SLOVENSKI STANDARD
oSIST prEN IEC 61810-7-20:2023

01-september-2023

Električni releji - Preskusi in meritve -7-20. del: Mehanska življenska doba

Electrical relays - Tests and Measurements - Part 7-20: Mechanical endurance

Ta slovenski standard je istoveten z: **prEN IEC 61810-7-20:2023**

ICS:

29.120.70 Releji Relays

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94/881/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 61810-7-20 ED1	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2023-07-07	**2023-09-29**
SUPERSEDES DOCUMENTS:	
94/788/CD, 94/867/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: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

Electrical relays – Tests and Measurements - Part 7-20: Mechanical endurance

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Electrical relays – Tests and measurements

Part 7-20: Mechanical endurance

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
94/788/CD	94/867/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.

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

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

67 • reconfirmed,
68 • withdrawn,
69 • replaced by a revised edition, or
70 • amended.

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Electrical relays – Tests and measurements

Part 7-20: Mechanical endurance

1 Scope

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

The object of this test is to define a standard test method for mechanical endurance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 61810-1:2015, *Electromechanical elementary relays – Part 1: General and safety requirements*

IEC 61810-7-0, *Electrical relays – Tests and Measurements – Part 7-0: Testing – General and Guidance*

IEC 61810-7-6, *Electrical relays – Tests and Measurements – Part 7-6: Contact-circuit resistance (or voltage drop)*

IEC 61810-7-7, *Electrical relays – Tests and Measurements – Part 7-7: Functional tests*

IEC 61810-7-45, *Electrical relays – Tests and Measurements – Part 7-45: Maximum frequency of operation*

101 **3 IEC 61810-7-**

102 **3 Term of definition**

103 For the purpose of this document, the terms and definitions given in Clause 3 of
104 EC 61810-7-0 apply.

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4 Test procedure

4.1 Purpose

To assess the mechanical performance of relays under specified energization conditions over an extended number of cycles.

NOTE The mechanical endurance has no linkage to any electrical endurance. However, any performed electrical endurance could be be assests as an mechanical endurance.

4.2 Procedure

The relay shall be energized with the rated coil voltage or an appropriate value within the rated coil voltage range or operative range and the test shall be conducted at ambient room temperature or as otherwise specified.

Unless otherwise specified, the mechanical endurance shall be performed with nominal coil voltage.

For alternate current coil driven relays - the switching action shall not be synchronous with the source of the monitoring circuit. The frequency of operation shall be as specified; the relay shall attain both - the operate and release/reset condition - within one cycle.

4.2.1 Method 1: Continuous checking

4.2.1.1 With monitoring contact load

The mechanical operation of the relay shall be monitored electrically, using a contact load as specified. The contact load chosen shall ensure reliable monitoring of the performed cycles, while not causing a level of wear of the contact points that might devalue the test.

It is permitted all contacts of the same type of the relay permitted to be connected in parallel or as specifies by standards or the manufacturer.

NOTE The single contact monitoring will gain possible more information for product development reason and is up to the manufacturer.

4.2.1.2 With other monitoring

The usage of other monitoring methods like using the coil current curve or sensors is permitted. The reliable monitoring of the performed cycle shall be ensured.

4.2.2 Method 2: Intermediate checking

After each 20 % of the mechanical endurance specified, intermediate measurements shall be made as specified by the manufacturer.

4.3 Conditions to be specified

In general, valid are the influence quantities in accordance to IEC 61810-7-0, 202X, Clause 4.4.

The conditions to be specified are the following:

a) method 1 or 2;
b) mounting conditions;
c) energization value;
d) ambient conditions;
e) total number of cycles or test duration for each contact and number of contacts to be tested simultaneously or not;

f) number of cycles per hour and duty factor;

g) monitoring voltage and current, if applicable;

h) Contact configuration in case of multipole relays;

5 Evaluation

5.1.1 Number of cycles

5.1.1.1 Method 1: Continuous checking

At any time during the test, the accumulated number of malfunctions shall not exceed 0,1% of the number of cycles performed until this time, or a percentage specified by the manufacturer or defined in a detailed specification

5.1.1.2 Method 2: Intermediate checking

The measured intermediate parameters shall in accordance to IEC 61810-7-6 and IEC 61810-7-7 within the limits defined by the manufacturer product specification at any intermediate checking during the endurance test

5.1.2 Visual inspection

Subsequently for all relays a visual inspection shall verify the mechanical integrity of the relays. For this purpose, it may be necessary to open the relays. Parts which are necessary for the proper function of the relay, or any safety related parts, which are loose and/or broken shall be considered a failure.

NOTE Safety related are defined as parts to ensure creepages and clearances as well protection against electrical shock and requirement on solid insulation.

5.1.3 Final measurement

Any other measurement, if required or specified.