

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Electromechanical contactors for household and similar purposes**

**Contacteurs électromécaniques pour usages domestiques et analogues**



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**Electromechanical contactors for household and similar purposes**

**Contacteurs électromécaniques pour usages domestiques et analogues**

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ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTROMECHANICAL CONTACTORS  
FOR HOUSEHOLD AND SIMILAR PURPOSES**

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International Standard IEC 61095 has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear in conjunction with subcommittee 23E: Circuit-breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 1992 and its Amendment 1 (2000), and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- deletion of switching overvoltages requirements,
- addition of a new utilization category AC-7c: switching of compensated electric discharge lamp control,
- measuring of  $U_{imp}$  required, but the marking is not required if  $U_{imp}$  equal to 4 kV,
- improvement regarding marking concerning direction of movement,
- improvement of dielectric properties,
- test of resistance to humidity referred to IEC 60068-2-78 instead of IEC 60068-2-3,



- amendment to Table B.1 regarding test sequences,
- deletion of Table F.2 regarding the correspondence between the nominal voltage of the supply system and the contactor rated impulse withstand voltage,
- addition of a new Annex H (normative): degrees of protection of enclosed contactor,
- addition of a new Annex I (normative): requirements and tests for equipment with protective separation.

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

FDIS	Report on voting
17B/1640/FDIS	17B/1652/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.

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

This International Standard gives requirements for contactors household and similar purposes, including contactors for distribution control in buildings.

Contactors for such purposes have particular requirements which include test sequences and sampling plans to facilitate testing.

Contactors according to this standard are limited in the range of operational currents and operational voltages to values appropriate to the applications. Such contactors are for use in circuits of limited prospective short-circuit fault current for which they need to be co-ordinated with an appropriate short-circuit protective device to provide suitable co-ordination.

This standard defines in a single document the specific utilization category for a described application and states the relevant requirements. As far as possible, it is in line with the requirements contained in IEC 60947-4-1 "Electromechanical contactors and motor-starters".

This standard also applies to contactors which are components of an appliance, unless otherwise stated in the standard covering the relevant appliance.

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## ELECTROMECHANICAL CONTACTORS FOR HOUSEHOLD AND SIMILAR PURPOSES

### 1 Scope

This International Standard applies to electromechanical air break contactors for household and similar purposes provided with main contacts intended to be connected to circuits the rated voltage of which does not exceed 440 V a.c. (between phases) with rated operational currents less than or equal to 63 A for utilization category AC-7a and 32 A for utilization categories AC-7b and AC-7c, and rated conditional short-circuit current less than or equal to 6 kA.

The contactors dealt with in this standard are not normally designed to interrupt short-circuit currents. Therefore, suitable short-circuit protection (see 9.3.4) shall form part of the installation.

This standard does not apply to

- contactors complying with IEC 60947-4-1;
- semiconductor contactors;
- contactors designed for special applications;
- auxiliary contacts of contactors. These are dealt with in IEC 60947-5-1.

This standard states

- 1) the characteristics of contactors.
- 2) the conditions with which contactors shall comply with reference to:
  - a) their operation and behaviour;
  - b) their dielectric properties;
  - c) the degrees of protection provided by their enclosures, where applicable;
  - d) their construction;
  - e) their electromagnetic compatibility characteristics.
- 3) the tests intended for confirming that these conditions have been met, and the methods to be adopted for these tests.
- 4) the test sequences and the number of samples.
- 5) the information to be given with contactors or in the manufacturer's literature.

### 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 60028:1925, *International standard of resistance for copper*

IEC 60050-151:2001, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Chapter 441: Switchgear, controlgear and fuses*  
Amendment 1 (2000)

IEC 60050-604:1987, *International Electrotechnical Vocabulary (IEV) – Chapter 604: Generation, transmission and distribution of electricity – Operation*  
Amendment 1 (1998)

IEC 60050-826:2004, *International Electrotechnical Vocabulary (IEV) – Part 826: Electrical installations*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60073:2002, *Basic and safety principles for man-machine interface, marking and identification – Coding principles for indicators and actuators*

IEC 60085:2007, *Electrical insulation – Thermal evaluation and designation*

IEC 60099-1:1991, *Surge arresters – Part 1: Non-linear resistor type gapped surge arresters for a.c. systems*  
Amendment 1 (1999)

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60216 (all parts), *Electrical insulating materials – Properties of thermal endurance*

IEC 60364-4-44:2007, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60417-DB: 2007<sup>1</sup>, *Graphical symbols for use on equipment*

IEC 60445:2006, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals and conductor terminations*

IEC 60447:2004, *Basic and safety principles for man-machine interface, marking and identification – Actuating principles*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*  
Amendment 1 (1999)

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-10:2000, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-11-10:1999, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*  
Amendment 1 (2003)

IEC 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*

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<sup>1</sup> “DB” refers to the IEC on-line database.

IEC 60947-4-1:2000, *Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters*  
Amendment 1 (2002)  
Amendment 2 (2005)

IEC 60947-5-1:2003, *Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

IEC 61140:2001, *Protection against electric shock – Common aspects for installation and equipment*  
Amendment 1 (2004)

IEC 61180 (all parts), *High-voltage test techniques for low-voltage equipment*

ISO 7000:2004, *Graphical symbols for use on equipment – Index and synopsis*

ISO 2039-2:1987, *Plastics – Determination of hardness – Part 2: Rockwell hardness*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1 General terms

##### 3.1.1

##### **over-current**

current exceeding the rated current

[IEV 441-11-06]

##### 3.1.2

##### **short-circuit**

accidental or intentional conductive path between two or more conductive parts forcing the electric potential differences between these conductive parts to be equal to or close to zero

[IEV 151-12-04]

##### 3.1.3

##### **short-circuit current**

over-current resulting from a short circuit due to a fault or an incorrect connection in an electric circuit

[IEV 441-11-07]

##### 3.1.4

##### **overload**

operating conditions in an electrically undamaged circuit which cause an over-current

[IEV 441-11-08]

##### 3.1.5

##### **overload current**

over-current occurring in an electrically undamaged circuit