
Irish Standard
I.S. EN 60947-7-3:2009

# Low-voltage switchgear and controlgear -- Part 7-3: Ancillary equipment - Safety requirements for fuse terminal blocks (IEC 60947-7 -3:2009 (EQV))

I.S. EN 60947-7-3:2009

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**I.S. EN 60947-7-3:2009**

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# EN 60947-7-3

November 2009

ICS 29.120.99; 29.130.20

Supersedes EN 60947-7-3:2002

English version

# Low-voltage switchgear and controlgear - Part 7-3: Ancillary equipment - Safety requirements for fuse terminal blocks

(IEC 60947-7-3:2009)

Appareillage à basse tension -
Partie 7-3: Matériels accessoires -
Exigences de sécurité pour les blocs
de jonction à fusible
(CEI 60947-7-3:2009)

Niederspannungsschaltgeräte -
Teil 7-3: Hilfseinrichtungen -
Sicherheitsanforderungen
für Sicherungs-Reihenklemmen
(IEC 60947-7-3:2009)

This European Standard was approved by CENELEC on 2009-09-01. 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.

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

CENELEC

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

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



Ref. No. EN 60947-7-3:2009 E

## Foreword

The text of document 17B/1657/FDIS, future edition 2 of IEC 60947-7-3, prepared by SC 17B, Low-voltage switchgear and controlgear, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60947-7-3 on 2009-09-10.

This European Standard supersedes EN 60947-7-3:2002.

The main technical modifications of EN 60947-7-3:2009 since EN 60947-7-3:2002 are listed below:

– requirements regarding clearances and creepage distances replaced by reference to Annex H of EN 60947-1;

– requirements for the test of the mechanical strength of the clamping units improved in 8.3.3.1;

– requirements for tightening torques for the tests improved and referenced to Table 4 of EN 60947-1;

– requirements for the resistance and the dimensions of dummy fuse-links specified in 8.5.2.5.

This standard shall be read in conjunction with EN 60947-1 and EN 60947-7-1. The provisions of the general rules dealt with in EN 60947-1 and the requirements for terminal blocks of EN 60947-7-1 are applicable to this standard, where specifically called for. Clauses and subclauses, tables, figures and annexes thus applicable are identified by reference to EN 60947-1 or EN 60947-7-1, e.g. 1.2 of EN 60947-1, Table 4 of EN 60947-7-1 or Annex A of EN 60947-1.

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) | 2010-06-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2012-09-01 |

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 60947-7-3:2009 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 60127-6<br>+ A1<br>+ A2 | NOTE Harmonized as EN 60127-6:1994 + A1:1996 + A2:2003 (not modified). |
| IEC 60715<br>+ A1 | NOTE Harmonized as EN 60715:2001 (not modified). |
| IEC 61180-1 | NOTE Harmonized as EN 61180-1:1994 (not modified). |
| IEC 61180-2 | NOTE Harmonized as EN 61180-2:1994 (not modified). |

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# 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60127-1 | 2006 | Miniature fuses - Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links | EN 60127-1 | 2006 |
| IEC 60127-2 | 2003 | Miniature fuses - | EN 60127-2 | 2003 |
| A1 | 2003 | Part 2: Cartridge fuse-links | A1 | 2003 |
| IEC 60216-1 | 2001 | Electrical insulating materials - Properties of thermal endurance - Part 1: Ageing procedures and evaluation of test results | EN 60216-1 | 2001 |
| IEC 60695-11-5 | 2004 | Fire hazard testing - Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance | EN 60695-11-5 | 2005 |
| IEC 60947-1 | 2007 | Low-voltage switchgear and controlgear - Part 1: General rules | EN 60947-1 | 2007 |
| IEC 60947-7-1 | -[1)] | Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors | EN 60947-7-1 | 2009 |
| ISO 3 | 1973 | Preferred numbers - Series of preferred numbers | - | - |
| ISO 4046-4 | 2002 | Paper, board, pulps and related terms - Vocabulary - Part 4: Paper and board grades and converted products | - | - |

[1)] Undated reference.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

## Part 7-3: Ancillary equipment – Safety requirements for fuse terminal blocks

## 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 60947-7-3 has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

This second edition of IEC 60947-7-3 cancels and replaces the first edition, published in 2002, and constitutes a technical revision.

The main technical modifications of this standard since this previous publication are listed below:

– requirements regarding clearances and creepage distances replaced by reference to Annex H of IEC 60947-1;
– requirements for the test of the mechanical strength of the clamping units improved in 8.3.3.1;
– requirements for tightening torques for the tests improved and referenced to Table 4 of IEC 60947-1;

– requirements for the resistance and the dimensions of dummy fuse-links specified in 8.5.2.5.

This standard shall be read in conjunction with IEC 60947-1 and IEC 60947-7-1. The provisions of the general rules dealt with in IEC 60947-1 and the requirements for terminal blocks of IEC 60947-7-1 are applicable to this standard, where specifically called for. Clauses and subclauses, tables, figures and annexes thus applicable are identified by reference to IEC 60947-1 or IEC 60947-7-1, e.g. 1.2 of IEC 60947-1, Table 4 of IEC 60947-7-1 or Annex A of IEC 60947-1.

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

| FDIS | Report on voting |
|---|---|
| 17B/1657/FDIS | 17B/1671/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 the parts in the IEC 60947 series, under the general title *Low-voltage switchgear and controlgear*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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

The standard for fuse terminal blocks covers not only the terminal block requirements but also takes into account the specifications of the cartridge fuse-links according to IEC 60127-1 and IEC 60127-2. A connection between these two standards is made by adding (adapting) the fundamental specifications of cartridge fuse-links (rated current, rated voltage, maximum voltage drop and maximum sustained power dissipation for cartridge fuse-links with the dimension of 5 mm × 20 mm or 6,3 mm × 32 mm with their different response characteristics) to the IEC 60947-7-1 requirements for terminal blocks. By this means, it is possible to judge the quality of the product “fuse terminal blocks”.

An important fact when using such cartridge fuse-links with fuse terminal blocks is that fuses heat up much less under rated load than they would do under overload conditions. The rated load is the result of rated current and maximum voltage drop. But there is a considerably increased power dissipation under overload conditions, equalling the maximum sustained power dissipation loss according to IEC 60127-2.

In industrial applications, single fuse terminal blocks are used within an arrangement of terminal blocks or many of them forming an arrangement on their own. This means that the same current and fuse-link will result in different heat emissions. Furthermore, it should be taken into account that apart from the general full range fuse (for overload and short-circuit protection), some fuse terminal blocks are exclusively used for short-circuit protection according to IEC 60364-4-43, e.g. in control circuits, where no overloads occur (i.e. safety coils, indicator lights or similar equipment).

Consequently there are four different types of application that need to be described in the catalogue or indicated on the fuse terminal block. For more information, see Annex B.

# LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

# Part 7-3: Ancillary equipment – Safety requirements for fuse terminal blocks

## 1 General

### 1.1 Scope

This part of IEC 60947 applies to fuse terminal blocks with screw-type or screwless-type clamping units for the connection of rigid (solid or stranded) or flexible copper conductors for the reception of cartridge fuse-links in accordance with IEC 60127-2, intended primarily for industrial or similar use in circuits not exceeding 1 000 V a.c., up to 1 000 Hz or 1 500 V d.c., and having a maximum short-circuit breaking capacity of 1 500 A.

They are intended for installation in electrical equipment with enclosures which surround the fuse terminal blocks to such an extent that they are accessible only with the aid of a tool.

For certain applications, for example in control circuits, the fuse terminal blocks may be designed exclusively for short-circuit protection.

NOTE This standard may be used as a guide for fuse terminal blocks for the reception of special cartridge fuse-links which do not meet the requirements of IEC 60127-2.

The object of this standard is to specify safety requirements and test methods for the mechanical, electrical and thermal characteristics of fuse terminal blocks, to ensure the compatibility between terminal blocks and standardized fuse-links.

This standard may be used as a guide for

– fuse terminal blocks requiring the fixing of special devices to the conductors, for example quick connect terminations or wrapped connections, etc.;
– fuse terminal blocks providing direct contact to the conductors by means of edges or points penetrating the insulation, for example insulation displacement connections, etc.

Where applicable in this standard, the term “clamping unit” has been used instead of the term “terminal”. This is taken into account in case of reference to IEC 60947-1.

### 1.2 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 60127-1:2006, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60127-2:2003, *Miniature fuses – Part 2: Cartridge fuse-links*
Amendment 1 (2003)

IEC 60216-1:2001, *Electrical insulating materials – Properties of thermal endurance – Part 1: Ageing procedures and evaluation of test results*

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