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

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EUROPEAN STANDARD

**EN 60947-7-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2002

ICS 29.120.99; 29.130.20

English version

**Low-voltage switchgear and controlgear  
Part 7-3: Ancillary equipment -  
Safety requirements for fuse terminal blocks  
(IEC 60947-7-3:2002)**

Appareillage à basse tension  
Partie 7-3: Matériels accessoires -  
Prescriptions de sécurité  
pour les blocs de jonction à fusible  
(CEI 60947-7-3:2002)

Niederspannungsschaltgeräte  
Teil 7-3: Hilfseinrichtungen -  
Sicherheitsanforderungen  
für Sicherungs-Reihenklemmen  
(IEC 60947-7-3:2002)

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This European Standard was approved by CENELEC on 2002-10-01. 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.

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

**CENELEC**

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

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

## Foreword

The text of document 17B/1193/FDIS, future edition 1 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 2002-10-01.

This Part 7-3 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 "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 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) 2003-07-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2005-10-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, C and ZA are normative and annex B is informative.

Annex ZA has been added by CENELEC.

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**Endorsement notice**

The text of the International Standard IEC 60947-7-3:2002 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	NOTE	Harmonized as EN 60127-6:1994 (not modified).
IEC 60715	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).

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60127-1 + corr. March	1988 1990	Miniature fuses Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links	EN 60127-1	1991
A1	1999		A1	1999
IEC 60127-2 + corr. March	1989 1990	Part 2: Cartridge fuse-links	EN 60127-2	1991
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 60695-2-2	1991	Fire hazard testing Part 2: Test methods - Section 2: Needle-flame test	EN 60695-2-2	1994
A1	1994		A1	1995
IEC 60947-1 (mod)	1999	Low-voltage switchgear and controlgear Part 1: General rules	EN 60947-1 + corr. October	1999 1999
A1	2000		A1	2000
A2	2001		A2	2001
IEC 60947-7-1	2002	Part 7-1: Ancillary equipment - Terminal blocks for copper conductors	EN 60947-7-1	2002
ISO 3	1973	Preferred numbers - Series of preferred numbers	-	-
ISO 4046	1978	Paper, board, pulp and related terms - Vocabulary	-	-

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Appareillage à basse tension –

Partie 7-3:

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Part 7-3:

Ancillary equipment –

Safety requirements for fuse terminal  
blocks

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International Electrotechnical Commission  
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## CONTENTS

FOREWORD .....	5
INTRODUCTION .....	9
1 General .....	11
1.1 Scope .....	11
1.2 Normative references .....	13
2 Definitions .....	13
3 Classification .....	15
4 Characteristics .....	15
4.1 Fuse-links .....	15
4.2 Rated power dissipation value .....	17
4.3 Rated and limiting values .....	17
5 Product information .....	17
5.1 Marking .....	17
5.2 Additional information .....	19
5.3 Marking on the packing unit .....	19
6 Normal service, mounting and transport conditions .....	19
7 Constructional and performance requirements .....	21
7.1 Constructional requirements .....	21
7.2 Performance requirements .....	23
7.3 Electromagnetic compatibility (EMC) .....	25
8 Tests .....	25
8.1 Kinds of test .....	25
8.2 General .....	25
8.3 Verification of mechanical characteristics .....	25
8.4 Verification of electrical characteristics .....	31
8.5 Verification of thermal characteristics .....	39
8.6 Verification of EMC characteristics .....	53
Annex A (normative) Gauges .....	55
Annex B (informative) Power dissipation values $P_V$ and $P_{VK}$ .....	57
Annex C (normative) Order of tests and number of specimens .....	73
Bibliography .....	75



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

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

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

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 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/1193/FDIS	17B/1226/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.

Annexes A and C form an integral part of this standard.

Annex B is for information only.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

The contents of the corrigendum of March 2003 have been included in this copy.

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## 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 terminal block. For more information, see annex B.

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## 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 60127-1:1988, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*  
Amendment 1 (1999)

IEC 60127-2:1989, *Miniature fuses – Part 2: Cartridge fuse-links*

IEC 60216-1:2001, *Guide for the determination of thermal endurance properties of electrical insulating materials – Part 1: General guidelines for ageing procedures and evaluation of test results*

IEC 60695-2-2:1991, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*  
Amendment 1 (1994)

IEC 60947-1:1999, *Low-voltage switchgear and controlgear – Part 1: General rules*  
Amendment 1 (2000)  
Amendment 2 (2001)

IEC 60947-7-1:2002, *Low-voltage switchgear and controlgear – Part 7-1: Ancillary equipment – Terminal blocks for copper conductors*

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

ISO 4046:1978, *Paper, board, pulp and related terms – Vocabulary*  
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## 2 Definitions

For the purpose of this part of IEC 60947, definitions given in IEC 60947-7-1, together with the following definitions, apply.

### 2.1

#### **fuse terminal block**

terminal block base with a fuse-carrier

### 2.2

#### **terminal block base**

insulating part of a fuse terminal block carrying the clamping units and contacts, intended to be fixed to a support

### 2.3

#### **fuse-carrier**

movable part of a fuse terminal block designed to carry the cartridge fuse-link and enable its exchange

NOTE The fuse-carrier can be mechanically coupled with the terminal block base.