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Interested committees:

Title: BS EN IEC 63522-0 Electrical relays - Tests and Measurements

Part 0: General and Guidance

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Responsible Committee Secretary: **Committee Service Centre (BSI)**Direct tel: **020 8996 7009**E-mail: csc@bsigroup.com

Full document details: 23/30480766 DC

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



94/963/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 63522-0 ED1

DATE OF CIRCULATION:

2023-09-29

CLOSING DATE FOR COMMENTS:

2023-11-24

SUPERSEDES DOCUMENTS:

94/864/CD, 94/958/CC

IEC TC 94 : ELECTRICAL RELAYS

SECRETARIAT:

Austria

SECRETARY:

Mr Bernhard Spalt

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Electrical relays - Tests and Measurements - Part 0: General and Guidance

NOTE FROM TC/SC OFFICERS:

The project number was changed from 61810-7-0 to 63522-0 according to decision 23/04 taken at the TC 94 Plenary on September 15th 2023. See the 94/962/RM.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Electrical Relays –
Tests and measurements****Part 7-0: Testing - General and Guidance****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
94/864/CD	94/958/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.

- 108 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.
- 109 A list of all parts of IEC 61810 series, published under the general title *Electromechanical*
110 *elementary relays*, can be found on the IEC website.
- 111 This International Standard is to be used in conjunction with IEC 61810-1:2015.
- 112 The committee has decided that the contents of this document will remain unchanged until the
113 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to
114 the specific document. At this date, the document will be
- 115 • reconfirmed,
 - 116 • withdrawn,
 - 117 • replaced by a revised edition, or
 - 118 • amended.
- 119
- 120

Electrical Relays – Tests and measurements

Part 7-0: Testing – General and Guidance

1 Scope

The IEC 61810-7-X series includes a series of methods for testing along with their 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.

This part of IEC 61810-7 series specifies the general condition applying for all testing if not otherwise specified and provide general guidance to be used in conjunction with all other IEC 61810-7 parts.

Table 1 – Table of all related part 7 standards

Part	Title
IEC 61810-7-0	Testing – General and Guidance
IEC 61810-7-1	Visual inspection and check of dimensions
IEC 61810-7-2	Mechanical test and weighting
IEC 61810-7-3	Relay coil properties
IEC 61810-7-4	Dielectric strength test, impulse voltage test
IEC 61810-7-5	Insulation resistance
IEC 61810-7-6	Contact-circuit resistance (or voltage drop)
IEC 61810-7-7	Functional tests
IEC 61810-7-8	Timing Test
IEC 61810-7-9	Climatic tests sequence, damp heat steady state
IEC 61810-7-10	Heating
IEC 61810-7-11	Enclosure and IP Code (Ingress Protection Code)
IEC 61810-7-12	Internal moisture
IEC 61810-7-13	Corrosive atmospheres
IEC 61810-7-14	Mould growth
IEC 61810-7-15	Robustness of terminals
IEC 61810-7-16	Soldering
IEC 61810-7-17	Shock, Bump, Vibration, Acceleration
IEC 61810-7-18	Thermal resistance of the coil
IEC 61810-7-19	Electrical Endurance
IEC 61810-7-20	Mechanical Endurance
IEC 61810-7-21	Thermal Endurance
IEC 61810-7-22	Limiting continuous current

IEC 61810-7-24	Load transfer
IEC 61810-7-25	Magnetic interference
IEC 61810-7-26	Crosstalk and insertion loss
IEC 61810-7-27	Electrical contact noise
IEC 61810-7-28	Thermoelectric emf
IEC 61810-7-29	Capacitance
IEC 61810-7-30	Contact sticking (delayed release)
IEC 61810-7-31	Magnetic remanence
IEC 61810-7-32	Acoustic noise
IEC 61810-7-33	Continuity of protective earth connection
IEC 61810-7-34	Fluid contamination
IEC 61810-7-35	Resistance to cleaning solvents
IEC 61810-7-36	Fire hazard
IEC 61810-7-37	Temperature rise at rated load
IEC 61810-7-38	Mechanical interlock
IEC 61810-7-39	Insertion and withdrawal force (mating relay and socket)
IEC 61810-7-40	Short circuit testing
IEC 61810-7-41	Insulation coordination
IEC 61810-7-42	EMC
IEC 61810-7-43	Prof tracking index (PTI)
IEC 61810-7-44	Salt mist
IEC 61810-7-45	Maximum cycling frequency
IEC 61810-7-46	Surge withstand test
IEC 61810-7-48	Contact reliability test
IEC 61810-7-49	Long term stability of sealing (leak rate evaluation)
IEC 61810-7-50	Momentary drop in supply voltage
IEC 61810-7-51	React behaviour at coil voltage drop
IEC 61810-7-52	Coil overvoltage
IEC 61810-7-53	Slow decrease and increase of supply voltage
IEC 61810-7-54	Critical DC load current
IEC 61810-7-55	Maximum DC load breaking capacity
IEC 61810-7-56	Ball Pressure Test

135

136 **2 Normative references**

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

141 IEC 60028, *International standard of resistance for copper*

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

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

IEC 60068-2-17, *Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-64:2008, *Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broadband random and guidance*

IEC 60270, *High-voltage test techniques – Partial discharge measurements*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60721-3-3:2019, *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weatherprotected locations*

IEC 60947-1:2020, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 60999-2, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 2: Particular requirements for clamping units for conductors above 35 mm² up to 300 mm² (included)*

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

ISO 16750-1:2018, *Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 1: General*

ISO 16750-2:2012, *Road vehicles – Environmental conditions and testing for electrical and electronic equipment – Part 2: Electrical loads*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply for the entire IEC 61810-7 series.

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>

177 NOTE In the text of this document, the term "relay" is used instead of "elementary relay" to improve the readability.

178 **3.1 Types of relays**

179 **3.1.1** 180 **electromechanical relay**

181 electrical relay in which the intended response results mainly from the movement of mechanical
182 elements

183 [IEV 444-01-04]

184 **3.1.2** 185 **all-or-nothing relay**

186 electrical relay, which is intended to be energized by a quantity, the value of which is either within its
187 operative range or effectively zero

188 [IEV 444-01-02]

189 **3.1.3** 190 **elementary relay**

191 all-or-nothing relay which operates and releases without any intentional time delay

192 [IEV 444-01-03]

193 **3.1.4** 194 **monostable relay**

195 electrical relay which, having responded to an energizing quantity and having changed its condition,
196 returns to its previous condition when that quantity is removed

197 [IEV 444-01-07]

198 **3.1.5** 199 **bistable relay**

200 electrical relay which, having responded to an energizing quantity and having changed its condition,
201 remains in that condition after the quantity has been removed; a further appropriate energization is
202 required to make it change its condition

203 [IEV 444-01-08]

204 **3.1.6** 205 **polarized relay**

206 electrical relay, the change of condition of which depends upon the polarity of its DC energizing
207 quantity

208 [IEV 444-01-09]

209 **3.1.7** 210 **non-polarized relay**

211 electrical relay, the change of condition of which does not depend upon the polarity of its energizing
212 quantity

213 [IEV 444-01-10]

3.2 Types of relays, based upon environmental protection (relay technology RT)

3.2.1

RT 0 unenclosed relay

relay not provided with a protective case

3.2.2

RT I dust protected relay

relay provided with a case which protects its mechanism from dust

3.2.3

RT II flux proof relay

relay capable of being automatically soldered without allowing the migration of solder fluxes beyond the intended areas

NOTE Where an enclosed construction is used, venting to the outside atmosphere is permissible.

3.2.4

RT III wash tight relay

relay capable of being automatically soldered and subsequently undergoing a washing process to remove flux residues without allowing the ingress of flux or washing solvents

NOTE In service, this type of relay is sometimes vented to the atmosphere after the soldering or washing process.

3.2.5

RT IV sealed relay

relay provided with a case which has no venting to the outside atmosphere, and having a time constant better than 2×10^4 s (see IEC 60068-2-17)

3.2.6

RT V hermetically sealed relay

sealed relay having an enhanced level of sealing, assuring a time constant better than 2×10^6 s (see IEC 60068-2-17)

3.3 Functions of a relay

3.3.1

release condition

for a monostable relay, specified condition of the relay when it is not energized; for a bistable relay, one of the conditions, as declared by the manufacturer

[IEV 444-02-01]

3.3.2

operate condition

for a monostable relay, specified condition of the relay when it is energized by the specified energizing quantity and has responded to that quantity; for a bistable relay, the condition other than the release condition as declared by the manufacturer

[IEV 444-02-02]

3.3.3**operate** (verb)**set (for bistable relays only)**

change from the release condition to the operate condition

[IEV 444-02-04]

3.3.4**release** (verb)

for a monostable relay, change from the operate condition to the release condition

[IEV 444-02-05]

3.3.5**reset** (verb)

for a bistable relay, change from the operate condition to the release condition

[IEV 444-02-06]

3.3.6**change over** (verb)

for a monostable relay, operate or release; for a bistable relay, operate or reset

[IEV 444-02-07]

3.3.7**cycle** (verb)

for a monostable relay, operate and then release or vice versa; for a bistable relay, operate and then reset or vice-versa

[IEV 444-02-08]

3.3.8**revert** (verb)

for a specific type of polarized relay, release/reset again, or remain in the release condition, when supplied with a coil voltage in excess of that required for operation and of the same polarity as required for operation

[IEV 444-02-09, modified]

3.3.9**revert reverse** (verb)

for a specific type of polarized bistable relay, operate again, or remain in the operate condition, when supplied with a coil voltage in excess of that required for resetting and of the same polarity as required for resetting

[IEV 444-02-10, modified]

3.4 Types of contacts

3.4.1

make contact

contact which is closed when the relay is in its operate condition and which is open when the relay is in its release condition

[IEV 444-04-17]

3.4.2

break contact

contact which is open when the relay is in its operate condition and which is closed when the relay is in its release condition

[IEV 444-04-18]

3.4.3

change-over contact

combination of two contact circuits with three contact members, one of which is common to the two contact circuits; such that when one of these contact circuits is open, the other is closed

[IEV 444-04-19]

3.4.4

change-over make-before-break contact

change-over contact in which the make contact circuit closes before the break contact circuit opens

[IEV 444-04-20]

3.4.5

change-over break-before-make contact

change-over contact in which the break contact circuit opens before the make contact circuit closes

[IEV 444-04-21]

3.5 Prefixes for the values applicable to relays

3.5.1

rated value

value of a quantity used for specification purposes, established for a specified set of operating conditions of a relay

[IEV 444-02-18, modified]

3.5.2

actual (“just”) value

value of a quantity determined by measurement on a specific relay, during performance of a specified function

[IEV 444-02-21, modified]