# SLOVENSKI STANDARD
# oSIST prEN IEC 61810-4:2020

**01-marec-2020**

**Elektromehanski osnovni releji - 4. del: Reed-releji - Splošne in varnostne zahteve**

Electromechanical elementary relays - Part 4: Reed relays - General and safety requirements



**Ta slovenski standard je istoveten z:** **prEN IEC 61810-4:2020**



**ICS:**

29.120.70 Releji Relays

**oSIST prEN IEC 61810-4:2020** **en**

# 94/464/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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| PROJECT NUMBER: **IEC 61810-4 ED1** | |
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|---|---|
| IEC TC 94 : ALL-OR-NOTHING ELECTRICAL RELAYS | |
| SECRETARIAT: Austria | SECRETARY: Mr Bernhard Spalt |
| OF INTEREST TO THE FOLLOWING COMMITTEES: TC 9,TC 31,TC 44,TC 45,TC 56,TC 59,TC 61,TC 62,TC 65,TC 79,TC 82 | 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 | |
| ☒ SUBMITTED FOR CENELEC PARALLEL VOTING | ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING |
| **Attention IEC-CENELEC parallel voting** 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. The CENELEC members are invited to vote through the CENELEC online voting system. | |



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TITLE:

**Electromechanical elementary relays – Part 4: Reed relays – General and safety requirements**

PROPOSED STABILITY DATE: 2022

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# ELECTROMECHANICAL ELEMENTARY RELAYS –

# Part 4: Reed relays – General and safety requirements

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International Standard IEC 61810-4 has 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 |
|---|---|
| 94/459/CD | 94/463/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 and IEC 62246 series, published under the general title *Electromechanical elementary relays and Reed switches,* can be found on the IEC website.

This International Standard is to be used in conjunction with IEC 61810-1, IEC 61810-2, IEC 61810-2-1, IEC 61810-7, IEC 62246-1 and IEC 62246-1-1.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this document the stability date is XX-202X

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

# INTRODUCTION

Reed relays have been used in wide fields such as household and similar appliances, security control systems for appliances, measuring instruments, medical equipment, semiconductor and chip test equipment, information and communication equipment, power distribution facilities and transit vehicles, etc.

This part of IEC 61810 series provides technical deviations/additions to the part 1 in order to specify a general and safety requirements for reed relays from the relevant system and component safety standards.

The reed switches are used as the switching contacts of the reed relays, all requirements for reed contacts (reed switches) within the reed relay are conjunction with IEC 62246-series.

# ELECTROMECHANICAL ELEMENTARY RELAYS –

# Part 4: Reed relays – General and safety requirements

## 1 Scope

This part of IEC 61810 applies to electromechanical elementary relays with reed switches (reed contacts) incorporation into general control circuits. It defines the basic functional and safety requirements in all areas of electrical engineering or electronics accordance with the parts of IEC 61810 series and IEC 62246 series.

This document defines technical deviations/additions to the Part 1. It specifies type tests, routine tests, special tests and environmental tests to confirm the service conditions for applications.

Note: the terms reed switch(es) and reed contact(s) are both in use for the description of the contact set in reed relays.

## 2 Normative references

The following documents are referred 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 60068-2-17:1994, *Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing*

IEC 61810-1:2015, *Electromechanical elementary relays – Part 1: General and safety requirements*

IEC 61810-2:2017, *Electromechanical elementary relays – Part 2: Reliability*

IEC 61810-2-1:2017, *Electromechanical elementary relays – Part 2-1: Reliability – Procedure for the verification of $B_{10}$ values*

IEC 61810-7:2006, *Electromechanical elementary relays – Part 7: Test and measurement procedures*

IEC 61810-10:2019, *Electromechanical elementary relays – Part 10: Additional functional aspects and safety requirements for high-capacity relays*

IEC 62246-1:2015, *Reed switches – Part 1: Generic specification*

IEC 62246-1-1:2018, *Reed switches – Part 1-1: Generic specification – Blank detail specification*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61810-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

### 3.2 Terms and definitions of relay types

*Addition to IEC 61810-1:2015:*

**3.2.10**
**reed relay**
electromechanical control circuit devices with connecting terminals, consisting of reed switch sets (reed contact sets) and coil fitting with/without a housing which could be plastic or metal

Note 1 to entry: see Figure A.2

[SOURCE: IEC 60050-444:2010, 444-01-04, modified – "reed relay" has been added in the term and Note 1 to entry has been added.]

## 3.4 Terms and definitions of operating values

*Addition to IEC 61810-1:2015:*

**3.4.8**
**magnetic interference**
tendency of a relay to be influenced by the magnetic field from an adjacent energized relay or any other surrounding solenoid

Note 1 to entry: this influence can result in depression or elevation of the operate and release voltage of the affected relay, possibly causing them to fall outside their specification

Note 2 to entry: magnetic interference can be minimized by alternating the polarity of adjacent relay coils, by magnetic shielding, or by placing two relays at right angles to each other.

## 3.5 Terms and definitions related to contacts

*Addition to IEC 61810-1:2015:*



**3.5.23**
**frequency range, <of a relay>**
set of frequencies over which an equipment can be adjusted to operate satisfactorily

Note 1 to entry: the frequency range of a relay can be subdivided into switched subranges which may or may not be contiguous.

[SOURCE: IEC 60050-702:1992, 702-09-68, modified – "an equipment " has been replace with "a relay" in the "Note 1 to entry"]



**3.5.24**
**capacitance, <between open contacts>**
ability to store an electric charge between contacts

[SOURCE: IEC 60050-131:2002, 131-12-13, modified – definition has been replaced with "ability to store an electric charge between contact"]

**3.5.25**
**capacitance, <between coil and contacts>**
ability to store an electric charge between contact and coil

Note 1 to entry: it may have adverse effects for use in high frequency signal transmission circuits of information and communication equipment

[SOURCE: IEC 60050-131:2002, 131-12-13, modified – definition has been replaced with "ability to store an electric charge between contact and coil"]

**3.5.26**
**Impedance, <of a relay>**
quotient of a voltage by a current for a passive linear two-terminal element or two-terminal circuit with terminals A and B under sinusoidal conditions

[SOURCE: IEC 60050-131:2002, 131-12-43, modified – definition has been replaced]

**3.5.27**
**isolation, <of a relay>**
ratio of the power delivered to the output port of a relay, with open contacts, at a specific frequency, compared to the power emitted from the corresponding output port

**3.5.28**
**insertion loss, <of a relay>**
resulting from the insertion of a network into a transmission system, the ratio of the power delivered to that part of the system following the network, before insertion of the network, to the power delivered to that same part after insertion of the network

Note1 to entry: the insertion loss is generally expressed in decibels.

[SOURCE: IEC 60050-726:1982, 726-06-07]

**3.5.29**
**return loss, <of a relay>**
modulus of the reciprocal of the reflection factor, generally expressed in decibels

Note1 to entry: when impedances can be defined, the return loss is given by the formula:

$$-20\lg|r| = 20\lg\left|\frac{\underline{Z}-\underline{Z}'}{\underline{Z}+\underline{Z}'}\right|$$

where $\underline{Z}$ is the characteristic impedance of a transmission line ahead of a discontinuity, or the impedance of a source, and $\underline{Z}'$ is the impedance after the discontinuity or the load impedance seen from the junction between the source and the load

[SOURCE: IEC 60050-702:1992, 702-07-25]

**3.5.30**
**repeatability, <of results of measurements>**
closeness of agreement between the results of successive measurements of the same measurand, carried out under the same conditions of measurement, i.e.:

– by the same measurement procedure;

– by the same observer;

– with the same measuring instruments, used under the same conditions;

– in the same laboratory;

– at relatively short intervals of time.

[SOURCE: IEC 60050-311:2001, 311-06-06, the Note has been omitted.]



## 4 Influence quantities

Clause 4 of IEC 61810-1 is applicable.

## 5 Rated values

Clause 5 of IEC 61810-1 is applicable with the following deviations/additions.

### 5.2 Rated coil voltage/rated coil voltage range

b) DC voltage, recommended values:

15 V; 32 V; 36 V; 50 V; 55 V; 64 V; 72 V; 87 V; 96 V.

### 5.6 Electrical endurance

Recommended number of cycles: 5 000; 10 000; 20 000; 50 000

$1 \times 10^5$; $2 \times 10^5$; $1 \times 10^6$; $2 \times 10^6$; $5 \times 10^6$; $1 \times 10^7$; $2 \times 10^7$; $5 \times 10^7$; $1 \times 10^8$; $2 \times 10^8$; $5 \times 10^8$; $1 \times 10^9$; $1 \times 10^{10}$

### 5.8 Contact loads

a) Resistive loads, recommended values