SLOVENSKI STANDARD
SIST EN 60947-3:1998

01-februar-1998

Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 947-3:1990 + corrigendum Dec.1991 (Modified))

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

Niederspannungsschaltgeräte - Teil 3: Lastschalter, Trennschalter, Lasttrennschalter und Schalter-Sicherungs-Einheiten

Appareillage à basse tension -- Partie 3: Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-fusibles

Ta slovenski standard je istoveten z: **EN 60947-3:1992**

ICS:

29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear

SIST EN 60947-3:1998 **en**

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPÄISCHE NORM

EN 60947-3

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UDC 621.316.5.027.2:620.1

Supersedes HD 422 S1:1982

Descriptors: Low-voltage switchgear and controlgear, switches, disconnectors, switch-disconnectors, fuse-combination units

ENGLISH VERSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR
PART 3: SWITCHES, DISCONNECTORS, SWITCH-DISCONNECTORS AND FUSE-COMBINATION UNITS
(IEC 947-3:1990, modified + Corrigendum December 1991)

Appareillage à basse tension
Troisième partie: Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-fusibles
(CEI 947-3:1990, modifiée + corrigendum décembre 1991)

Niederspannung-Schaltgeräte
Teil 3: Lastschalter, Trennschalter, Lasttrennschalter und Schalter-Sicherungs-Einheiten
(IEC 947-3:1990, modifiziert + Corrigendum Dezember 1991)

This European Standard was approved by CENELEC on 1992-03-24. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Ref. No. EN 60947-3:1992 E

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 947-3:1990 and its corrigendum of December 1991 could be accepted without textual changes, has shown that some common modifications were necessary for the acceptance as European Standard.

The reference document, together with the common modifications prepared by the CENELEC Technical Committee TC 17B, was submitted to the CENELEC members for formal vote.

The text of the draft was approved by CENELEC as EN 60947-3 on 24 March 1992.

This European Standard replaces HD 422 S1:1982.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1993-03-01

- latest date of withdrawal of conflicting national standards (dow) 1993-03-01

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

INTRODUCTION

All subjects left "under consideration" in IEC 947-3:1990 are not part of this European Standard.

This means that:
- for the following clauses the title and text are to be replaced by "Vacant":

8.1.4	Sampling tests
8.3.3.3.4	Switching overvoltages
8.3.4.1.4	Switching overvoltages
8.3.6.1	Circuit-breaker protected short-circuit withstand

Up-to-date information concerning the subjects dealt with in these clauses can be obtained from the secretariat of CENELEC TC 17B.

ENDORSEMENT NOTICE

The text of the International Standard IEC 947-3:1990 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

7.2.1.1 General

Sub-clause 7.2.1.1 of Part 1 applies with the following addition :

For fuse-switch disconnectors for which the closing operation is by direct manual operation and without an interposing mechanism (see for example figure 2) the test speed for the making operations specified in Sub-clause 8.3.6.2.4 shall be determined as follows :

a) The fuse-switch disconnector shall be operated 30 times manually under no-load conditions in accordance with the manufacturer's instructions, 10 times by each of 3 persons. The velocity of the hand actuator at the instant of contact closure of the last closing contact shall be determined by oscillographic or other appropriate means at any convenient part of the device. The point at which the measurement is made and the velocity at the measurement point shall be stated in the test report. The mean velocity shall be determined after deleting the highest and the lowest values.

b) A test apparatus shall ensure that the equipment under test fully closes and that there is no impediment to the free closing movement of the device. The actual test speed shall not exceed the mean velocity determined according to a). The mass of the moving parts of the test apparatus (without the equipment under test) shall be 2 kg ± 10 %.

c) In the case of a fuse-switch-disconnector having the phases side by side, the maximum test speed shall not exceed 0.5 m/s.

Note : The values 2kg (in b) and 0.5 m/s (in c) are derived from the behaviour and the possibilities of the human arm.

Sub-clause 8.3.6.2.4

Add the following new paragraph after the second paragraph :
"For fuse-switch disconnector, the closing mechanism shall be operated according to Sub-clause 7.2.1.1".

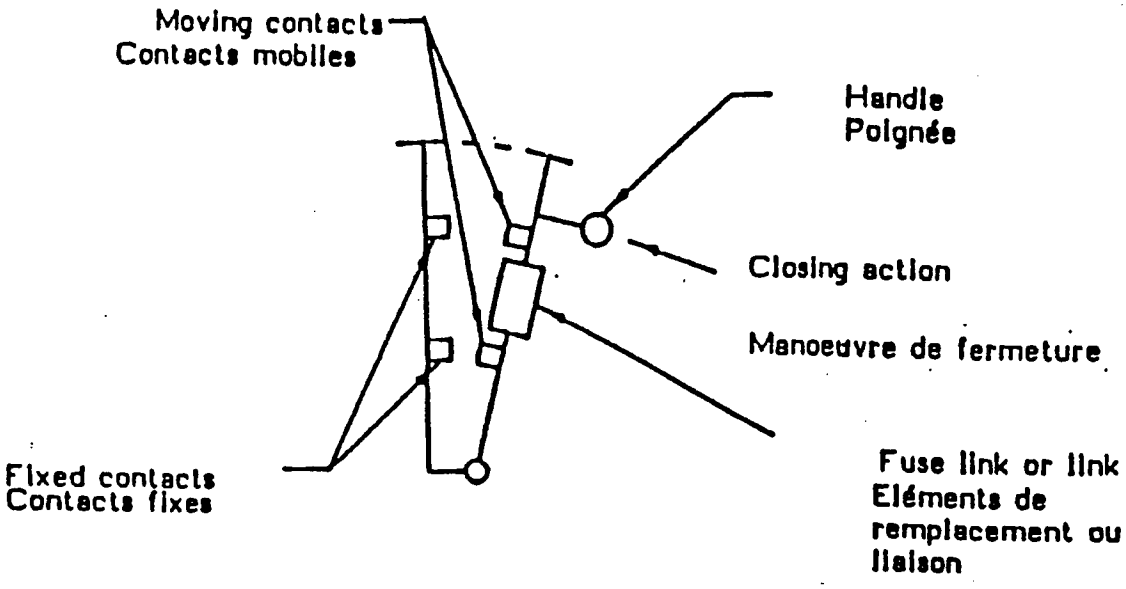

Fig. 2 : Example of fuse-switch disconnector for direct manual operation.

Exemple de fusible-interrupteur-sectionneur pour fonctionnement manuel direct.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
50 (441)	1984	International Electrotechnical Vocabulary (IEV) - Chapter 441: Switchgear, controlgear and fuses	-	-
417	1973	Graphical symbols for use on equipment Index, survey and compilation of the single sheets	HD 243 S1*	1984
617-7	1983	Graphical symbols for diagrams Part 7: Switchgear, controlgear and protective devices	-	-
947-1 (mod)	1988	Low-voltage switchgear and controlgear Part 1: General rules (Corrigendum 1992)	EN 60947-1	1991
947-2	1989	Part 2: Circuit-breakers (Corrigenda 1989/1990)	EN 60947-2	1991
947-4-1	1990	Part 4: Contactors and motor-starters Section One: Electromechanical contactors and motor-starters (Corrigendum 1991)	EN 60947-4-1	1992
947-5-1	1990	Part 5: Control circuit devices and switching elements - Section One: Electromechanical control circuit devices (Corrigendum 1991)	EN 60947-5-1	1991

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* superseded by HD 243 S9:1991, which is based on IEC 417:1973 + supplements A:1974 to J:1990

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INTERNATIONAL STANDARD

CEI
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Première édition
Third edition
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Appareillage à basse tension

Troisième partie:
Interrupteurs, sectionneurs, interrupteurs-sectionneurs et combinés-fusibles

Low-voltage switchgear and controlgear

Part 3:
Switches, disconnectors, switch-disconnectors and fuse-combination units

Numéro de référence
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CEI/IEC 947-3: 1990

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

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FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

PREFACE

This standard has been prepared by Sub-Committee 17B: Low-voltage switchgear and controlgear, of IEC Technical Committee No. 17: Switchgear and controlgear.

It should be used in conjunction with IEC Publication 947-1.

This standard replaces IEC Publication 408 (1985): Low-voltage air-break switches, air-break disconnectors, air-break switch-disconnectors and fuse-combination units.

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

Six Months' Rule	Report on Voting		Two Months' Procedure	Report on Voting
17B(CO)156-I+II	17B(CO)171		17B(CO)173	17B(CO)179

Full information on the voting for the approval of this standard can be found in the Voting Reports indicated in the above table.

The following IEC Publications are quoted in this standard:

Publications Nos. 50(441) (1984):	International Electrotechnical Vocabulary (IEV), Chapter 441: Switchgear, controlgear and fuses.
417 (1973):	Graphical symbols for use on equipment. Index survey and compilation of the single sheets.
617-7 (1983):	Graphical symbols for diagrams, Part 7: Switchgear, controlgear and protective devices.
947-1 (1988):	Low-voltage switchgear and controlgear, Part 1: General rules.
947-2 (1989):	Part 2: Circuit-breakers.
947-4-1 (1990):	Part 4: Contactors and motor-starters. Section One - Electromechanical contactors and motor-starters.
947-5-1 (1990):	Part 5: Control-circuit devices and switching elements. Section One - Electromechanical control-circuit devices.

For technical reasons, in the tables, the symbols "I" and "U", which are normally printed in italics, appear in roman type.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

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1. General

The provisions of the general rules dealt with in Part 1 (IEC Publication 947-1) are applicable to this standard, where specifically called for. Clauses and sub-clauses, tables, figures and appendices of the general rules thus applicable are identified by reference to Part 1, e.g., Sub-clause 1.2.3 of Part 1, Table IV of Part 1, or Appendix A of Part 1.

1.1 *Scope*

This standard applies to switches, disconnectors, switch-disconnectors and fuse-combination units to be used in distribution circuits and motor circuits of which the rated voltage does not exceed 1 000 V a.c. or 1 500 V d.c.

The manufacturer shall specify the type, ratings and characteristics according to the relevant standard of any incorporated fuses.

This standard does not apply to equipment coming within the scope of IEC Publications 947-2, 947-4-1 and 947-5-1; however, when switches and fuse-combination units coming into the scope of this standard are normally used to start, accelerate and/or stop an individual motor they shall also comply with the additional requirements given in Appendix A.

This standard does not include the additional requirements necessary for electrical apparatus for explosive gas atmospheres.

Notes 1.- Depending on its design, a switch (or disconnector) can be referred to as "a rotary switch (disconnector)", "cam-operated switch (disconnector)", "knife-switch (disconnector)", etc.

2.- If they are not manually operated, switches and disconnectors may have to comply with additional requirements.

3.- In this standard, the word "switch" also applies to the apparatus referred to in French as "commutateurs", intended to modify the connections between several circuits and inter alia to substitute a part of a circuit for another.

4.- In general, throughout this standard switches, disconnectors, switch-disconnectors and fuse-combination units will be referred to as "equipment".

1.2 *Object*

The object of this standard is to state:

a) the characteristics of the equipment;

b) the conditions with which the equipment shall comply with reference to:

1) operation and behaviour in normal service;

2) operation and behaviour in case of specified abnormal conditions, e.g. short circuit;

3) dielectric properties;

c) the tests for confirming that these conditions have been met and the methods to be adopted for these tests;

d) the information to be marked on the equipment or made available by the manufacturer, e.g. in the catalogue.

2. Definitions

For the majority of the definitions required in connection with this standard, see Clause 2 of Part 1.

Necessary additional definitions are given in this clause together with pertinent device definitions. The device definitions are also summarised in Table I.

2.1 *Switch (mechanical) (IEV 441-14-10)*

A 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 circuit conditions such as those of short-circuit.

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

2.2 *Disconnector*

A mechanical switching device which, in the open position, complies with the requirements specified for the isolating function.

Notes 1.- This definition differs from IEV 441-14-05 by referring to isolating function instead of isolating distance.

2.- A disconnector is capable of opening and closing a circuit when either a negligible current is broken or made, or when no significant change in the voltage across the terminals of each of the poles of the disconnector occurs. It is also capable of carrying currents under normal circuit conditions and carrying for a specified time currents under abnormal conditions such as those of short circuit.