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Standards

Irish Standard  
I.S. EN 60127-4:2005

# Miniature fuses -- Part 4: Universal modular fuse-links (UMF) - Through-hole and surface mount types (IEC 60127-4:2005 (EQV))

## I.S. EN 60127-4:2005

*Incorporating amendments/corrigenda issued since publication:*

EN 60127-4:2005/A1:2009  
EN 60127-4:2005/A2:2013

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<b>NSAI</b> 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie  W NSAI.ie	<b>Sales:</b> T +353 1 857 6730 F +353 1 857 6729 W standards.ie
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EUROPEAN STANDARD

**EN 60127-4/A2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2013

ICS 29.120.50

English version

**Miniature fuses -  
Part 4: Universal modular fuse-links (UMF) -  
Through-hole and surface mount types  
(IEC 60127-4:2005/A2:2012)**

Coupe-circuit miniatures -  
Partie 4: Eléments de remplacement  
modulaires universels (UMF) -  
Types de montage en surface et montage  
par trous  
(CEI 60127-4:2005/A2:2012)

Geräteschutzsicherungen -  
Teil 4: Welteinheitliche modulare  
Sicherungseinsätze (UMF) -  
Bauarten für Steck- und  
Oberflächenmontage  
(IEC 60127-4:2005/A2:2012)

This amendment A2 modifies the European Standard EN 60127-4:2005; it was approved by CENELEC on 2013-01-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## **Foreword**

The text of document 32C/456/CDV, future amendment 2 to edition 3 of IEC 60127-4, prepared by SC 32C "Miniature fuses" of IEC/TC 32 "Fuses" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60127-4:2005/A2:2013.

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) 2013-12-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-01-11

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).

## **Endorsement notice**

The text of the International Standard IEC 60127-4:2005/A2:2012 was approved by CENELEC as a European Standard without any modification.

English version

**Miniature fuses -  
Part 4: Universal modular fuse-links (UMF) -  
Through-hole and surface mount types  
(IEC 60127-4:2005/A1:2008)**

Coupe-circuit miniatures -  
Partie 4: Eléments de remplacement  
modulaires universels (UMF) -  
Types de montage en surface  
et montage par trous  
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Bauarten für Steck- und  
Oberflächenmontage  
(IEC 60127-4:2005/A1:2008)

This amendment A1 modifies the European Standard EN 60127-4:2005; it was approved by CENELEC on 2009-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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**Central Secretariat: avenue Marnix 17, B - 1000 Brussels**

**I.S. EN 60127-4:2005**

EN 60127-4:2005/A1:2009

– 2 –

**Foreword**

The text of document 32C/411/FDIS, future amendment 1 to IEC 60127-4:2005, prepared by SC 32C, Miniature fuses, of IEC TC 32, Fuses, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60127-4:2005 on 2009-02-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-11-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2012-02-01

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**Endorsement notice**

The text of amendment 1:2008 to the International Standard IEC 60127-4:2005 was approved by CENELEC as an amendment to the European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61190-1-2      NOTE Harmonized as EN 61190-1-2:2007 (not modified).

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EUROPEAN STANDARD

**EN 60127-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2005

ICS 29.120.50

Supersedes EN 60127-4:1996 + A1:2002 + A2:2003

English version

**Miniature fuses**  
**Part 4: Universal modular fuse-links (UMF) –**  
**Through-hole and surface mount types**  
(IEC 60127-4:2005)

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et montage par trous  
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Geräteschutzsicherungen  
Teil 4: Welteinheitliche modulare  
Sicherungseinsätze (UMF) –  
Bauarten für Steck- und  
Oberflächenmontage  
(IEC 60127-4:2005)

This European Standard was approved by CENELEC on 2005-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

**I.S. EN 60127-4:2005**

EN 60127-4:2005

- 2 -

**Foreword**

The text of document 32C/362/FDIS, future edition 3 of IEC 60127-4, prepared by SC 32C, Miniature fuses, of IEC TC 32, Fuses, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60127-4 on 2005-03-01.

This European Standard supersedes EN 60127-4:1996 + A1:2002 + A2:2003.

The major technical changes with regard to the previous edition are as follows: introduction of physically smaller devices with lower rated voltages. Fuse-link temperature test (9.7) is modified.

The clauses of this standard supplement, modify or replace the corresponding clauses in EN 60127-1.

Where there is no corresponding clause or subclause in this standard, the clause or subclause of EN 60127-1 applies without modification as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in EN 60127-1 is to be adapted accordingly.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2008-03-01

Annex ZA has been added by CENELEC.

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**Endorsement notice**

The text of the International Standard IEC 60127-4:2005 was approved by CENELEC as a European Standard without any modification.

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

- |             |      |   |
|-------------|------|---|
| IEC 60115-1 | NOTE | Harmonized as EN 60115-1:2001 (modified).     |
| IEC 61191-2 | NOTE | Harmonized as EN 61191-2:1998 (not modified). |
| ISO 9453    | NOTE | Harmonized as EN 29453:1993 (not modified).   |



## 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 Where 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 60068-2-20 + A2	1979 1987	Basic environmental testing procedures Part 2: Tests - Test T: Soldering	HD 323.2.20 S3	1988
IEC 60068-2-21	1999	Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	1999
IEC 60068-2-58	2004	Part 2-58: Tests - Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	EN 60068-2-58 + corr. December	2004 2004
IEC 60127-1	1988	Miniature fuses Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links	EN 60127-1	1991
A1	1999		A1	1999
A2	2002		A2	2003
IEC 60194	1999	Printed board design, manufacture and assembly - Terms and definitions	-	-
IEC 60664-1 + A1 + A2	1992 2000 2002	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	EN 60664-1	2003
IEC 61249-2-7	2002	Materials for printed boards and other interconnecting structures Part 2-7: Reinforced base materials, clad and unclad - Epoxide woven E-glass laminated sheet of defined flammability (vertical burning test), copper-clad	EN 61249-2-7	2002
ISO 3	1973	Preferred numbers - Series of preferred numbers	-	-

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## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope and object.....	6
2 Normative references.....	6
3 Terms and definitions .....	7
4 General requirements .....	7
5 Standard ratings .....	7
6 Marking .....	8
7 General notes on tests.....	8
8 Dimensions and construction .....	9
9 Electrical requirements .....	12
10 Standard sheets .....	24
Annex A (informative) Mounting for surface mount fuse-links .....	28
Bibliography.....	31
Figure 1 – Unique identifying symbol for UMFs .....	19
Figure 2 – Test board for through-hole fuse-links.....	19
Figure 3 – Test board for surface mount fuse-links .....	20
Figure 4 – Test fuse base.....	21
Figure 5 – Bending jig for surface mount fuse-links.....	22
Figure 6 – Test circuits for breaking capacity tests .....	23
Figure A.1 – Parameters for reflow temperature .....	29
Table 1 – Maximum values of voltage drop and sustained dissipation .....	15
Table 2 – Testing schedule for individual ampere ratings .....	16
Table 3 – Testing schedule for maximum ampere rating of a homogeneous series.....	17
Table 4 – Testing schedule for minimum ampere rating of a homogeneous series.....	18

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### MINIATURE FUSES –

#### **Part 4: Universal modular fuse-links (UMF) – Through-hole and surface mount types**

### 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.
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- 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 60127-4 consists of the third edition (2005) [documents 32C/362/FDIS and 32C/366/RVD], its amendment 1 (2008) [documents 32C/411/FDIS and 32C/412/RVD] and its amendment 2 (2012) [documents 32C/456/CDV and 32C/463/RVC]. It bears the edition number 3.2.**

**The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2. Additions and deletions are displayed in red, with deletions being struck through.**

International Standard IEC 60127-4 has been prepared by subcommittee 32C: Miniature fuses, of IEC technical committee 32: Fuses.

The major technical changes with regard to the previous edition are as follows: introduction of physically smaller devices with lower rated voltages. Fuse-link temperature test (9.7) is modified.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The clauses of this standard supplement, modify or replace the corresponding clauses in IEC 60127-1.

Where there is no corresponding clause or subclause in this standard, the clause or subclause of IEC 60127-1 applies without modification as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in IEC 60127-1 is to be adapted accordingly.

The IEC 60127 series is subdivided as follows:

- Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links
- Part 2: Cartridge fuse-links
- Part 3: Sub-miniature fuse-links
- Part 4: Universal modular fuse-links (UMF)
- Part 5: Guidelines for quality assessment of miniature fuse-links
- Part 6: Fuse-holders for miniature fuse-links
- Part 7: (Free for further documents)
- Part 8: (Free for further documents)
- Part 9: (Free for further documents)
- Part 10: User guide for miniature fuses

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

## I.S. EN 60127-4:2005

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### INTRODUCTION

The trend towards miniaturization of electronic equipment has caused users to require fuse-links of small dimensions, and of appropriate design for application to printed circuit boards or other substrate systems, possibly by automatic means. These fuse-links should be designed to incorporate a degree of non-interchangeability.

Rated voltages of 12,5 V, 25 V, 32 V, 50 V, 63 V, 125 V, and 250 V are specified together with the following characteristics: very quick acting (FF), quick acting (F), time-lag (T) and long time-lag (TT).

Because of the increasing importance of limitation of transient overvoltages in new technology, recommendations are included for limits to the overvoltages produced by these fuses under specified test conditions related to typical circuit configurations.

The option is given to specify the breaking capacity with alternating current or direct current; it is considered that fuses that meet the d.c. requirement will meet the a.c. requirement; however, testing is required to validate this. Fuses may be dual rated, in which case the manufacturer's literature should be referred to.

~~The users of miniature fuses express the wish that all standards, recommendations and other documents relating to miniature fuses should have the same publication number in order to facilitate reference to fuses in other specifications, for example, equipment specifications.~~

~~Furthermore, a single publication number and subdivision into parts would facilitate the establishment of new standards, because clauses and subclauses containing general requirements need not be repeated.~~

## MINIATURE FUSES –

### Part 4: Universal modular fuse-links (UMF) – Through-hole and surface mount types

#### 1 Scope and object

This part of IEC 60127 relates to universal modular fuse-links (UMF) for printed circuits and other substrate systems, used for the protection of electric appliances, electronic equipment, and component parts thereof, normally intended to be used indoors.

It does not apply to fuse-links for appliances intended to be used under special conditions, such as in a corrosive or explosive atmosphere.

These fuses are normally intended to be mounted or replaced only by appropriately skilled persons using specialized equipment.

~~Fuse links for use in fuse holders are under consideration.~~

This standard applies in addition to the requirements of IEC 60127-1.

The objectives of this part of IEC 60127 are as given in IEC 60127-1, with the additional requirement of a degree of non-interchangeability.

#### 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 60068-2-20:1979, *Basic environmental testing procedures – Part 2: Tests – Test T: Soldering*~~  
~~Amendment 2 (1987)~~

~~IEC 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*~~

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-58:2004, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60127-1:1988, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*<sup>1</sup>  
Amendment 1 (1999)  
Amendment 2 (2002)

IEC 60194:1999, *Printed board design, manufacture and assembly – Terms and definitions*

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<sup>1</sup> There exists a consolidated version (2003).

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