



SLOVENSKI STANDARD
oSIST prEN IEC 61810-7-4:2023
01-september-2023

Električni releji - Preskusi in meritve - 7-4. del: Preskus dielektrične trdnosti

Electrical relays - Tests and Measurements - Part 7-4: Dielectric strength test

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Ta slovenski standard je istoveten z: prEN IEC 61810-7-4:2023

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COMMITTEE DRAFT FOR VOTE (CDV)

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DATE OF CIRCULATION: 2023-07-07	CLOSING DATE FOR VOTING: 2023-09-29
SUPERSEDES DOCUMENTS: 94/838/CD, 94/866/CC	

IEC TC 94 : ELECTRICAL RELAYS	
SECRETARIAT: Austria	SECRETARY: Mr Bernhard Spalt
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 121, SC 121A	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p>Attention IEC-CENELEC parallel voting</p> <p>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>https://standards.iteh.ai/catalog/standards/sist/d933c0bc-f133-4112-a382-pr-en-iec-61810-7-4-2023</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

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Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Electrical relays - Tests and Measurements Part 7-4: Dielectric strength test

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Electrical Relays –
Tests and measurements**
Part 7-4: Dielectric strength test**FOREWORD**

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The International Standards of the IEC 61810 have been prepared by IEC technical committee 94: All-or-nothing electrical relays.

The text of this International Standard is based on the following documents:

CD	CC
94/838/CD	94/866/CC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 61810 series, published under the general title *Electromechanical elementary relays*, can be found on the IEC website.

65 This International Standard is to be used in conjunction with IEC 61810-1:2015.

66 The committee has decided that the contents of this document will remain unchanged until the
67 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
68 the specific document. At this date, the document will be

- 69 • reconfirmed,
- 70 • withdrawn,
- 71 • replaced by a revised edition, or
- 72 • amended.

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Electrical Relays – Tests and measurements

Part 7-4: Dielectric strength test

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82 **1 Scope**

83 This part of IEC 61810-7 is used for testing along with the appropriate severities and conditions
84 for measurements and tests designed to assess the ability of specimens to perform under
85 expected conditions of transportation, storage and all aspects of operational use.

86 The object of this test is to define a standard test method for the dielectric strength test.

87 **2 Normative references**

88 The following documents are referred to in the text in such a way that some or all of their content
89 constitutes requirements of this document. For dated references, only the edition cited applies.
90 For undated references, the latest edition of the referenced document (including any
91 amendments) applies.

92 IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at
93 <http://www.electropedia.org>)

94 IEC 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test
95 requirements*

96 IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

97 IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

98 IEC 60364-4-44; *Low-voltage electrical installations - Part 4-44: Protection for safety -
99 Protection against voltage disturbances and electromagnetic disturbances*

100 IEC 60068-2-67:1995, *Environmental testing – Part 2: Tests – Test Cy: Damp heat, steady*

101 IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and
102 procedure requirements, test equipment*

103 IEC 61810-1, *Electromechanical elementary relays – Part 1: General and safety requirements*

104 IEC 61810-7-0, *All-or-nothing electrical relays – Tests and Measurements – Part 7-0: Testing
105 general*

106 **3 Terms and definitions**

107 Clause 3 of IEC 61810-7-0 is applicable.

108 **3.1 Terms and definitions related to general terms**

109 **3.1.2**

110 **breakdown voltage**

111 Voltage at which electric breakdown occurs under specified test conditions, or in use

112 [SOURCE: IEC 60050-212:1992, 212-11-34]

113 **3.1.3**

114 **breakdown time**

115 Time until the breakdown occurs, measured from starting time of applying the test voltage.

116 NOTE For more than one sample it is recommended to handle each sample separate

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118 4 Test procedures

119 4.1 Purpose

120 To ensure that the withstand capability of the insulation between specific circuits of the relay or
121 across open contact(s) is sufficient.

122 4.2 Procedure

123 4.2.1 Pre-Conditioning

124 If prescribed, a relay in the new condition shall be subjected to the following preconditioning,
125 unless other procedures and values are specified:

126 The preconditioning comprises the tests “dry heat” according IEC 60068-2-2:2007 and “damp
127 heat” according IEC 60068-2-67:1995.

128 The test dry heat is carried out in a heat chamber. The air temperature is maintained at 55 °C
129 with an accuracy of ± 2 K in the area where the specimens are mounted. The specimens are
130 kept in the chamber for 48 h.

131 The test damp heat is carried out in a climatic test cabinet at a relative humidity between 91 %
132 and 95 %. The air temperature shall be maintained at 25 °C with an accuracy of ± 5 K in the
133 area where the specimens are mounted. The specimens are kept in the chamber for 48 h. There
134 shall be no condensation.

135 4.2.2 Procedure

136 The dielectric strength shall be started immediately after the preconditioning and finished
137 without unnecessary delay. The test voltage specified for a circuit shall be applied to the
138 respective relay terminals. The a.c. test voltage shall be of sinusoidal waveform having a
139 frequency of 50 Hz or 60 Hz and may be substituted by a d.c. test voltage of a value equal to
140 the peak value of the a.c. test voltage. Unless otherwise specified, the test voltage is applied
141 for 1 min across the insulation or disconnection.

142 An application time of 1 s is permissible, provided the test voltage value is increased to 110 %
143 of the rated value. For even shorter periods, the manufacturer shall evaluate an appropriate
144 value ensuring the same level of dielectric withstand capability. No flashover or breakdown shall
145 occur. A current of not more than 3 mA is permitted.

146 Special components which might render the test impractical such as light emitting diodes, free-
147 wheeling diodes, varistors are disconnected at one pole, or bridged, or removed, as appropriate
148 to the insulation being tested.

149 Dielectric strength test equipment and voltage shall be in line with Annex A.

150 The test procedure shall be carried out at reference ambient conditions according table 2 of
151 IEC 61810-7-0.

152 4.3 Conditions to be specified

153 The conditions to be specified are the following:

- 154 a) terminals to which the test voltage shall be applied, selected from the following:
- 155 • terminals of each contact circuit; break contacts shall be opened for this test,
 - 156 • all terminals requiring the same test voltage connected and any exposed conductive part
157 not intended to be electrically connected, the latter being simulated by a foil wrapped
158 around relays having an insulating enclosure,

- 159 • terminals of separate windings (bifilar or not),
160 • all coil terminals requiring the same test voltage connected and all contact circuit
161 terminals connected together,
162 • terminals of separate contact circuits;
- 163 b) test voltage or voltages;
164 c) duration of the test: 1 s or 1 min;
165 d) reductions for repetition tests, for example for final measurement after an endurance test.
166 Reductions shall be specified together with such tests;
167 e) details of the preconditioning, if prescribed;
168 f) The time to complete the test shall be indicated in the test report.

169 **5 Evaluation**

170 No flashover or breakdown shall occur.

171 The test report must state the conditions and the values which confirm or not confirm the
172 requirements.

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