This document is a preview generated by EVS

Electric components - Reliability - Reference conditions for failure rates and stress models for conversion

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

This document is a preview generated by EVS

See Eesti standard EVS-EN 61709:2017 sisaldab Euroopa standardi EN 61709:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 61709:2017 consists of the English text of the European standard EN 61709:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 19.05.2017.	Date of Availability of the European standard is 19.05.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 31.020

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61709

May 2017

ICS 31.020

Supersedes EN 61709:2011

English Version

Electric components - Reliability - Reference conditions for failure rates and stress models for conversion (IEC 61709:2017)

Composants électriques - Fiabilité - Conditions de référence pour les taux de défaillance et modèles de contraintes pour la conversion (IEC 61709:2017)

Bauelemente der Elektronik - Zuverlässigkeit - Referenzbedingungen für Ausfallraten und Beanspruchungsmodelle zur Umrechnung (IEC 61709:2017)

This European Standard was approved by CENELEC on 2017-03-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2017 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN 61709:2017 E

This document is a preview generated by EVS

European foreword

The text of document 56/1714/FDIS, future edition 3 of IEC 61709, prepared by IEC/TC 56 "Dependability" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61709:2017.

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)	2017-12-24
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-03-24

This document supersedes EN 61709:2011.

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 61709:2017 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 60300-3-2:2004	NOTE	Harmonized as EN 60300-3-2:2005.
IEC 60300-3-3	NOTE	Harmonized as EN 60300-3-3.
IEC 60721 (series)	NOTE	Harmonized as EN 60721 (series).
IEC 60721-3-3	NOTE	Harmonized as EN 60721-3-3.
IEC 60721-3-4	NOTE	Harmonized as EN 60721-3-4.
IEC 60721-3-5	NOTE	Harmonized as EN 60721-3-5.
IEC 60721-3-7	NOTE	Harmonized as EN 60721-3-7.
IEC 61014:2003	NOTE	Harmonized as EN 61014:2003.
IEC 61360 (series)	NOTE	Harmonized as EN 61360 (series).
IEC 61360-1:2009	NOTE	Harmonized as EN 61360-1:2010.
IEC 61360-4:2005	NOTE	Harmonized as EN 61360-4:2005.
IEC 61508 (series)	NOTE	Harmonized as EN 61508 (series).
IEC 61649:2008	NOTE	Harmonized as EN 61649:2008.
IEC 61703:2002	NOTE	Harmonized as EN 61703:2002.
IEC 61710	NOTE	Harmonized as EN 61710.

This document is a preview generated by EVS

IEC 61810-2:2011	NOTE	Harmonized as EN 61810-2:2011.
IEC 61810-2-1:2011	NOTE	Harmonized as EN 61810-2-1:2011.
IEC 62007 (series)	NOTE	Harmonized as EN 62007 (series).
IEC 62741	NOTE	Harmonized as EN 62741.
IEC 62308:2006	NOTE	Harmonized as EN 62308:2006.

This document is a preview generated by EVS

Annex ZA
(normative)
Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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 60050-192	2015	International electrotechnical vocabulary - Part 192: Dependability	-	-

This document is a preview generated by EVS

CONTENTS

This document is a preview generated by EVS

This document is a preview generated by EVS

This document is a preview generated by EVS

This document is a preview generated by EVS

This document is a preview generated by EVS

This document is a preview generated by EVS

This document is a preview generated by EVS

INTRODUCTION

This document is intended for the reliability prediction of electric components as used in equipment and is aimed at organizations that have their own data and describes how to state and use that data in order to perform reliability predictions.

It can also be used to allow an organization to set up a failure rate database and describes the reference conditions for which field failure rates should be stated. The reference conditions adopted in this document are typical of the majority of applications of components in equipment however when components operate under other conditions the users may consider stating these conditions as their reference conditions.

Using the presented stress models allows extrapolation of failure rates from reference conditions to other operating conditions which in turn permits the prediction of failure rates at assembly level. This allows estimation of the effect of design changes or changes in the environmental conditions on component reliability. Reliability prediction is most useful in the early design phase of equipment. It can be used, for example, to identify potential reliability problems, the planning of logistic support strategies and the evaluation of designs.

The stress models contained herein are generic and are as simple as possible while still being comparable with more complex equations contained in other models. The predictions generated using this document have a wide range of prediction accuracy.

This document does not contain failure rates, but it describes how they can be stated and used. This approach allows a user to select the most relevant and up to date failure rates for the prediction from a source that they select. This document also contains information on how to select the data that can be used in the presented models.

The failure rates considered in this document are assumed to be constant, either for an unlimited period of operation (general case) or for limited periods. The limitation of life is called useful life and applies only for some few component families, reaching the wear-out failure period (during which the failure rate is increasing) within the normal period of use. It is hence assumed that during useful life, the failure rate can be considered constant for any practical use.

For the purposes of this document the term electric component includes the commonly used terms “electronic component”, “electrical component” and “electro-mechanical component”.

This document is a preview generated by EVS