

**Low-voltage fuses -
Part 5: Guidance for the application of low-voltage fuses
(IEC/TR 60269-5:2010)**

Fusibles basse tension -
Partie 5: Lignes directrices pour
l'application des fusibles basse tension
(CEI/TR 60269-5:2010)

Niederspannungssicherungen -
Teil 5: Leitfaden für die Anwendung von
Niederspannungssicherungen
(IEC/TR 60269-5:2010)

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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

This Technical Report consists of the text of the International Technical Report IEC/TR 60269-5:2010 prepared by SC 32B, Low-voltage fuses, of IEC TC 32, Fuses.

It was circulated for voting in accordance with the Internal Regulations, Part 2, Subclause 11.4.3.3 (simple majority) and was accepted by CENELEC as CLC/TR 60269-5 on 2011-04-25.

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

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the Technical Report IEC/TR 60269-5:2010 was approved by CENELEC as a Technical Report without any modification.

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 60050-441	-	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
IEC/TR 60146-6	-	Semiconductor convertors - Part 6: Application guide for the protection of semiconductor convertors against overcurrent by fuses	-	-
IEC 60269	Series	Low-voltage fuses	EN 60269	Series
IEC 60269-1	-	Low-voltage fuses - Part 1: General requirements	EN 60269-1	-
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 J	HD 60269-2	-
IEC 60269-3 (mod)	-	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	-
IEC 60269-4	-	Low-voltage fuses - Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices	EN 60269-4	-
IEC 60364-4-41 (mod)	-	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41	-
IEC 60364-4-43 (mod)	-	Low voltage electrical installations - Part 4-43: Protection for safety - Protection against overcurrent	HD 60364-4-43	-
IEC 60364-5-52 (mod)	-	Low-voltage electrical installations - Part 5-52: Selection and erection of electrical equipment - Wiring systems	HD 60364-5-52	-
IEC/TR 60787	-	Application guide for the selection of high-voltage current-limiting fuse-links for transformer circuits	-	-
IEC 60947	Series	Low-voltage switchgear and controlgear	EN 60947	Series
IEC 60947-3	-	Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	EN 60947-3	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60947-4-1	-	Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor- starters	EN 60947-4-1	-
IEC/TR 61912-1	-	Low-voltage switchgear and controlgear - Overcurrent protective devices - Part 1: Application of short-circuit ratings	-	-

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INTRODUCTION

Fuses protect many types of equipment and switchgear against the effects of over-current which can be dramatic:

- thermal damage of conductors or bus-bars;
- vaporisation of metal;
- ionisation of gases;
- arcing, fire, explosion,
- insulation damage.

Apart from being hazardous to personnel, significant economic losses can result from downtime and the repairs required to restore damaged equipment.

Modern fuses are common overcurrent protective devices in use today, and as such provide an excellent cost effective solution to eliminate or minimize the effects of overcurrent.

LOW-VOLTAGE FUSES –

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

1 Scope

This technical report, which serves as an application guide for low-voltage fuses, shows how current-limiting fuses are easy to apply to protect today's complex and sensitive electrical and electronic equipment. This guidance specifically covers low-voltage fuses up to 1 000 V a.c. and 1 500 V d.c. designed and manufactured in accordance with IEC 60269 series. This guidance provides important facts about as well as information on the application of fuses.

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 60050-441, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*

IEC/TR 60146-6, *Semiconductor convertors – Part 6: Application guide for the protection of semiconductor convertors against overcurrent by fuses*

IEC 60269 (all parts), *Low-voltage fuses*

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 application) – Examples of standardized fuses system A to J*

IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons – Examples of standardized fuses system A to F*

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

IEC 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-4-43, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-5-52, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC/TR 60787, *Application guide for the selection of high-voltage current-limiting fuse-links for transformer circuits*

IEC 60947 (all parts), *Low-voltage switchgear and controlgear*

IEC 60947-3, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-4-1, *Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters*

CEI 61912-1 : *Low-voltage switchgear and controlgear – Overcurrent protective devices – Part 1 :Application of short-circuit ratings*

3 Terms and definitions

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

3.1

switch (mechanical)

mechanical switching device capable of making, carrying and breaking currents under normal circuit conditions, which may include specified operating overload conditions and also carrying, for a specified time, currents under specified abnormal conditions such as those of short-circuits

NOTE A switch may be capable of making but not breaking, short-circuit currents.

[IEC,60050-441:1984, 441-14-10]

3.2

disconnector

mechanical switching device that, in the open position, complies with the requirements specified for isolating function

NOTE Some disconnectors may not be capable of switching load.

[IEC 60050-441:1984, 441-14-05, modified]

3.3

fuse-combination unit

combination of a mechanical switching device and one or more fuses in a composite unit, assembled by the manufacturer or in accordance with his instructions

[IEC 60050-441:1984, 441-14-04, modified]

3.4

switch-fuse

switch in which one or more poles have a fuse in series in a composite unit

[IEC 60050-441:1984, 441-14-14]

3.5

fuse-switch

switch in which a fuse-link or a fuse-carrier with fuse-link forms the moving contact

[IEC 60050-441:1984, 441-14-17]

3.6

Switching device

SD

device designed to make or break the current in one or more electric circuits

NOTE A switching device may perform one or both of these operations.

[IEC 60050-441:1984, 441-14-01]