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Electromechanical elementary relays - Part 2: Reliability

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ICS 29.120.70

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61810-2

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English Version

Electromechanical elementary relays - Part 2: Reliability (IEC 61810-2:2017)

Relais électromécaniques élémentaires - Partie 2: Fiabilité (IEC 61810-2:2017)

Elektromechanische Elementarrelais - Teil 2: Funktionsfähigkeit (Zuverlässigkeit) (IEC 61810-2:2017)

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European Committee for Electrotechnical Standardization
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European foreword

The text of document 94/415/FDIS, future edition 3 of IEC 61810-2, prepared by IEC/TC 94 "All-ornothing electrical relays" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61810-2:2017.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-04-06
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-10-06

This document supersedes EN 61810-2:2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61810-2:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61810-2-1	NOTE	Harmonized as EN 61810-2-1.
IEC 61810-3	NOTE	Harmonized as EN 61810-3.
IEC 62061	NOTE	Harmonized as EN 62061.
ISO 13849-1:2015	NOTE	Harmonized as EN ISO 13849-1:2015 (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61649	2008	Weibull analysis	EN 61649	2008
IEC 61810-1	2015	Electromechanical elementary relays - Part 1: General and safety requirements	EN 61810-1	2015

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INTRODUCTION

Within the IEC 61810 series of basic standards covering elementary electromechanical relays, IEC 61810-2 is intended to give requirements and tests permitting the assessment of relay reliability. All information concerning endurance tests for type testing have been included in IEC 61810-1.

NOTE According to IEC 61810-1, a specified value for the electrical endurance under specific conditions (e.g. contact load) is verified by testing 1 or 3 relays. None is allowed to fail. Within this document, a prediction of the reliability of a relay is performed using statistical evaluation of the measured cycles to failure of a larger number of relays (generally 10 or more relays).

This document is the base for IEC 61810-2-1 to determine reliability values for relays where enhanced requirements for the verification of reliability (B_{10} and B_{10D}) apply.

The technical committee responsible for dependability has developed IEC 61649 dealing with Weibull-distributed test data. It contains both numerical and graphical methods for the evaluation of Weibull-distributed data as well as WeiBayes estimation.

On the basis of this basic reliability standard, this document was developed. It comprises test conditions and an evaluation method to obtain characteristic reliability values for electromechanical elementary relays. The life of relays as non-repairable items is primarily determined by the number of operations. For this reason, the reliability is expressed in terms of mean cycles to failure (MCTF).

Commonly, equipment reliability is calculated from mean time to failure (MTTF) figures. With the knowledge of the frequency of operation (cycling rate) of the relay within a piece of equipment, it is possible to calculate an effective MTTF value for the relay in that application.

Such calculated MTTF values for relays can be used to calculate respective reliability, probability of failure, and availability (e.g. MTBF (mean time between failures)) values for equipment into which these relays are incorporated.

Generally, it is not appropriate to state that a specific MCTF value is “high” or “low”. The MCTF figures are used to make comparative evaluations between relays with different styles of design or construction, and as an indication of product reliability under specific conditions.

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