2:2013/BS 88-2:2013 has been extracted from IEC 60269-2:2013 and is identical to the text for sections E, G, and I. However, wherever a reference is made to IEC 60269-1 in the text this should be taken as a reference to BS EN 60269-1 (BS 88-1).

The UK participation in its preparation was entrusted to Technical Committee PEL/32, Fuses.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
31 March 2014	Standard amended to only include fuses E, G and I
28 February 2023	Implementation of IEC amendment 1:2016 with CENELEC endorsement A1:2022

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HARMONIZATION DOCUMENT

DOCUMENT D'HARMONISATION

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HD 60269-2+A1

November 2022

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English version

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 K

(IEC 60269-2:2013, modified)

Fusibles basse tension -
Partie 2: Exigences supplémentaires pour les fusibles destinés à être utilisés par des personnes habilitées (fusibles pour usages essentiellement industriels) -
Exemples de systèmes de fusibles normalisés A à K
(CEI 60269-2:2013, modifiée)

Niederspannungssicherungen -
Teil 2: Zusätzliche Anforderungen an Sicherungen zum Gebrauch durch Elektrofachkräfte bzw. elektrotechnisch unterwiesene Personen (Sicherungen überwiegend für den industriellen Gebrauch) -
Beispiele für genormte Sicherungssysteme A bis K
(IEC 60269-2:2013, modifiziert)

This Harmonization Document was approved by CENELEC on 2013-08-15. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document at national level.

Up-to-date lists and bibliographical references concerning such national implementations may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. HD 60269-2:2013 E

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Foreword

The text of document 32B/611/FDIS, future edition 5 of IEC 60269-2:2013, prepared by SC 32B, "Low-voltage fuses", of IEC/TC 32, "Fuses" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as HD 60269-2:2013.

A draft amendment, which covers common modifications to IEC 60269-2:2013, was prepared by CLC/SR 32B "Low-voltage fuses" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-08-15
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2016-08-15

This document supersedes HD 60269-2:2010.

HD 60269-2:2013 includes the following significant technical changes with respect to HD 60269-2:2010:

a) fuse systems A and B: modified values for the power dissipation of NH aM fuse-links;

b) fuse systems A and B: introduction of dimension *r* for NH fuse-links;

c) addition of new fuse system K: gK fuse-links with contacts for bolted connections.

This part is to be used in conjunction with EN 60269-1:2007 + A1:2009, *Low-voltage fuses – Part 1: General requirements*.

This Part 2 supplements or modifies the corresponding clauses or subclauses of Part 1.

Where no change is necessary, this Part 2 indicates that the relevant clause or subclause applies.

Tables and figures which are additional to those in Part 1 are numbered starting from 101 in fuse system A, from 201 in fuse system B, etc. Additional annexes are numbered AA, BB, etc.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60269-2:2013 are prefixed “Z”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

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Endorsement notice

The text of the International Standard IEC 60269-2:2013 was approved by CENELEC as a Harmonisation Document with agreed common modifications.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60060-1	NOTE	Harmonised as EN 60060-1.
IEC 60060-2	NOTE	Harmonised as EN 60060-2.
IEC 60060-3	NOTE	Harmonised as EN 60060-3.
IEC 60529	NOTE	Harmonised as EN 60529.
IEC 60672-1	NOTE	Harmonised as EN 60672-1.
IEC 60672-2	NOTE	Harmonised as EN 60672-2.
IEC 60672-3	NOTE	Harmonised as EN 60672-3.
IEC 62262	NOTE	Harmonised as EN 62262.
ISO 898-1	NOTE	Harmonised as EN ISO 898-1.
ISO 1207	NOTE	Harmonised as EN ISO 1207.
ISO 4589-1	NOTE	Harmonised as EN ISO 4589-1.

European foreword to Amendment 1

The text of document 32B/641/CDV, future IEC 60269-2/A1, prepared by SC 32B "Low-voltage fuses" of IEC/TC 32 "Fuses" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as HD 60269-2:2013/A1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-05-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-11-11

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice to Amendment 1

The text of the International Standard IEC 60269-2:2013/A1:2016 was approved by CENELEC as a European Standard without any modification.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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.

Publication	Year	Title	EN/HD	Year
IEC 60112	-	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	-
IEC 60269-1	-	Low-voltage fuses Part 1: General requirements	EN 60269-1	-
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	EN 60664-1	-
IEC 60999	Series	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units	EN 60999	Series
IEC 60999-1	-	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)	EN 60999-1	-
IEC 60999-2	-	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units Part 2: Particular requirements for clamping units for conductors above 35 mm² up to 300 mm² (included)	EN 60999-2	-
ISO 6988	-	Metallic and other non-organic coatings - Sulfur dioxide test with general condensation of moisture	EN ISO 6988	-

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INTRODUCTION

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

Part 1: General requirements

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

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

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

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

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

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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 K

1 General scope

1.1 Scope

Fuses for use by authorized persons are generally designed to be used in installations where the fuse-links are accessible to, and may be replaced by, authorized persons only.

Fuses for use by authorized persons according to the following fuse systems also comply with the requirements of the corresponding subclauses of IEC 60269-1, unless otherwise defined in this standard.

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

Fuse system A:	Fuses with fuse-links with blade contacts (NH fuse system)
Fuse system B:	Fuses with striker fuse-links with blade contacts (NH fuse system)
Fuse system C:	Fuse-rails (NH fuse system)
Fuse system D:	Fuse-bases for busbar mounting (NH fuse system)
Fuse system E:	Fuses with fuse-links for bolted connections (BS bolted fuse system)
Fuse system F:	Fuses with fuse-links having cylindrical contact caps (NF cylindrical fuse system)
Fuse system G:	Fuses with fuse-links with offset blade contacts (BS clip-in fuse system)
Fuse system H:	Fuses with fuse-links having "gD" and "gN" characteristic (class J and class L [A1⟩ and class T time delay and non time delay fuse types) ⟨A1]
Fuse system I:	gU fuse-links with wedge tightening contacts
Fuse system J:	Fuses with fuse-links having "gD class CC" and "gN class CC" characteristics (class CC time delay and non-time delay fuse types)
Fuse system K:	gK fuse-links with blade for bolted connections – High fuse-link ratings from 1 250 A up to 4 800 A (master fuse-links)

[C⟩ The following fuse systems are standardized systems in respect to their safety aspects. The National Committees shall select at least one complete fuse system of this European Standard for their national standards. The time current characteristics “gD” and “gN” are only relevant for the fuse system H. ⟨C]

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1.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60112, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

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

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

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

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm^2 up to 35 mm^2 (included)*

IEC 60999-2, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 2: Particular requirements for clamping units for conductors above 35 mm^2 up to 300 mm^2 (included)*

ISO 6988, *Metallic and other non organic coatings – Sulfur dioxide test with general condensation of moisture*

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Fuse system E –
Fuses with fuse-links for bolted connections
(BS bolted fuse system)

1 General

IEC 60269-1 applies with the following supplementary requirements.

1.1 Scope

The following additional requirements apply to fuses with fuse-links having bolted connections. Such fuses have rated currents up to and including 1 250 A and rated voltages up to and including 690 V a.c. and up to and including 500 V d.c.

The following characteristics of the fuses are specified in addition to IEC 60269-1:

- minimum rated breaking capacities;
- time-current characteristics;
- I^2t characteristics;
- standard conditions of construction;
- power dissipation and acceptable power dissipation.

2 Terms and definitions

IEC 60269-1 applies.

3 Conditions for operation in service

IEC 60269-1 applies.

4 Classification

IEC 60269-1 applies.

5 Characteristics of fuses

IEC 60269-1 applies with the following supplementary requirements.

5.3.1 Rated current of the fuse-link

The maximum preferred rated currents are given in Figure 501.

5.3.2 Rated current of the fuse-holder

The maximum preferred rated currents for the fuse-holder are given in Figure 502.

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

The maximum values of power dissipation of fuse-links are given in Figure 501.

The values of rated acceptable power dissipation of fuse-holders at rated current when tested in accordance with 8.3.1 are given in Figure 502.

5.6 Limits of time-current characteristics

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

In addition to the limits of pre-arcing time given by the gates and the conventional times and currents, the time-current zones, excluding manufacturing tolerances, are given in Figures 503 and 504. The tolerance on time-current characteristics shall not deviate by more than ±10 % in terms of current.

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 501.

Table 501 – Conventional time and current for "gG" fuse-links

Rated current I_n	Conventional time	Conventional current	
A	h	I_{nf}	I_f
$I_n < 16$	1	1,25 I_n	1,6 I_n

5.6.3 Gates

For "gG" fuse-links the gates given in Table 502 and in IEC 60269-1 apply.

Table 502 – Gates for specified pre-arcing times of "gG" fuse-links

I_n	I_{min} (10 s)	I_{max} (5 s)	I_{min} (0,1 s)	I_{max} (0,1 s)
A	A	A	A	A
2	3,4	5,0	4,6	7,5
4	6,5	10,5	10,0	18,5
6	10,0	18,0	17,0	35,0
10	18,0	36,0	35,0	60,0

5.7.2 Rated breaking capacity

The rated breaking capacity shall be a minimum of 80 kA a.c. and 40 kA d.c.

6 Markings

IEC 60269-1 applies with the following supplementary requirements.

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