

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 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 K**

**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**





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2024 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, 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 either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, 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'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 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 K**

**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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.120.50

ISBN 978-2-8322-9054-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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****AMENDMENT 2**

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 2 to IEC 60269-2:2013 and IEC 60269-2:2013/AMD1:2016 has been prepared by subcommittee 32B: Low-voltage fuses, of IEC technical committee 32: Fuses.

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

Draft	Report on voting
32B/743/FDIS	32B/755/RVD

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

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

1.2 Normative references

[IEC 60269-2:2013/AMD2:2024](https://standards.itih.ai/catalyst/standards/iec/60269-2-2013-amd2-2024)

Remove the existing reference to ISO 6988.

Add the following new normative reference:

ISO 22479, *Corrosion of metals and alloys – Sulfur dioxide test in a humid atmosphere (fixed gas method)*

Fuse system A – Fuses with fuse-links with blade contacts (NH fuse system)

1 General

Replace the existing text of the first paragraph of Clause 1 with the following new text:

IEC 60269-1 applies with the following additional and modified requirements.

1.1 Scope

Replace, in the second sentence of 1.1, "1 250A" with "1 600 A".

5.3.1 Rated current of the fuse-link

Delete the second paragraph of 5.3.1.

Table 102 – Gates for specified pre-arcing and operating times of "gG" fuse-links

Delete the last row of Table 102.

Table 103 – Minimum rated breaking capacities

Replace existing Table 103 with the following new table:

Rated voltage	Minimum rated breaking capacities
≤ 690 V AC	50 kA
690 V AC < U ≤ 1 000 V AC	20 kA
≤ 750 V DC	25 kA
750 V < U ≤ 1 500 V DC	10 kA

Table 105 – Minimum cross-sectional ranges of unprepared conductors

Replace existing Table 105 by the following new table:

Size	Range of the rated currents of the fuse-links A	Cross-sectional area ranges mm ²	
		Copper	Aluminium
000	2 to 160	6 to 70	25 to 95
00	2 to 160	6 to 70	25 to 95
1	80 to 250	25 to 120	35 to 150
2	125 to 400	50 to 240	70 to 300
3	315 to 630	50 to 2 × 185	70 to 2 × 240
4	500 to 1 250	stated in the manufacturer's literature	
4a	500 to 1 600	stated in the manufacturer's literature	

7.7 I²t characteristics

Delete, in the second sentence of the first paragraph of 7.7, the words: "and for 224A".

Table 106 – Pre-arcing and operating I²t values at 0,01 s for "gG" fuse-links

Delete the last row of Table 106.

Replace the existing text of the second paragraph of 7.7 with the following new text:

The maximum operating I²t values are given in Table 107 for the stated test value.

8.1.4 Arrangement of the fuse and dimensions

Replace, in the second paragraph of 8.1.4, the word "model" with "reference".

8.2.2.1 Points of application of test voltage

Replace, in the second paragraph of 8.2.2.1, the word "test fuse base" with "reference fuse-base".

8.3.1 Arrangement of fuse

Replace the existing title of 8.3.1 with the following new title:

8.3.1 Arrangement of fuse and dimensions

Replace, in the third paragraph of 8.3.1, the number "1 250A" with "1 600A" and "are" with "shall be".

Table 111 – Torque to be applied to the terminal screws

Replace existing Table 111 with the following new table:

Table 111 – Torque to be applied to the terminal screws

I_n A	Size	Size of screws	Torque Nm
160	000	M 8	10
160	00	M 8	10
250	1	M 10	32
400	2	M 10/12	32/40
630	3	M 10/12	32/40
1 250	4	M 12	40
1 600	4a	2 × M 12 or 1 × M16	40 56

8.4.3.1 Verification of conventional non-fusing and fusing current

Add the following new text at the end of 8.4.3.1:

(see Table 11 – Survey of complete tests on fuse-links and number of fuse-links to be tested of IEC 60269-1:2024)

Table 112 – Test currents

Delete the third row (0) of Table 112.

8.5.5.1.3 Acceptability of test results

Add the following new text at the end of 8.5.5.1.3:

The fuse or the circuit-breaker of the source shall not operate.

8.5.8 Acceptability of test results

Delete the existing title and text of Subclause 8.5.8.

8.7.4 Verification of overcurrent discrimination

Replace the existing title of 8.7.4 with the following new title:

8.7.4 Verification of overcurrent selectivity

Replace the existing text of the second paragraph of 8.7.4 with the following new text:

The samples are arranged as for the breaking capacity tests according to 8.5. Regarding the power factor Table 20, Test No.2, of IEC 60269-1:2024 applies.

The tolerances for prospective currents for minimum pre-arcing I^2t and maximum operating I^2t tests are $\pm 5\%$.

Delete the existing fifth paragraph of 8.7.4 (beginning with "Prospective currents for minimum pre-arcing ...").

[IEC 60269-2:2013/AMD2:2024](https://standards.iteh.ai/catalog/standards/iec/9c62a9cb-d48d-4032-a521-afe709534849/iec-60269-2-2013-amd2-2024)

<https://standards.iteh.ai/catalog/standards/iec/9c62a9cb-d48d-4032-a521-afe709534849/iec-60269-2-2013-amd2-2024>

Table 113 – Test currents and I^2t limits for discrimination test

Replace the existing title and contents of Table 113 with the following new title and contents:

Table 113 – Test currents and I^2t limits for selectivity test

I_n	Minimum pre-arcing I^2t		Maximum operating I^2t		Selectivity ratio
	Prospective I	I^2t	Prospective	I^2t	
	RMS		I		
A	kA	A ² s	kA	A ² s	
2	0,013	0,67	0,064	16,4	Can be calculated
4	0,035	4,9	0,13	67,6	
6	0,064	16,4	0,22	193,6	
8	0,1	40	0,31	390	
10	0,13	67,6	0,4	640	
12	0,18	130	0,45	820	
13	0,18	190	0,55	950	
16	0,27	291	0,55	1 210	1:1,6
20	0,4	640	0,79	2 500	
25	0,55	1 210	1	4 000	
32	0,79	2 500	1,2	5 750	
35	0,79	3 000	1,5	7 000	
40	1	4 000	1,5	9 000	
50	1,2	5 750	1,85	13 700	
63	1,5	9 000	2,3	21 200	
80	1,85	13 700	3	36 000	
100	2,3	21 200	4	64 000	
125	3	36 000	5,1	104 000	
160	4	64 000	6,8	185 000	
200	5,1	104 000	8,7	302 000	
224	5,9	139 000	10,2	412 000	
250	6,8	185 000	11,8	557 000	
300	8,7	302 000	15	900 000	
315	8,7	302 000	15	900 000	
355	10,2	412 000	20	1 200 000	
400	11,8	557 000	20	1 600 000	
425	11,8	650 000	26	1 900 000	
500	15	900 000	26	2 700 000	
630	20	1 600 000	37	5 470 000	
800	26	2 700 000	50	10 000 000	
1 000	37	5 470 000	66	17 400 000	
1 250	50	10 000 000	90	33 100 000	
1 600	66	17 400 000	120	50 000 000	

8.10.2 Test method

Replace, in the second sentence of the sixth paragraph of 8.10.2, "However the current I_m " with "However, the measuring current I_m ".

Table 118 – Force to withdraw the fuse-link from the fuse-base contacts

Replace existing Table 118 with the following new table:

Size	Withdrawal force	
	F_{min} N	F_{max} N
00	60	250
1	110	350
2	150	400
3	210	400
4 ¹⁾	Not applicable	Not applicable
4a ²⁾	Not applicable	Not applicable

1) Fuse-link is fixed with screws in the fuse base
2) This fuse-base is locked in the on position

Figure 103 – Replacement handle

Replace, in the second row of the first column of the table, "0" with "1".

Replace "M2 for the sizes 0...3" with "M2 for the sizes 1...3".

Figure 105 – Dummy fuse-link according to 8.3.4.1, 8.9.1 and 8.10

Delete the second row (0) of the table.

Annex AA Special test for cable overload protection

Delete, in the first sentence of Annex AA, "0".

AA.1 Arrangement of the fuse

Delete, in the third paragraph of AA.1, " $6 \times 10^{-3}m^3$ for size 0".

Figure 201 – Fuse-links with blade contacts with striker

Delete, in Figure 201 (2 of 4), the sixth row (0) of the table.

Delete, in Figure 201 (3 of 4), Reference A the first row (0) of the table.