
**Niskonapetostne stikalne in krmilne naprave – 6. del: Večfunkcijska oprema –
1. oddelek: Oprema za samodejne preklope**

Low-voltage switchgear and controlgear - Part 6: Multiple function equipment -
Section 1: Automatic transfer switching equipment (IEC 947-6-1:1989)

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ENGLISH VERSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR
PART 6: MULTIPLE FUNCTION EQUIPMENT
SECTION ONE - AUTOMATIC TRANSFER SWITCHING
EQUIPMENT
(IEC 947-6-1:1989)

Appareillage à basse tension
Sixième partie: Matériels à
fonctions multiples
Section un - Matériels de
connexion de transfert
automatique
(CEI 947-6-1:1989)

Niederspannung-Schaltgeräte
Teil 6: Mehrfunktion
Schaltgeräte
Hauptabschnitt eins -
Automatischer Netzumschalter
(IEC 947-6-1:1989)

This European Standard was approved by CENELEC on 1991-03-15.
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
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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 CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 947-6-1:1989 could be accepted without textual changes, has shown that no CENELEC common modifications were necessary for the acceptance as European Standard. The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 60947-6-1 on 15 March 1991.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1992-03-01
- latest date of withdrawal of conflicting national standards (dow) 1992-03-01

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 947-6-1:1989 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

- in the following clauses the appropriate paragraphs or notes are to be deleted:

7.1 Constructional requirements

7.2.6 Switching overvoltages

8.3.3.5.4 Switching overvoltages

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

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ENDORSEMENT NOTICE

The text of the International Standard IEC 947-6-1:1989 was approved by CENELEC as a European Standard without any modification.

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.

<u>IEC Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
947-1, mod	1988	Low-voltage switchgear and controlgear Part 1: General rules	EN 60947-1	1991
947-2	1988	Part 2: Circuit-breakers	EN 60947-2	1991
947-4	-	Part 4: Contactors and motor-starters (In preparation)	-	-

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NORME
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Première édition
First edition
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Appareillage à basse tension

Sixième partie:

Matériels à fonctions multiples

Section un – Matériels de connexion
de transfert automatique

Low-voltage switchgear and controlgear

Part 6:

Multiple function equipment

Section One – Automatic transfer
switching equipment

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 6: Multiple function equipment

Section One - Automatic transfer switching equipment

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.

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)139	17B(CO)149 and 149A	17B(CO)163	17B(CO)169

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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. 112 (1979): Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions.
- 947-1 (1988): Low-voltage switchgear and controlgear, Part 1: General rules.
- 947-2 (1988): Part 2: Circuit-breakers.
- 947-4: Part 4: Contactors and motor-starters. (In preparation.)

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR
Part 6: Multiple function equipment
Section One - Automatic transfer switching equipment

1. General

The provisions of the General Rules, IEC Publication 947-1, are applicable to this standard, where specifically called for. General Rules clauses and sub-clauses thus applicable, as well as tables, figures and appendices are identified by references to Part 1, for example: "Sub-clause 1.2.3, Table IV or Appendix A or Part 1".

1.1 Scope

This standard applies to Automatic Transfer Switching Equipment (ATSE) to be used in emergency power systems with interruption of the supply to the load during transfer, the rated voltage of which does not exceed 1 000 V a.c. or 1 500 V d.c. It covers ATSE provided with or without an enclosure.

Devices necessary for the control (e.g. control switches, ...) and the protection (e.g. circuit-breakers, ...) of an ATSE shall comply with the requirements of the relevant IEC standards.

ATSE used only for emergency lighting may be subject to specific rules and/or legal requirements and are not, therefore, covered by this standard.

1.2 Object

The object of this standard is to state:

- 1) the characteristics of the equipment.
- 2) the conditions with which the equipment must comply with reference to:
 - a) operation for which the equipment is intended;
 - b) operation and behaviour in case of specified abnormal conditions, for example, short circuit;
 - c) dielectric properties.
- 3) The tests intended to confirm that these conditions have been met and the methods for performing these tests.
- 4) The data to be marked on the equipment and provided by the manufacturer.

2. Definitions

For the purpose of this standard the relevant definitions given in Clause 2 of Part 1 and the following additional definitions shall apply:

2.1 *Switching devices*

2.1.1 *Transfer switching device (transfer switch)*

A device for transferring one or more load circuits from one supply to another.

2.1.2 *Automatic transfer switching equipment (ATSE)*

Self-acting equipment containing the transfer switching device(s) and other necessary devices for monitoring supply circuits and for transferring one or more load circuits from one supply to another.

2.2 *Operation of ATSE*

2.2.1 *Operating sequence*

The operating sequence of ATSE consists of an automatic transfer of a load from the normal supply to an alternative supply in the event of a monitored supply deviation and automatically returning the load to the normal supply when it is restored. The transfer may be with or without a predetermined time delay and may include an off position.

In the case of both the normal and the alternative supplies being present, the ATSE shall assume the normal supply position.

2.2.2 *Monitored supply deviation*

A variation in the power supply characteristics being monitored so that it signals the ATSE to operate when a deviation from the specified limits occurs, for example, abnormal changes in voltage or frequency of the supply.

2.2.2.1 *Voltage supply deviation*

The change or loss of voltage of the normal power supply.

2.2.2.2 *Frequency supply deviation*

The change in frequency from the normal operating frequency of the normal supply.

2.2.3 *Operating times*

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2.2.3.1 *Contact transfer time*

The time measured from the parting of one set of main contacts from one power supply to the closing of a second set of main contacts on an alternative power supply.

2.2.3.2 *Operating transfer time*

The time measured from the instant of the monitored supply deviation to the closing of main contacts on an available alternative supply source, exclusive of any purposely introduced time delay.

2.2.3.3 *Total operating time*

The sum of operating transfer time and any purposely introduced time delay.

2.2.3.4 *Return transfer time*

The time from the instant when the normal supply is fully restored to the instant when the set of main contacts is closed on the normal supply, plus any purposely introduced time delay.

2.2.3.5 *Off-time*

The time measured during transfer from the instant of final arc extinction in all poles to the closing of main contacts on another supply, including any purposely introduced time delay.

2.3 *Main contact positions*

2.3.1 *Normal position*

The contact position of the equipment when there is no deviation of the normal supply.

2.3.2 *Alternative position*

The contact position of the equipment when the load circuit is switched on the alternative (emergency) supply in the event of a monitored supply deviation of the normal supply.

2.3.3 *Off position*

The contact position of the equipment when the load circuit is not switched on any supply.

Note.- This position results from either automatic tripping caused by a fault in the load circuit or intentional interruption of the automatic transfer function.

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3. Classification

Automatic transfer switching equipment is classified as Class PC or Class CB. SIST EN 60947-6-1:1995
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Class PC: ATSE that is capable of making and withstanding, but is not intended for breaking short-circuit currents.

Class CB : ATSE provided with overcurrent releases and the main contacts of which are capable of making and are intended for breaking short-circuit currents.