

Electromechanical elementary relays - Part 2-1:
Reliability - Procedure for the verification of B10 values

EESTI STANDARDI EESSÕNA

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English Version

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

Relais électromécaniques élémentaires -
Partie 2-1: Fiabilité - Procédure de vérification des valeurs
de B_{10}
(IEC 61810-2-1:2017)

Elektromechanische Elementarrelais -
Teil 2-1: Funktionsfähigkeit (Zuverlässigkeit) - Verfahren
zum Nachweis der B_{10} -Werte
(IEC 61810-2-1:2017)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 94/416/FDIS, future edition 2 of IEC 61810-2-1, prepared by IEC/TC 94 "All-or-nothing electrical relays" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61810-2-1:2017.

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-10-06

This document supersedes EN 61810-2-1:2011.

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Endorsement notice

The text of the International Standard IEC 61810-2-1:2017 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:

ISO 13849-2:2012 NOTE Harmonized as EN ISO 13849-2:2012 (not modified).

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61810-1	2015	Electromechanical elementary relays - Part 1: General and safety requirements	EN 61810-1	2015
IEC 61810-2	2017	Electromechanical elementary relays - Part 2: Reliability	EN 61810-2	2017
IEC 61810-3	-	Electromechanical elementary relays - Part 3: Relays with forcibly guided (mechanically linked) contacts	EN 61810-3	-
IEC 62061	-	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems	EN 62061	-
ISO 13849-1	2015	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design	EN ISO 13849-1	2015

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INTRODUCTION

Based on the general provisions of IEC 61810-2, this part of IEC 61810 specifies reliability test procedures for electromechanical elementary relays where enhanced requirements for the verification of reliability apply. A type test is passed and then confirmed by routine tests with specified periodicity. This document describes how figures for B_{10} (the mean number of cycles until 10 % of the relays have failed) are derived from these life tests performed with representative relay samples.

In particular when electromechanical elementary relays are intended to be incorporated in safety-related control systems of machinery in accordance with IEC 62061 and ISO 13849-1, the mean time to dangerous failure ($MTTF_d$) is a measure that can be taken into account when assessing the probability of dangerous failure of the safety function concerned. Although a component failure cannot be defined as “dangerous” unless the detailed application is known, it is common to consider a failure mode that is likely to result in danger in a typical application of the component, and to refer to this failure mode as a “dangerous failure”. The $MTTF_d$ then becomes the expectation of the mean time to failure in this “dangerous” mode. For the calculation of $MTTF_d$ for electromechanical relays, the data provided by the manufacturer for B_{10D} can be used (see Clause C.4 of ISO 13849-1:2015).

Electromechanical elementary relays with forcibly guided (mechanically linked) contacts offer the possibility of a high diagnostic coverage according to 4.5.3 of ISO 13849-1:2015.

NOTE Requirements for such relays are given in IEC 61810-3.