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NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61710

September 2013

ICS 03.120.01; 03.120.30

English version

Power law model - Goodness-of-fit tests and estimation methods
(IEC 61710:2013)

Modèle de loi en puissance - Essais d'adéquation et méthodes d'estimation des paramètres (CEI 61710:2013)

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Foreword

The text of document 56/1500/FDIS, future edition 2 of IEC 61710, prepared by IEC/TC 56 "Dependability" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61710:2013.

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)	2014-03-26
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IEC 61703	NOTE	Harmonised as EN 61703.
IEC 61164:2004	NOTE	Harmonised as EN 61164:2004 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60050-191	1990	International Electrotechnical Vocabulary (IEV) - Chapter 191: Dependability and quality of service	-	-

IEC 61710

Edition 2.0 2013-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Power law model – Goodness-of-fit tests and estimation methods

Modèle de loi en puissance – Essais d'adéquation et méthodes d'estimation des paramètres

IEC 61710:2013

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IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Power law model – Goodness-of-fit tests and estimation methods

Modèle de loi en puissance – Essais d'adéquation et méthodes d'estimation des paramètres

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 8
2 Normative references 8
3 Terms and definitions 8
4 Symbols and abbreviations 8
5 Power law model 9
6 Data requirements 10
6.1 General 10
6.1.1 Case 1 – Time data for every relevant failure for one or more copies from the same population 10
6.1.2 Case 1a) – One repairable item 10
6.1.3 Case 1b) – Multiple items of the same kind of repairable item observed for the same length of time 11
6.1.4 Case 1c) – Multiple repairable items of the same kind observed for different lengths of time 11
6.2 Case 2 – Time data for groups of relevant failures for one or more repairable items from the same population 12
6.3 Case 3 – Time data for every relevant failure for more than one repairable item from different populations 12
7 Statistical estimation and test procedures 13
7.1 Overview 13
7.2 Point estimation 13
7.2.1 Case 1a) and 1b) – Time data for every relevant failure 13
7.2.2 Case 1c) – Time data for every relevant failure 14
7.2.3 Case 2 – Time data for groups of relevant failures 15
7.3 Goodness-of-fit tests 16
7.3.1 Case 1 – Time data for every relevant failure 16
7.3.2 Case 2 – Time data for groups of relevant failures 17
7.4 Confidence intervals for the shape parameter 18
7.4.1 Case 1 – Time data for every relevant failure 18
7.4.2 Case 2 – Time data for groups of relevant failures 19
7.5 Confidence intervals for the failure intensity 20
7.5.1 Case 1 – Time data for every relevant failure 20
7.5.2 Case 2 – Time data for groups of relevant failures 20
7.6 Prediction intervals for the length of time to future failures of a single item 21
7.6.1 Prediction interval for length of time to next failure for case 1 – Time data for every relevant failure 21
7.6.2 Prediction interval for length of time to Rth future failure for case 1 – Time data for every relevant failure 22
7.7 Test for the equality of the shape parameters $\beta_1, \beta_2, ..., \beta_k$ 23
7.7.1 Case 3 – Time data for every relevant failure for two items from different populations 23
7.7.2 Case 3 – Time data for every relevant failure for three or more items from different populations 24
Annex A (informative) The power law model – Background information 30
Annex B (informative) Numerical examples 31

Annex C (informative) Bayesian estimation for the power law model 41
Bibliography 56

Figure 1 – One repairable item 10
Figure 2 – Multiple items of the same kind of repairable item observed for same length of time 11
Figure 3 – Multiple repairable items of the same kind observed for different lengths of time 12
Figure B.1 – Accumulated number of failures against accumulated time for software system 32
Figure B.2 – Expected against observed accumulated times to failure for software system 32
Figure B.3 – Accumulated number of failures against accumulated time for five copies of a system 35
Figure B.4 – Accumulated number of failures against accumulated time for an OEM product from vendors A and B 37
Figure B.5 – Accumulated number of failures against time for generators 38
Figure B.6 – Expected against observed accumulated number of failures for generators 39
Figure C.1 – Plot of fitted Gamma prior (6,7956, 0,0448) 47
for the shape parameter of the power law model 47
Figure C.2 – Plot of fitted Gamma prior (17,756 6, 1447,408) for the expected number of failures parameter of the power law model 47
Figure C.3 – Subjective distribution of number of failures 51
Figure C.4 – Plot of the posterior probability distribution for the number of future failures, M 54
Figure C.5 – Plot of the posterior cumulative distribution for the number of future failures, M 55

Table 1 – Critical values for Cramer-von-Mises goodness-of-fit test at 10 % level of significance 25
Table 2 – Fractiles of the Chi-square distribution 26
Table 3 – Multipliers for two-sided 90 % confidence intervals for intensity function for time terminated data 27
Table 4 – Multipliers for two-sided 90 % confidence intervals for intensity function for failure terminated data 28
Table 5 – 0,95 fractiles of the F distribution 29
Table B.1 – All relevant failures and accumulated times for software system 31
Table B.2 – Calculation of expected accumulated times to failure for Figure B.2 33
Table B.3 – Accumulated times for all relevant failures for five copies of a system (labelled A, B, C, D, E) 34
Table B.4 – Combined accumulated times for multiple items of the same kind of a system 34
Table B.5 – Accumulated operating hours to failure for OEM product from vendors A and B 36
Table B.6 – Grouped failure data for generators 38
Table B.7 – Calculation of expected numbers of failures for Figure B.6 40
Table C.1 – Strengths and weakness of classical and Bayesian estimation 42

Table C.2 – Grid for eliciting subjective distribution for shape parameter β 46
Table C.3 – Grid for eliciting subjective distribution for expected number of failures parameter η 46
Table C.4 – Comparison of fitted Gamma and subjective distribution for shape parameter β 48
Table C.5 – Comparison of fitted Gamma and subjective distribution for expected number of failures by time $T = 20\ 000\ \mathrm{h}$ parameter η 48
Table C.6 – Times to failure data collected on system test 49
Table C.7 – Summary of estimates of power law model parameters 50
Table C.8 – Time to failure data for operational system 53

INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER LAW MODEL – GOODNESS-OF-FIT TESTS AND ESTIMATION METHODS

FOREWORD

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International Standard IEC 61710 has been prepared by IEC technical committee 56: Dependability.

This second edition cancels and replaces the first edition, published in 2000, and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

– the inclusion of an additional Annex C on Bayesian estimation for the power law model.

The text of this standard is based on the following documents:

FDIS	Report on voting
56/1500/FDIS	56/1508/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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INTRODUCTION

This International Standard describes the power law model and gives step-by-step directions for its use. There are various models for describing the reliability of repairable items, the power law model being one of the most widely used. This standard provides procedures to estimate the parameters of the power law model and to test the goodness-of-fit of the power law model to data, to provide confidence intervals for the failure intensity and prediction intervals for the length of time to future failures. An input is required consisting of a data set of times at which relevant failures occurred, or were observed, for a repairable item or a set of copies of the same item, and the time at which observation of the item was terminated, if different from the time of final failure. All output results correspond to the item type under consideration.

Some of the procedures can require computer programs, but these are not unduly complex. This standard presents algorithms from which computer programs should be easy to construct.

POWER LAW MODEL – GOODNESS-OF-FIT TESTS AND ESTIMATION METHODS

1 Scope

This International Standard specifies procedures to estimate the parameters of the power law model, to provide confidence intervals for the failure intensity, to provide prediction intervals for the times to future failures, and to test the goodness-of-fit of the power law model to data from repairable items. It is assumed that the time to failure data have been collected from an item, or some identical items operating under the same conditions (e.g. environment and load).

2 Normative references

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.

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