

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

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COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 61810-4 ED1	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2020-01-17	2020-04-10
SUPERSEDES DOCUMENTS:	
94/459/CD,94/463/CC	

IEC TC 94 : All-or-nothing electrical relays			
SECRETARIAT:	SECRETARY:		
Austria	Mr Bernhard Spalt		
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD:		
TC 9,TC 31,TC 44,TC 45,TC 56,TC 59,TC 61,TC 62,TC 65,TC 79,TC 82			
	Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.		
FUNCTIONS CONCERNED:	QUALITY ASSURANCE		
SUBMITTED FOR CENELEC PARALLEL VOTING	NOT SUBMITTED FOR CENELEC PARALLEL VOTING		
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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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69	INTERN	ATIONAL ELECTRO	TECHNICAL C	OMMISSION
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71 72	ELEC		ELEMENTARY	RELAYS -
73 74	Part 4: R	eed relays – Genei	ral and safety i	requirements
75 76		FORE	WORD	
77 78 79 80 81 82 83 84 85	 The International Electrot all national electrotechnic co-operation on all quest in addition to other activiti Publicly Available Speci preparation is entrusted to may participate in this pre with the IEC also particip Standardization (ISO) in a 	echnical Commission (IEC) i cal committees (IEC National ions concerning standardizat es, IEC publishes Internation fications (PAS) and Guides o technical committees; any I paratory work. International, ate in this preparation. IEC c accordance with conditions d	s a worldwide organiz Committees). The obje ion in the electrical ar al Standards, Technica s (hereafter referred EC National Committe governmental and non collaborates closely wi etermined by agreeme	ation for standardization comprising ect of IEC is to promote international nd electronic fields. To this end and al Specifications, Technical Reports, to as "IEC Publication(s)"). Their e interested in the subject dealt with -governmental organizations liaising th the International Organization for nt between the two organizations.
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108 109	International Standard I nothing electrical relays	EC 61810-4 has been p	prepared by IEC te	echnical committee 94: All-or-
110	The text of this Internat	ional Standard is based	on the following d	ocuments:
		CD	СС	
		94/459/CD	94/463/CC	
111 112	Full information on the v	oting for the approval o	f this International	Standard can be found in the

report on voting indicated in the above table.

114 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.

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119 120 121	The committee has decided that the con- stability date indicated on the IEC websi the specific document. At this date, the c	tents of this document ite under "http://webstc document will be	will remain unchanged until the pre.iec.ch" in the data related to
122	• reconfirmed,		
123	• withdrawn,		
124	 replaced by a revised edition, or 		
125	• amended.		
126			
127 128	The National Committees are requested 202X	I to note that for this doo	cument the stability date is XX-

129THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED130AT THE PUBLICATION STAGE.

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133

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.

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- 143 ELECTROMECHANICAL ELEMENTARY RELAYS –
- 144

Part 4: Reed relays – General and safety requirements

145 **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.

155 **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
- 162 IEC 61810-1:2015, Electromechanical elementary relays Part 1: General and safety 163 requirements
- 164 IEC 61810-2:2017, *Electromechanical elementary relays Part 2: Reliability*
- 165 IEC 61810-2-1:2017, Electromechanical elementary relays Part 2-1: Reliability Procedure 166 for the verification of B_{10} values
- 167 IEC 61810-7:2006, Electromechanical elementary relays Part 7: Test and measurement 168 procedures
- 169 IEC 61810-10:2019, *Electromechanical elementary relays Part 10: Additional functional* 170 aspects and safety requirements for high-capacity relays
- 171 IEC 62246-1:2015, *Reed switches Part 1: Generic specification*
- 172 IEC 62246-1-1:2018, *Reed switches Part 1-1: Generic specification Blank detail* 173 *specification*

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

181**3.2Terms and definitions of relay types**

182 Addition to IEC 61810-1:2015:

- 8 -

183 **3.2.10**

- 184 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
- 187 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

191 Addition to IEC 61810-1:2015:

192 **3.4.8**

193 magnetic interference

- 194 tendency of a relay to be influenced by the magnetic field from an adjacent energized relay or 195 any other surrounding solenoid
- 196 Note 1 to entry: this influence can result in depression or elevation of the operate and release voltage of the 197 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

- 201 Addition to IEC 61810-1:2015:
- 202 **3.5.23**

203 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.
- 207 [SOURCE: IEC 60050-702:1992, 702-09-68, modified "an equipment " has been replace with 208 "a relay" in the "Note 1 to entry"]

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209 **3.5.24**

210 capacitance, <between open contacts>

- ability to store an electric charge between contacts
- 212 [SOURCE: IEC 60050-131:2002, 131-12-13, modified definition has been replaced with 213 "ability to store an electric charge between contact"]

214 **3.5.25**

215 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"]

221 **3.5.26**

222 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]

226 **3.5.27**

227 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

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230 **3.5.28**

231 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

- 235 Note1 to entry: the insertion loss is generally expressed in decibels.
- 236 [SOURCE: IEC 60050-726:1982, 726-06-07]

237 **3.5.29**

238 return loss, <of a relay>

- modulus of the reciprocal of the reflection factor, generally expressed in decibels
- 240 Note1 to entry: when impedances can be defined, the return loss is given by the formula:

241
$$-20 \lg |r| = 20 \lg \left| \frac{\underline{Z} - \underline{Z'}}{\underline{Z} + \underline{Z'}} \right|$$

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

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

246 **3.5.30**

247 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.:

- 250 by the same measurement procedure;
- 251 by the same observer;
- 252 with the same measuring instruments, used under the same conditions;

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- 253 in the same laboratory; en-iec-61810-4-20
- 254 at relatively short intervals of time.
- 255 [SOURCE: IEC 60050-311:2001, 311-06-06, the Note has been omitted.]

256 4 Influence quantities

257 Clause 4 of IEC 61810-1 is applicable.

258 5 Rated values

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

260 5.2 Rated coil voltage/rated coil voltage range

- b) DC voltage, recommended values:
- 262 15 V; 32 V; 36 V; 50 V; 55 V; 64 V; 72 V; 87 V; 96 V.

263 **5.6 Electrical endurance**

- Recommended number of cycles: 5 000; 10 000; 20 000; 50 000
- 265 1×10^5 ; 2×10^5 ; 1×10^6 ; 2×10^6 ; 5×10^6 ; 1×10^7 ; 2×10^7 ; 5×10^7 ; 1×10^8 ; 2×10^8 ; 5×10^8 ; 266 1×10^9 ; 1×10^{10}

267 **5.8 Contact loads**

a) Resistive loads, recommended values