IEC 60127-6

Edition 2.0 2014-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Miniature fuses –
Part 6: Fuse-holders for miniature fuse-links

Coupe-circuits miniatures –
Partie 6: Ensembles-porteurs pour cartouches de coupe-circuits miniatures

IEC 60127-6:2014-09(en-fr)

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MINIATURE FUSES –

Part 6: Fuse-holders for miniature fuse-links

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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International Standard IEC 60127-6 has been prepared by subcommittee 32C: Miniature fuses, of IEC technical committee 32: Fuses.

This second edition cancels and replaces the first edition published in 1994, its Amendment 1 (1996) and Amendment 2 (2002). This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) modify the arrangement of the fuse-holder samples in the planes in 13.1.1;
b) add a new test 13.2.2：Glow-wire ignition test;
c) change maximum gauge size for standard sheets 3 and 4 from 0,70 to 0,63 in table 5;
d) change minimum gauge size for standard sheets 3 and 4 from 0,55 to 0,56 in table 5.

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

FDIS	Report on voting
32C/491/FDIS	32C/497/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.

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

A list of all parts in the IEC 60127 series, published under the general title *Miniature fuses*, can be found on the IEC website.

The committee has decided that the contents of this publication 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.

INTRODUCTION

According to the wish expressed by the users of miniature fuses, 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.

The new IEC 60127 series is thus subdivided as follows:

IEC 60127, *Miniature fuses* (general title)

IEC 60127-1, *Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60127-2, *Part 2: Cartridge fuse-links*

IEC 60127-3, *Part 3: Sub-miniature fuse-links*

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

IEC 60127-5, *Part 5: Guidelines for quality assessment of miniature fuse-links*

IEC 60127-6, *Part 6: Fuse-holders for miniature cartridge fuse-links*

IEC 60127-7, *Part 7: Miniature fuse-links for special applications*

IEC 60127-8 (free for further documents)

IEC 60127-9 (free for further documents).

IEC 60127-10, *Part 10: User guide for miniature fuses*

This part of IEC 60127 covers requirements, test equipment and test methods for fuse-holders. It is a self-standing document, which refers back to Part 1 with regard to certain definitions and the atmospheric conditions for test. It also makes reference to other parts of IEC 60127 with regard to dimensions and maximum power losses of fuse-links.

MINIATURE FUSES –

Part 6: Fuse-holders for miniature fuse-links

1 Scope

This part of IEC 60127 is applicable to fuse-holders for miniature cartridge fuse-links according to IEC 60127-2 and sub-miniature fuse-links according to IEC 60127-3 for the protection of electric appliances, electronic equipment and component parts thereof, normally intended for use indoors.

Examples of fuse-holder types with different features are given in Table 1.

Table 1 – Features of unexposed or exposed fuse-holders

1	*Types of mounting*
1.1	Panel and base mounting
1.2	Printed circuit board mounting
2	*Methods of fastening*
2.1	Methods of fastening on panel:
2.1.1	Fixing nut fastening (threaded nut)
2.1.2	Snap-in fastening:
2.1.2.1	Fuse-base with an integral spring system
2.1.2.2	Fuse-base with a separate spring-nut (a nut fabricated, e.g. from thin spring steel having an impression designed to accommodate the mating part)
2.2	Methods of fastening on printed circuit (PC) board:
2.2.1	Solder fastening
2.2.2	Plug-in fastening
3	*Methods of insertion of the fuse-carrier into the fuse base*
3.1	Screw insertion
3.2	Bayonet insertion
3.3	Plug-in insertion
4	*Types of terminals*
4.1	Screw terminals
4.2	Solder terminals
4.3	Quick connect terminals
4.4	Other solderless terminals: – crimp terminals – wire wrap terminals
5	*Protection against electric shock*
5.1	Fuse-holder without integral protection against electric shock
5.2	Fuse-holder with integral protection against electric shock
5.3	Fuse-holder with enhanced integral protection against electric shock
NOTE This list is not intended to be comprehensive and fuse-holders which are not listed are not necessarily excluded from the scope.	

This part of IEC 60127 applies to fuse-holders with:

– a maximum rated current of 16 A; and
– a maximum rated voltage of 1 500 V d.c. or 1 000 V a.c.; and
– for use up to 2 000 m above sea-level, unless otherwise specified.

The object of this standard is to establish uniform requirements for safety and the assessment of electrical, mechanical, thermal and climatic properties of fuse-holders and the compatibility between fuse-holders and fuse-links.

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 60050 (all parts), *International Electrotechnical Vocabulary*

IEC 60068-1:2013, *Environmental testing - Part 1: General and guidance*

IEC 60068-2-1:2007, *Environmental testing - Part 2-1: Tests - Test A: Cold*

IEC 60068-2-2:2007, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

IEC 60068-2-6:2007, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

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 60068-2-21:2006, *Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-27:2008, *Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock*

IEC 60068-2-45:1980, *Basic environmental testing procedures - Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents*
IEC 60068-2-45:1980/AMD1:1993

IEC 60068-2-47:2005, *Environmental testing - Part 2-47: Test - Mounting of specimens for vibration, impact and similar dynamic tests*

IEC 60068-2-75:1997, *Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests*

IEC 60068-2-78:2012, *Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state*

IEC 60068-3-4:2001, *Environmental testing - Part 3-4: Supporting documentation and guidance - Damp heat tests*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009

IEC 60127-1:2006, *Miniature fuses - Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*
IEC 60127-1:2006/AMD1:2011

IEC 60127-2:2003, *Miniature fuses - Part 2: Cartridge fuse-links*
IEC 60127-2:2003/AMD1:2003
IEC 60127-2:2003/AMD2:2010

IEC 60127-3:1988, *Miniature fuses - Part 3: Sub-miniature fuse-links*
IEC 60127-3:1988/AMD1:1991
IEC 60127-3:1988/AMD2:2002

IEC 60216-1:2013, *Electrical insulating materials - Thermal endurance properties - Part 1: Ageing procedures and evaluation of test results*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests*

IEC 60695-11-5:2004, *Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance*

IEC 60695-2-12:2010, *Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-wire flammability index (GWFI) test method for materials*
IEC 60695-2-12:2010/AMD1:2014

IEC 60695-2-13:2010, *Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignition temperature (GWIT) test method for materials*
IEC 60695-2-13:2010/AMD1:2014

IEC 60999-1:1999, *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 61140:2001, *Protection against electric shock - Common aspects for installation and equipment*
IEC 61140:2001/AMD1:2004

IEC 61210:2010, *Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements*

ISO 3:1973, *Preferred numbers – Series of preferred numbers*

3 Terms and definitions

For the definitions of general terms used in this standard, reference should be made to IEC 60050-441, IEC 60050-581 and IEC 60664-1.

For definitions of terms relating to fuse-links, reference is made to IEC 60127-1:2006.

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

3.1 Fuse-holders

3.1.1
fuse-base
fuse-mount
fixed part of a fuse provided with contacts and terminals for connection to the system

[SOURCE: IEC 60127-1:2006, 3.10]

3.1.2
fuse-carrier
movable part of a fuse designed to carry a fuse-link

[SOURCE: IEC 60127-1:2006, 3.12]

3.1.3
fuse-holder
combination of a fuse-base with its fuse-carrier

Note 1 to entry: In some fuse-holder constructions where the fuse-base and the fuse-carrier are not spearate parts the fuse-holder may consist of only the fuse-base and no fuse-carrier.

3.1.4
unexposed fuse-holder
fuse-holder with enclosed contacts

3.1.5
exposed fuse-holder
fuse-holder with exposed contacts (e.g. clips)

3.2
rating
general term employed to designate the characteristic values that together define the working conditions upon which the tests are based and for which the fuse is designed

EXAMPLE Examples of rated values usually stated for fuses:

– voltage (U_N);
– current (I_N);
– breaking capacity.

[SOURCE: IEC 60127-1:2006, 3.16]

3.3
rated power acceptance
value of power acceptance of a fuse-holder assigned by the manufacturer

Note 1 to entry: This value is the maximum power dissipation produced by the inserted dummy fuse-link during testing, at the rated current tolerated by the fuse-holder without exceeding the specified temperatures.

Note 2 to entry: The rated power acceptance is referred to an ambient temperature of 23 °C.

3.4
rated current
value of current of a fuse-holder assigned by the manufacturer and to which the rated power acceptance is referred

3.5
rated voltage
value of voltage of a fuse-holder assigned by the manufacturer and to which operation and performance characteristics are referred

3.6
insulation coordination
mutual correlation of insulation characteristics of electrical equipment taking into account the expected micro-environment and other influencing stresses

[SOURCE: IEC 60664-1:2007, 3.1]

3.7
impulse withstand voltage
highest peak value of impulse voltage of prescribed form and polarity which does not cause breakdown of insulation under specified conditions

[SOURCE: IEC 60664-1:2007, 3.8.1]

3.8
overvoltage category
numeral defining a transient overvoltage condition

specified categories, see C.1

[SOURCE: IEC 60664-1:2007, 3.10, modified by addition of “specified categories”]

3.9
pollution
any addition of foreign matter, solid, liquid, or gaseous that can result in a reduction of electric strength or surface resistivity of the insulation

[SOURCE: IEC 60664-1:2007, 3.11]

3.10
pollution degree
numeral characterizing the expected pollution of the micro-environment

specified degrees, see C.2

[SOURCE: IEC 60664-1:2007, 3.13, modified by addition of “specified categories”]

3.11
micro-environment
immediate environment of the insulation which particularly influences the dimensioning of the creepage distances

[SOURCE: IEC 60664-1:2007, 3.12.2]

3.12
clearance
shortest distance in air between two conductive parts

[SOURCE: IEC 60664-1:2007, 3.2]

3.13
creepage distance
shortest distance along the surface of a solid insulating material between two conductive parts

[SOURCE: IEC 60050-151:2001, 151-15-50]