
Low-voltage switchgear and controlgear - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (IEC 947-5-1:1990)

Low-voltage switchgear and controlgear -- Part 5: Control circuit devices and switching elements -- Section 1: Electromechanical control circuit devices

Niederspannungsschaltgeräte -- Teil 5: Steuergeräte und Schaltelemente -- Hauptabschnitt 1: Elektromechanische Steuergeräte

Appareillage à basse tension -- Partie 5: Appareils et éléments de commutation pour circuits de commande -- Section 1: Appareils électromécaniques pour circuits de commande

Ta slovenski standard je istoveten z: EN 60947-5-1:1991

ICS:

29.130.20	Niskonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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EUROPEAN STANDARD

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Supersedes HD 420 S2:1988

Descriptors: Low-voltage switchgear and controlgear, electromechanical control circuit devices, characteristics, tests

ENGLISH VERSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR
PART 5: CONTROL CIRCUIT DEVICES AND SWITCHING
ELEMENTS
SECTION ONE - ELECTROMECHANICAL CONTROL CIRCUIT
DEVICES
(IEC 947-5-1:1990)

Appareillage à basse tension
Cinquième partie: Appareils et
éléments de commutation pour
circuits de commande
Section un - Appareils
électromécaniques pour circuits
de commande
(CEI 947-5-1:1990)

Niederspannung-Schaltgeräte
Teil 5: Steuergeräte und
Schaltelemente
Hauptabschnitt Eins -
Elektromechanische
Steuergeräte

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This European Standard was approved by CENELEC on 1991-09-23. 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

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 60947-5-1:1990 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 60947-5-1 on 23 September 1991.

This European Standard supersedes HD 420 S2:1988.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1992-09-01
- latest date of withdrawal of
conflicting national standards (dow) 1992-09-01

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

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INTRODUCTION

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All subjects left "under consideration" in IEC 947-5-1 are not part of this European Standard.

This means that:

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

- 7.2.7 Additional requirements for control switches suitable for isolation
- 8.1.4 Sampling tests

- the text of clause 8.2. is to be replaced by:
"Sub-clause 8.2.4 of Part 1 applies".

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 947-5-1:1990 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</u>	<u>Publication</u>	<u>Date</u>	<u>Title</u>	<u>EN/HD</u>	<u>Date</u>
50(441)	1984		International electrotechnical Vocabulary (IEV) Chapter 441: Switchgear, controlgear and fuses	-	-
50(446)	1983		Chapter 446: Electrical relays	-	-
73	1984		Colours of indicator lights and push-buttons	HD 354 S2	1987
112	1979		Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
255 - series			Electrical relays	-	-
617 - series			Graphical symbols for diagrams	-	-
947			Low-voltage switchgear and controlgear	-	-
947-1, mod	1988		Part 1: General rules	EN 60947-1	1991
947-4-1	1990		Part 4: Contactors and motor-starters Section One - Electromechanical contactors and motor-starters	-	-

C E N E L E C

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Central Secretariat

CORRIGENDUM to EN 60947-5-1:1991

English version

Title page

Replace the superseding note by:

Supersedes EN 50007:1981 and HD 420 S2:1988

Page 2, Foreword

Add "EN 50007:1981 and" before "HD 420" in the second paragraph.

Add after the implementation dates:

For products which have complied with EN 50007:1981 or HD 420 S2:1988 before 1992-09-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-09-01.

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Appareils et éléments de commutation pour circuits
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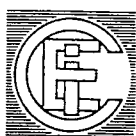
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Low-voltage switchgear and controlgear

Part 5:

Control circuit devices and switching elements.
Section One – Electromechanical control circuit
devices



Numéro de référence
Reference number
CEI/IEC 947-5-1:1990

DESKRIPTORIJSKI: NAPRAVE SINKHALNE, NA VEŠTOŠT SUTRA, UČESTUJE U PRAĆENJU I ODRŽAVANJU TOPOGRAFIJE I STIKALCA, U PRAĆENJU I ODRŽAVANJU ELEKTROMECHANSKA
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 5: Control circuit devices and switching elements

Section One – Electromechanical control circuit devices

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.

iTech STANDARD PREVIEW

PREFACE

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

This standard replaces IEC Publication 337-1 (1970), Amendment No. 1 (1983), Supplements 337-1A (1973) and 337-1B (1975), IEC Publication 337-2 (1972), Amendment No. 1 (1975), Supplements 337-2A (1973), 337-2B (1976) and 337-2C (1977).

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

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

Six Months' Rule	Reports on Voting	Two Months' Procedure	Reports on Voting
17B(CO)138-I+II	17B(CO)148+148A	17B(CO)158 17B(CO)167	17B(CO)160 17B(CO)174
17B(CO)155	17B(CO)164	17B(CO)168	17B(CO)175

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.
- 50(446) (1983): Chapter 446: Electrical relays.
- 73 (1984): Colours of indicator lights and push-buttons.
- 112 (1979): Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions.
- 255 Electrical relays.
- 617: Graphical symbols for diagrams.
- 947: Low-voltage switchgear and controlgear.
- 947-1 (1988): Part 1: General rules.
- 947-4-1 (1990): Part 4: Contactors and motor-starters.
Section One: Electromechanical contactors and motor-starters.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 5: Control circuit devices and switching elements

Section One – Electromechanical control circuit devices

CHAPTER 1: GENERAL REQUIREMENTS

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 a reference to Part 1, e.g. Sub-clause 1.2.3, Table IV or Appendix A of Part 1.

1.1 Scope

This standard applies to control circuit devices and switching elements intended for controlling, signalling, interlocking, etc., of switchgear and controlgear.

It applies to control circuit devices having a rated voltage not exceeding 1 000 V a.c. (at a frequency not exceeding 1 000 Hz) or 600 V d.c.

However for operational voltages below 100 V a.c. or d.c., see Note 2 of Sub-clause 4.3.1.1.

This standard applies to specific types of control circuit devices such as:

- manual control switches, e.g. pushbuttons, rotary switches, foot switches, etc.;
- electromagnetically operated control switches, either time-delayed or instantaneous, e.g. contactor relays;
- pilot switches, e.g. pressure switches, temperature sensitive switches (thermostats), programmers, etc.;
- position switches, e.g. control switches operated by part of a machine or mechanism;
- associated control circuit equipment, e.g. indicator lights, etc.

Notes 1. - A control circuit device includes (a) control switch(es) and associated devices such as (an) indicator light(s).

2. - A control switch includes (a) switching element(s) and an actuating system.

3. - A switching element may be a contact element or a semiconductor element.

It also applies to specific types of switching elements associated with other devices (whose main circuits are covered by other standards) such as:

- auxiliary contacts of a switching device (e.g. contactor, circuit breaker, etc.) which are not dedicated exclusively for use with the coil of that device;
- interlocking contacts of enclosure doors;
- control circuit contacts of rotary switches;
- control circuit contacts of overload relays.

Requirements pertaining to particular types of control circuit devices are dealt with in chapters 2 and 3.

Contactor relays shall also meet the requirements and tests of IEC Publication 947-4-1 except for the utilization category which shall comply with this standard.

This standard does not include the relays covered in IEC Publication 255 or automatic electrical control devices for household and similar purposes.

The colour requirements of indicator lights, pushbuttons, etc., are found in IEC Publication 73 and also in Publication 2 of the International Commission of Illumination (CIE).

1.2 Object

The object of this section is to state:

- 1) The characteristics of control circuit devices.
- 2) The electrical and mechanical requirements with respect to:
 - a) The various duties to be performed.
 - b) The significance of the rated characteristics and of the markings.
 - c) The tests to verify the rated characteristics.
- 3) The functional requirements to be satisfied by the control circuit devices with respect to:
 - a) Environmental conditions, including those of enclosed equipment.
 - b) Dielectric properties.
 - c) Terminals.

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Clause 2 of Part 1 applies with the following additions listed in Sub-clauses 2.1 to 2.4 inclusive.

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2.1 Basic definitions

2.1.1 Control circuit device

An electrical device intended for the controlling, signalling, interlocking, etc., of switchgear and controlgear.

Note. – Control circuit devices may include associated devices dealt with in other standards, such as instruments, potentiometers, relays, in so far as associated devices are used for the purposes specified above.

2.1.2 Control switch (for control and auxiliary circuits)

A mechanical switching device which serves the purpose of controlling the operation of switchgear or controlgear, including signalling, electrical interlocking, etc.

Notes 1. – A control switch consists of one or more contact elements with a common actuating system.

2. – This definition differs from IEC 441-14-46 since a control switch may include semiconductor elements or contact elements (see Sub-clauses 2.3.2 and 2.3.3).

2.1.3 Control switch suitable for isolation

A control switch which, in the open position, complies with the requirements specified for the isolating function (see Sub-clauses 2.1.19 and 7.2.3.1 *b*) of Part 1).

Note. – Such control switches are intended to provide a higher degree of safety to personnel when working on the equipment controlled. For this reason, they have to be manually actuated relying on the intelligence of instructed persons to react in case they would fail to operate, e.g. in case of insufficiently opened contacts.

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2.1.4 Control station (IEV 441-12-08)

An assembly of one or more control switches fixed on the same panel or located in the same enclosure.

Note. – A control station panel or enclosure may also contain related equipment, e.g. potentiometers, signal lamps, instruments, etc.

2.2 Control switches

2.2.1 Automatic control switches

Note. – Automatic control switches are operated by automatic control (see Sub-clause 2.4.5 of Part 1). They are also designated as *pilot switches* (see Sub-clause 2.2.18 of Part 1).

2.2.1.1 Instantaneous contactor relay (IEV 441-14-36)

A contactor relay operating without any intentional time delay.

Note. – Unless otherwise stated, a contactor relay is an instantaneous contactor relay.