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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electromechanical contactors for household and similar purposes

Contacteurs électromécaniques pour usages domestiques et analogues





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COMMISSION

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CONTENTS

FOREWORD	6
INTRODUCTION	8
1 Scope	9
2 Normative references	9
3 Terms and definitions	11
3.1 General terms	11
3.2 Switching devices	13
3.3 Parts of switching devices	15
3.4 Operation of switching devices	18
3.5 Characteristic quantities	19
4 Classification	24
5 Characteristics of contactors	24
5.1 Summary of characteristics	24
5.2 Type of contactor	24
5.2.1 Number of poles	24
5.2.2 Method of control	24
5.3 Rated and limiting values for main circuits	24
5.3.1 General	24
5.3.2 Rated voltages	24
5.3.3 Currents or powers	25
5.3.4 Rated frequency	26
5.3.5 Rated duties	26
5.3.6 Normal load and overload characteristics	27
5.3.7 Rated conditional short-circuit current	28
5.4 Utilization category	28
5.4.1 General	28
5.4.2 Assignment of utilization categories based on the results of tests	28
5.5 Control circuits	29
5.6 Auxiliary circuits	29
5.7 Co-ordination with short-circuit protective devices	29
6 Product information	29
6.1 Nature of information	29
6.1.1 Identification	29
6.1.2 Characteristics, basic rated values and utilization	30
6.2 Marking	30
6.3 Instructions for installation, operation and maintenance	31
7 Normal service, mounting and transport conditions	31
7.1 Normal service conditions	31
7.1.1 Ambient air temperature	31
7.1.2 Altitude	32
7.1.3 Atmospheric conditions	32
7.1.4 Normal electromagnetic environmental conditions	33
7.2 Conditions during transport and storage	33
7.3 Mounting	33
8 Constructional and performance requirements	33
8.1 Constructional requirements	33

8.1.1	General	33
8.1.2	Materials	33
8.1.3	Strength of screws or nuts other than those on terminals which are intended to be operated during installation or maintenance	34
8.1.4	Vacant.....	35
8.1.5	Actuator.....	35
8.1.6	Indication of the OFF and ON positions	35
8.1.7	Terminals	36
8.1.8	Additional requirements for contactors provided with a neutral pole.....	37
8.1.9	Provisions for earthing.....	37
8.1.10	Enclosures	38
8.1.11	Degrees of protection of enclosed contactors	39
8.1.12	Resistance to impact	39
8.1.13	Durability of markings	39
8.2	Performance requirements	40
8.2.1	Operating conditions.....	40
8.2.2	Temperature-rise.....	40
8.2.3	Dielectric properties.....	43
8.2.4	Normal load and overload performance requirements	45
8.2.5	Co-ordination with short-circuit protective devices	47
8.3	Electromagnetic compatibility	47
8.3.1	Immunity	47
8.3.2	Emission	47
9	Tests	48
9.1	Types of test	48
9.1.1	General	48
9.1.2	Type tests	48
9.1.3	Routine tests	48
9.1.4	Sampling tests for clearance verification.....	49
9.2	Compliance with constructional requirements	49
9.2.1	General	49
9.2.2	Materials	49
9.2.3	Test on screws or nuts other than those on terminals which are intended to be operated during installation or maintenance	52
9.2.4	Verification of the degrees of protection of enclosed contactors.....	52
9.2.5	Mechanical properties of terminals	52
9.2.6	Test of resistance to impact.....	55
9.2.7	Test of durability of marking	57
9.3	Compliance with performance requirements	58
9.3.1	Test sequences	58
9.3.2	General test conditions	58
9.3.3	Performance under no load, normal load and overload conditions	60
9.3.4	Performance under short-circuit conditions	71
9.3.5	Overload current withstand capability	76
9.3.6	Routine tests	76
Annex A (normative)	Terminal marking and distinctive number	95
Annex B (normative)	Test sequences and number of samples	100
Annex C (normative)	Description of a method for adjusting the load circuit	102
Annex D (normative)	Determination of short-circuit power-factor.....	104

Annex E (normative) Measurement of creepage distances and clearances	106
Annex F (normative) Correlation between the nominal voltage of the supply system and the rated impulse withstand voltage of a contactor	111
Annex G (normative) Hot wire ignition test	113
Annex H (normative) Degrees of protection of enclosed contactor	115
Annex I (normative) Requirements and tests for equipment with protective separation.....	122
Figure 1 – Thread-forming tapping screw	77
Figure 2 – Thread-cutting tapping screw	77
Figure 3 – Ball-pressure test apparatus (see 9.2.2.3.1)	77
Figure 4 – Test equipment for flexion test (see 9.2.5.3)	78
Figure 5 – Gauges of form A and form B (see 9.2.5.5)	78
Figure 6 – Pendulum for mechanical impact test apparatus (striking element) (see 9.2.6.2.1)	79
Figure 7 – Mounting support for sample, for mechanical impact test (see 9.2.6.2.1)	80
Figure 8 – Pendulum hammer test apparatus (see 9.2.6.2.1)	81
Figure 9 – Sphere test apparatus (see 9.2.6.2.2)	81
Figure 10 – Jointed test finger (according to IEC 60529).....	82
Figure 11 – Diagram of the test circuit for the verification of making and breaking capacities of a single-pole contactor on single-phase a.c.....	83
Figure 12 – Diagram of the test circuit for the verification of making and breaking capacities of a two-pole contactor on single-phase a.c.....	84
Figure 13 – Diagram of the test circuit for the verification of making and breaking capacities of a three-pole contactor	85
Figure 14 – Diagram of the test circuit for the verification of making and breaking capacities of a four-pole contactor	86
Figure 15 – Schematic illustration of the recovery voltage across contacts of the first phase to clear (see 9.3.3.5.2, e)) under ideal conditions	87
Figure 16 – Diagram of a load circuit adjustment method	88
Figure 17 – Diagram of the test circuit for the verification of short-circuit making and breaking capacities of a single-pole contactor on single-phase a.c	89
Figure 18 – Diagram of the test circuit for the verification of short-circuit making and breaking capacities of a two-pole contactor on single-phase a.c	90
Figure 19 – Diagram of the test circuit for the verification of short-circuit making and breaking capacities of a three-pole contactor	91
Figure 20 – Diagram of the test circuit for the verification of short-circuit making and breaking capacities of a four-pole contactor	92
Figure 21 – Example of short-circuit making and breaking test record in the case of a single-pole contactor on single-phase a.c	93
Figure 22 – Diagram of the test circuit for making and breaking verification for utilization category AC-7c	94
Figure C.1 – Determination of the actual value of the factor γ	103
Figure E.1 – Measurement of ribs	106
Figure E.2 – Creepage distance example 1.....	107
Figure E.3 – Creepage distance example 2.....	107
Figure E.4 – Creepage distance example 3.....	107
Figure E.5 – Creepage distance example 4.....	108

Figure E.6 – Creepage distance example 5.....	108
Figure E.7 – Creepage distance example 6.....	108
Figure E.8 – Creepage distance example 7	109
Figure E.9 – Creepage distance example 8.....	109
Figure E.10 – Creepage distance example 9.....	109
Figure E.11 – Creepage distance example 10.....	110
Figure E.12 – Creepage distance example 11.....	110
Figure G.1 – Test fixture for hot wire ignition test.....	113
Figure H.1 – IP Codes	119
Figure I.1 – Example of application with component connected between separated circuits.....	126
 Table 1 – Utilization categories	29
Table 2 – Standard cross-sections of round copper conductors.....	37
Table 3 – Temperature-rise limits for insulated coils in air.....	40
Table 4 – Temperature-rise limits of terminals	41
Table 5 – Temperature-rise limits of accessible parts.....	41
Table 6 – Intermittent duty test cycle data.....	42
Table 7 – Making and breaking capacities. Making and breaking conditions corresponding to the utilization categories	45
Table 8 – Relationship between current broken I_c and off-time for the verification of rated making and breaking capacities	46
Table 9 – Conventional operational performance. Making and breaking conditions corresponding to the utilization categories	46
Table 10 – Overload current withstand requirements	47
Table 11 – Tightening torques for the verification of the mechanical strength of screw-type terminals	53
Table 12 – Test values for flexion and pull-out tests for round copper conductors	54
Table 13 – Maximum conductor cross-sections and corresponding gauges	55
Table 14 – Tolerances on test quantities	59
Table 15 – Test copper conductors	62
Table 16 – Impulse test voltages and corresponding altitudes.....	66
Table 17 – Minimum clearances in air.....	67
Table 18 – Minimum creepage distances	67
Table 19 – Dielectric test voltage corresponding to the rated insulation voltage	68
Table 20 – Values of power-factors corresponding to test currents and ratio n between peak and r.m.s. values of current.....	73
Table 21 – Value of the prospective test current according to the rated operational current.....	75
Table B.1 – Test sequences.....	100
Table B.2 – Number of samples to be tested.....	101
Table F.1 – Correspondence between the nominal voltage of the supply system and the contactor rated impulse withstand voltage, in case of over-voltage protection by surge-arresters according to IEC 60099-1	112

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTROMECHANICAL CONTACTORS FOR HOUSEHOLD AND SIMILAR PURPOSES

FOREWORD

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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.

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: 2007¹, *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*

¹ “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